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History Files (HF) and Technical Background (TB) documents for Unified Interpretations (UIs)

HFs and TBs for Interpretations concerning:	
IMO Chemical Code	CC
1972 COLREG	COLREG
Fire Test Procedure	FTP
Liquified Gases in Bulk	GC
IGF Code	GF
High Speed Craft Code	HSC
Load Line Convention	LL
Mobile Offshore Drilling Units	MODU
MARPOL Convention	MPC
Passenger Submersible Craft	PASSUB
SOLAS	SC
Tonnage Measurement	TM

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Aug 2022

History Files (HF) and Technical Background (TB) documents for UIs concerning IMO Chemical Code (UI CC)

Res. No.	Title	Current Rev.	HF/TB?
UI CC1	Interpretation of sub-section 3.9(b), BCH Code	Rev.2 Feb 2007	No
UI CC2	Interpretation of paragraph 4.9.2, BCH Code	Rev.1 Feb 2007	No
UI CC3	Interpretation of paragraph 4.11.2, BCH Code	Rev.1 Feb 2007	No
UI CC4	Interpretation of paragraph 8.3.2 – Venting System on Chemical Tankers, IBC Code	Jun 2002	No
UI CC5	Fire protection and fire extinction IBC Code Chapter 11	Sept 2008	TB
UI CC6	Lining approved for use with acids –IBC Code item 15.11.2	Rev.1 Aug 2022	HF
UI CC7	Unprotected openings	Jun 2016	HF

Technical Background

UI CC5 (NEW), September 2008

Fire protection and fire extinction (Paragraphs 11.1.1.3 and 4 of IBC Code Chapter 11)

1. As there is no 2000gt limit in SOLAS II-2/10, except for 10.5.6, one would expect to find the following qualification based on the phrase in 11.1.1.3: "*as they would apply to cargo ships of 2,000 tons gross tonnage and over;*";

2. Except for sub-paragraph 10.5.6, SOLAS II-2/10.5 applies to new cargo ships constructed on/after 1 July 1986 (regulation II-2/10.5 was addressed under the previous version of SOLAS in regulation II-2/7); and the 1 July 1986 entry into force date for new ships under SOLAS II-2/7 corresponds to the entry into force date for the original IBC Code (MSC.4(48)).

3. In view of above understanding and to provide parity for the application of SOLAS II/2 10.2, 10.4, and 10.5 to cargo ships between 500-2000 gt under SOLAS and chemical carriers between 500-2000 gt under the IBC Code, the Statutory Panel, after a comprehensive discussion, agreed to the following interpretation to paragraphs 11.1.1.3 and 4:

"1. SOLAS Regulations II-2/10.2 and 10.4 apply to cargo ships of 500 gross tonnage and over under SOLAS and to chemical carriers, regardless of size, under the IBC Code.

2. SOLAS II-2/10.5, except for sub-paragraph10.5.6, applies to chemical tankers, regardless of size, constructed on/after 1 July 1986.

3. SOLAS II-2/10.5.6 applies only to chemical tankers constructed on/after 1 July 2002 and of 2,000 gt and above."

Submitted by Statutory Panel Chairman
25 August 2008

Permanent Secretariat notes:
- Approved by GPG 17 September 2008 (8642_IGb) with an implementation date of 1 January 2009.
- UI CC5 will be submitted to BLG13.

UI CC6 "Lining approved for use with acids – IBC Code item 15.11.2"

Summary

A new paragraph to clarify the elasticity requirements of a liner fitted in accordance with the IBC Code has been introduced.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2022)	11 August 2022	1 January 2023
New (Apr 2011)	20 April 2011	1 January 2012

- **Rev.1 (Aug 2022)**

1 Origin of Change:

☑ Other - Review at 10th anniversary

2 Main Reason for Change:

The UI was reviewed at its 10th anniversary. During the review an IACS member requested additional text to clarify the "elasticity" of the lining.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

During the review of UI CC6 one member advised that they had been advised of confusion with the use of the term "elasticity" and its application to non-metallic materials.

The Safety Panel extensively discussed this issue by correspondence considering the need for the liner to move with the steel to which it is applied.

During the discussion it was noted that the existing UI TB (see Part B, Annex 1) made it clear that spray-on corrosion protection systems were not allowed.

The text was agreed after extensive discussion.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 24 November 2021	(Made by: IACS member)
Panel Approval	: 26 July 2022	(Ref.: PS21015bISq)
GPG Approval	: 11 August 2022	(Ref:21197_IGf)

- **New (Apr 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

IACS societies appear to have a different approach when it comes to approval of linings. No common agreed technical acceptance requirements exist.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *06 July 2010 Made by: An IACS member*
Panel Approval: *03 March 2011 by: Statutory panel*
GPG Approval: *20 April 2011 (Ref. 11059_IGc)*

Part B. Technical Background

List of Technical Background (TB) documents for UI CC6:

Annex 1. **TB for New (April 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Aug 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI CC6 (New April 2011)

1. Scope and objectives

The scope of the UI is to ensure a common basis when considering and accepting linings for the protection of steel tank and pipe materials required by IBC Code item 15.11.2 when carrying acids.

"Spray on" type corrosion protection systems have occasionally been put forward for consideration as an acceptable solution in relation to 15.11.2. This UI makes it clear that such systems can not be approved for this purpose. The process of applying solid materials, for example rotational moulding, is acceptable.

2. Engineering background for technical basis and rationale

The Panel considered that a corrosion protection system applied in liquid state to surfaces cannot be assured to have greater flexibility ("elasticity"), in the cured state, than the supporting boundary plating it is protecting, as required by 15.11.2 of the IBC Code; whereas, a lining attached to the tank and pipe surfaces in a solid state (including, for example, rotational moulding) can afford the required flexibility ("elasticity")."

3. Source/derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The initial draft for this UI by EG/Coating ("coatings could not be a substitute of Linings")
was rejected because:

- It inappropriately judged the acceptability of a product based on the name ("coating" or "lining") assigned to the product by the manufacturer rather than the acceptability being based on the performance of the product; and
- It did not comply with the robustness, enforceability and technical integrity required of an IACS UI as per IACS Procedures.

Taking the above into account, it was agreed that the interpretation of an acceptable lining is one which need to be applied by attaching it to the tank and pipe surfaces in a solid state.

6. Attachments if any

None

Technical Background (TB) document for UI CC6 (Rev.1 Aug 2022)

1. Scope and objectives

The UI was reviewed when it reached its 10th anniversary. During the review it was recognised that further clarification was needed to describe the acceptable properties of the liner.

2. Engineering background for technical basis and rationale

See section 5 below.

3. Source/derivation of the proposed IACS Resolution

Not applicable.

4. Summary of Changes intended for the revised Resolution:

A new paragraph was introduced in the UI providing further clarification on the expected properties for a liner.

5. Points of discussions or possible discussions

The Panel discussed the need to include text which could not be interpreted as accepting a spray-on coating rather than a liner.

There was also discussion on the need to cover thermal expansion and the stresses introduced from tension and/or compression.

> Thermal expansion is more related to the coefficient of thermal expansion, not to the elasticity. The linings' coefficient of thermal expansion is commonly ranged (36--72)*10^{-6} mm/mm/°C, which is greater than that of the steel substrate, which is about 11*10^{-6} mm/mm/°C. See attachment.
>
> It was noted that an elastic lining should be capable of enduring yield deformation of the steel substrate, i.e. plastic deformation to some extent. It is known that the yield deformation of steel substrate is much lower than liner material generally used in these applications (PTFE, Rubber). The adhesive used to attach the liner to steel substrate should be selected such that it is capable of bonding steel and liner under the conditions relevant for the application of the liner (e.g. temperature and mechanical stresses that the adhesive will be exposed to).

Developing the above discussion the Panel also discussed the need to include specific criteria for elongation. One member provided information which could be used to support such criteria, however a majority considered that this was not needed due to the different linings which could be used for which different criteria might be relevant.

The Panel considered the need to include a reference to specific acceptable national or international standards. Although two standards were identified by one member as being relevant, NACE TM0374-2002: Laboratory Methods for the Evaluation of

Protective Coatings and Lining Materials on Metallic Substrates in Immersion Service; and ISO 16961:2015: Petroleum, petrochemical and natural gas industries — Internal coating and lining of steel storage tanks, a majority of the Panel were of the view that such a reference was not needed.

During the discussion regarding the clarification included in the UI that "the requirement for the elasticity of a lining to be not less than the supporting boundary plating is to prevent debonding at the interface between the lining and the lined surface", some members would have preferred that the UI included additional text to state the conditions which had to be met to satisfy the requirement. There was general agreement that the requirement is met when it is demonstrated that the lining remains intact without damage when the supporting boundary plating, to which the lining is applied, is subjected to tension, compression and bending up to its yield point and that stress is removed, however a majority preferred not to include text stating this in the UI.

6. Attachments if any

"Polyester and vinyl ester coatings" by William R Slama, Journal of Protective Coatings & Linings, May 1996.

UI CC7 "Unprotected openings"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2016)	3 June 2016	1 January 2017

- **New (June 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity *(Dutch Safety Board)*
☑ Other *(Based on Vessel Incident (Collision and capsizing of the tug Fairplay 22))*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24, that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed for the treatment of unprotected openings in respect of survival requirements under IBC Code Ch.2 Section 2.9.

.5 Other Resolutions Changes

Similar UIs were developed for ICLL Regulation 27, MARPOL Reg.27 & 28 and SOLAS/Ch.II-1-Reg.7-2, IGC Code Ch.2 Section 2.9.

.6 Dates:

Original Proposal: June 2014 made by Safety Panel
Panel Approval: April 2016 (Ref: SP12006r)
GPG Approval: 3 June 2016 (Ref: 15145bIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI CC7:

Annex 1. **TB for New (June 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI CC7 (New June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points / unprotected openings in the intact & damage stability calculation when they have to be left open for operational purposes. This should confirm that intact & damage stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis, where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in the intact stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed a unified interpretation for survival requirements as contained in IBC Code Ch.2 Section 2.9 based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as unprotected openings for the application of IBC Code Ch.2 Section 2.9.3.

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

N.A

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4) have to be considered as unprotected points, but only those which are left open during normal operation

6. Attachments if any

None

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May 2018

History Files (HF) and Technical Background (TB) documents for UIs concerning 1972 Collision Regulations (UI COLREG)

Res. No.	Title	Current Rev.	HF/TB?
UI COLREG1	Interpretation to COLREG 1972 Annex 1, Section 9 (b)	Corr.1 Feb 2013	HF
UI COLREG2	Interpretation to COLREG 1972 Rule 23 (a)	Deleted (Jan 2009)	TB
UI COLREG3	Interpretation to COLREG 1972 Annex 1, Section 3 (b)	Corr.1 Jan 2010	HF
UI COLREG4	Interpretation to COLREG 1972 Rule 27(b)(i)	Corr.1 Jul 2007	TB
UI COLREG5	Interpretation to COLREG 1972 Annex I Sections 9(a)(i) and 10(a)(i)	May 2018	HF

UI COLREG 1 "Interpretation to COLREG 1972 Annex 1, Section 9(b)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Feb 2013)	19 February 2013	-
Rev.1 (Oct 2012)	30 October 2012	1 July 2013
New (Jan 2006)	*No record*	1 July 2006

- **Corr. 1 (Feb 2013)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify the implementation statement of Rev.1 of the UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The proposal made by a GPG member for correction of the UI to clarify the implementation statement of Rev.1 was unanimously agreed by GPG. PermSec revised the HF file to record this correction.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *18 January 2013 Made by a Member*
GPG Approval: *19 February 2013 (Subject: 12166_IGg)*

- **Rev 1 (October 2012)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To accept alternative arrangements of all-round lights with screened angles greater than 180 degrees, the Members agreed to revise this UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This issue was discussed within the Statutory Panel by correspondence and at the Statutory Panel Meeting. The final draft of this revision to the UI was developed by the Statutory Panel. This revision to the UI was agreed upon unanimously.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *02 September 2009 Made by Statutory panel*
Panel Approval: *19 September 2012*
GPG Approval: *30 October 2012 (Subject: 12166_IGb)*

- **New (Jan 2006)**

Refer TB document in Part B Annex 1.

Part B. Technical Background

List of Technical Background (TB) documents for UI COLREG 1:

Annex 1. **TB for New (Jan 2006)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Oct 2012)**

See separate TB document in Annex 2.

◄▼►

Note: There is no separate Technical Background (TB) document available for Corr.1 (Feb 2013).

Technical background
UI COLREG 1 (New, Jan 2006)

During approval of navigation lights arrangement drawings on new vessels and conversions, it was experienced that IACS members applied the requirement set out in paragraph 9(b) of Annex 1 to COLREG 1972 in different ways.

It was then considered a benefit to have a unified interpretation in order to avoid different practices and possible problems for the yards, ship owners, navigators, surveyors and class approval centres.

The UI specifies that the all-round lights may be screened up to 180 degrees and that screenings details are to be approved when lights arrangement drawings are examined.

This UI is to be uniformly implemented by IACS Members and Associates from 1 July 2006, but existing ships are not required to undergo modifications to meet these UIs.

Submitted by Statutory Panel Chairman
17 Dec 2005

* This UI was submitted to IMO NAV 52.

Technical Background for UI COLREG 1 Rev.1, Oct 2012

1. Scope and objectives

This revision to the UI was developed to accept alternative arrangements of all-round lights with screened angles greater than 180 degrees.

2. Engineering background for technical basis and rationale

As a practical implementation of COLREG 1972 Annex 1, Section 9(b) so that the arrangement of two lights will perform as one all-round light which is visible from all sides, the original version of UI COLREG 1 was developed based on an arrangement as shown in Figure 1.

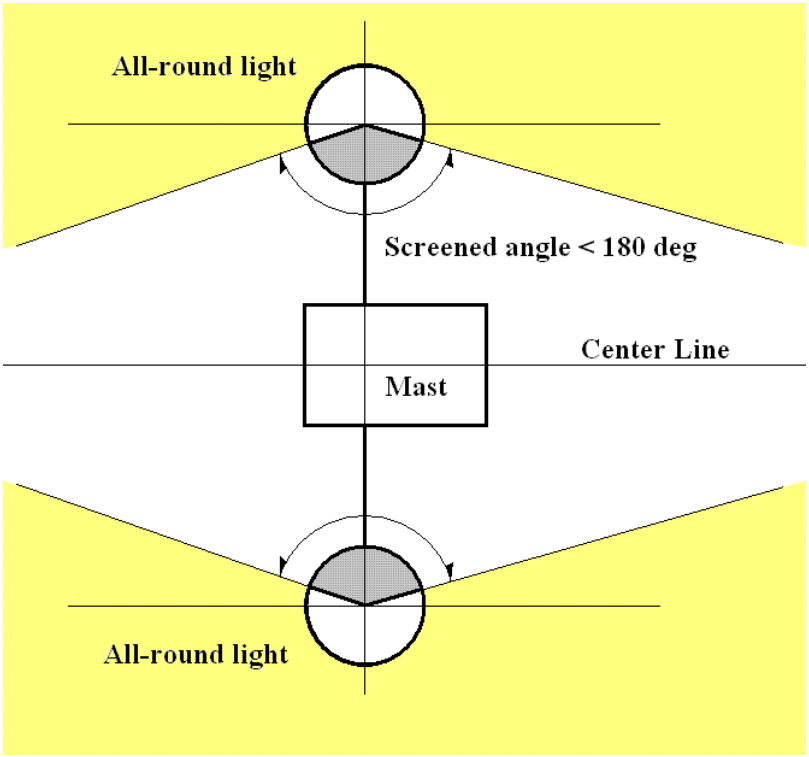

Figure 1 (Yellow coloured areas are visible sectors)

However, some ship designers propose alternative arrangements of two all-round lights with screened angles greater than 180 degrees as a compromise solution to the following issues:

a) At least one light is to be visible from all sides; and
b) Areas where two lights are visible simultaneously will be minimized.

Figure 2 show examples of such alternative arrangements.

After discussions within the Statutory Panel, it was agreed that such alternative arrangements can be accepted on a case by case basis.

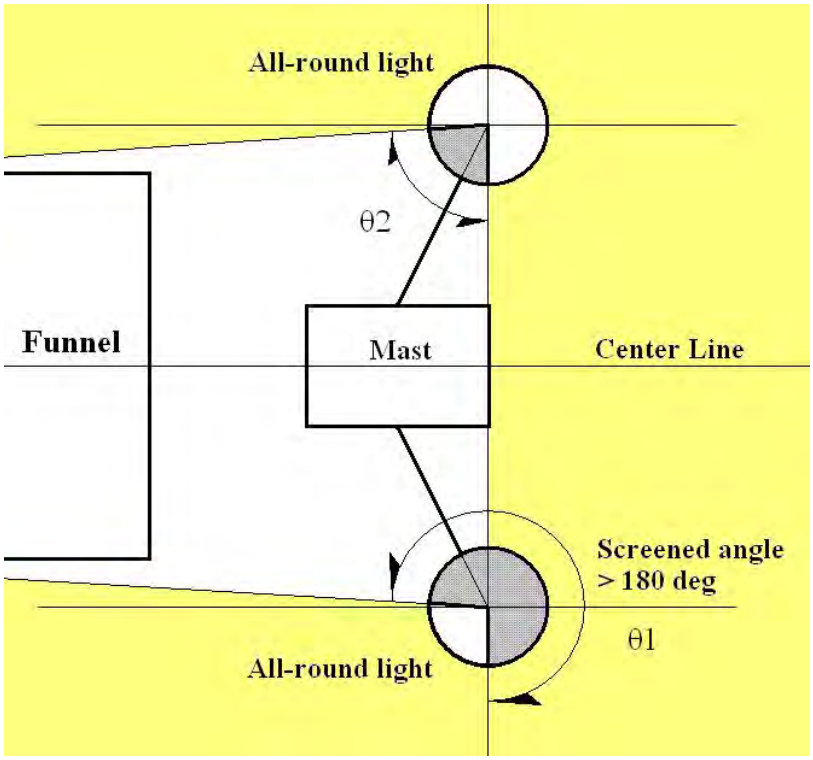

Figure 2

3. Source / derivation of the proposed IACS Resolution

During development of this revision, current practices of alternative arrangements by shipyards were reflected.

4. Summary of Changes intended for the revised Resolution

A description to accept alternative arrangements of all-round lights with screened angles greater than 180 degrees has been added.
In addition, for the clarification of the current interpretation, Figure 1 which shows the basis of the interpretation has been added.

5. Points of discussions or possible discussions

Assure complete compliance with the one (1) mile requirement in COLREG 1972 Annex 1, Section 9(b)(ii).

6. Attachments if any

None

Technical background

UI COLREG 2 (New, Jan 2006)

The COLREG 1972 does not specifically require duplication of lights.
Although most new vessels are delivered with duplicated navigation lights, the various yards around the world have different practice of which lights they install double sets.
Therefore, the UI was developed with aims of:

- avoiding different practices and possible problems for the yards, ship owners, navigators, surveyors and class approval centers; and
- ensuring that, for navigation lights, the provisions of COLREG 1972 can be complied with continuously.

This UI is to be uniformly implemented by IACS Members and Associates from 1 July 2006, but existing ships are not required to undergo modifications to meet these UIs.

Submitted by Statutory Panel Chairman
17 Dec 2005

* This UI was submitted to IMO NAV 52.

UI COLREG 3 "Interpretation to COLREG 1972 Annex 1, Section 3 (b)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1, Corr.1 (Jan 2010)	12 January 2010	1 January 2010
Rev.1 (May 2009)	26 May 2009	1 January 2010
NEW (Jan 2006)	26 January 2006	1 July 2006

- **Rev.1, Corr.1 (Jan 2010)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

One member proposed to clarify the note of UI COLREG 3(Rev.1) which reads "Changes introduced in Rev.1 are to be uniformly implemented by IACS Members and Associates from 1 January 2010" as to whether the implementation date refers to the date of building contract or the date of keel laid.

.3 History of Decisions Made:

After discussion, the Panel agreed to revise the implementation note of UI COLREG 3(Rev.1), and this was subsequently approved by GPG.

.4 Other Resolutions Changes

N/A

.5 Any dissenting views

N/A

.6 Dates:

Original Proposal: *3 September 2009, made by Statutory Panel*
Statutory Panel Approval: *December 2009*
GPG Approval: 12 January 2010 *(ref. 9572_IGd)*

- **Rev.1 (May 2009)**

Amendment to bring UI in line with MSC.1/Circ.1260 – see TB document in Part B.

- **NEW (Jan 2006)**

See TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI COLREG 3:

Annex 1. **TB for Original Resolution (Jan 2006)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1 (May 2009)**

See separate TB document in Annex 2.

◄▼►

Annex 3. **TB for Rev.1, Corr.1 (Jan 2010)**

See separate TB document in Annex 3.

◄▼►

Technical background

UI COLREG 3 (New, Jan 2006)

During approval of navigation lights arrangement drawings on new vessels and conversions, it was experienced that IACS members applied the requirement set out in paragraph 3(b) of Annex 1 to COLREG 1972 in different ways.

It was then considered a benefit to have a unified interpretation in order to avoid different practices and possible problems for the yards, ship owners, navigators, surveyors and class approval centres.

The UI eliminates uncertainness in the application of the term "near the side" used in the paragraph under consideration.

This UI is to be uniformly implemented by IACS Members and Associates from 1 July 2006, but existing ships are not required to undergo modifications to meet these UIs.

Submitted by Statutory Panel Chairman
17 Dec 2005

* This UI was submitted to IMO NAV 52.

TECHNICAL BACKGROUND

UI COLREG 3 (Rev.1, May 2009)

The Annex of IMO MSC.1/Circ.1260 provided an interpretation to the term “near the side” that is also interpreted in IACS UI COLREG 3.

However, considering that IMO MSC.1/Circ.1260 is a non-mandatory IMO document, and noting IACS Procedures which require that “*if an IACS UI is incorporated into a non-mandatory IMO document, the IACS UI is to be retained and consideration given to amending the UI to adopt any changes or additions introduced in the non-mandatory IMO document”,* the Statutory Panel decided to amend this UI so that it is in line with MSC.1/Circ.1260.

Submitted by Statutory Panel Chairman
18 May 2009

Permanent Secretariat note (May 2009):
UI COLREG 3 Rev.1 was approved by GPG on 26 May 2009 (ref. 9572_IGb) with an implementation date of 1 January 2010.

Technical Background for UI COLREG 3, Rev.1 Corr.1 (Jan 2010)

1. Scope and objectives
To clarify the implementation note of UI COLREG 3(Rev.1).

2. Engineering background for technical basis and rationale
The note of UI COLREG 3(Rev.1) reads: “Changes introduced in Rev.1 are to be uniformly implemented by IACS Members and Associates from 1 January 2010”. Statutory Panel considered it was not clear to users on whether the implementation date refers to the date of building contract or the date of keel laid.

Statutory Panel agreed to revise the note of UI COLREG 3(Rev.1) to make clear that the implementation date here refers to the date of new building contract.

The clarification made in this UI is based on the normal practice of IACS members, and the revision to the implementation note does not prohibit Members from implementing UI COLREG 3 Rev.1 on an earlier date.

3. Source / derivation of the proposed IACS Resolution
Suggestion by IACS member.

4. Summary of Changes intended for the revised Resolution:
The original implementation note in UI COLREG 3(Rev.1) was to be amended as follows:

“Changes introduced in Rev.1 are to be uniformly implemented by IACS Societies for ships contracted for construction on or after 1 January 2010.”

In addition the standard IACS statement clarifying the term ‘contracted for construction’ was added.

5. Points of discussions or possible discussions
N.A.

6. Attachments if any
N.A.

Technical background

UI COLREG 4 (New, Jan 2006)

This interpretation clarifies that NUC lights may be used as part of the RAM lights.

It was then considered a benefit to have a unified interpretation in order to avoid different practices and possible problems for the yards, ship owners, navigators, surveyors and class approval centres.

However, it is noted that the installation of these lights on board depends of the Flag Administration's requirements.

This UI is to be uniformly implemented by IACS Members and Associates from 1 July 2006, but existing ships are not required to undergo modifications to meet these UIs.

Submitted by Statutory Panel Chairman
17 Dec 2005

* This UI was submitted to IMO NAV 52.

UI COLREG5 "Interpretation to COLREG 1972 Annex I Sections 9(a)(i) and 10(a)(i)"

Summary:

This newly adopted IACS UI provides a clarification on the possible blockage of hull structures to the horizontal plane and the vertical sector of side lights as respectively required by COLREG Annex 1 9(a)(i) and 10(a)(i). This UI is intended to bring an earlier application of the provisions of MSC.1/Circ.1577.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2018)	08 May 2018	Refer Note 1 in COLREG5

- **New (May 2018)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To provide uniform implementation in determining the onboard location of the sidelights from a visibility (i.e., line of sight) perspective with respect to the application of the one-degree toe-in sector (as per 9(a)(i)) in the 112.5 deg horizontal sector and the application of this resulting horizontal plane throughout the +/-5 deg vertical sector (10(a)(i)).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Three decisions were made during the course of the development of the UI which are contained in NAV 57/10, NCSR 3/25 and NCSR 4/24/1.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal: 27 January 2010 made by IACS member
Panel Approval: 03 April 2018 (Ref: SP14017m)
GPG Approval: 08 May 2018 (Ref: 15128aIGi)

Part B. Technical Background

List of Technical Background (TB) documents for UI COLREG5:

Annex 1. **TB for New (May 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI COLREG5(New May 2018)

1. Scope and objectives

Develop an IACS UI that provides uniform means for determining the onboard location of the sidelights with respect to the application of the one-degree toe-in sector (as per 9(a)(i)) in the 112.5 deg horizontal sector and the application of this resulting horizontal plane throughout the +/-5 deg vertical sector (10(a)(i)).

2. Engineering background for technical basis and rationale

Based on the reasoning provided by IACS in NAV 57/10, MSC 90 approved MSC.1/Circ.1427 which provides an interpretation of Annex I, section 9(a)(i) and Annex I, section 10(a)(i). Namely, to enable other vessels to determine a "head-on-situation" as per COLREG rule 14,

- section 9(a)(i) requires full intensity of the side lights to be maintained in the forward direction of 1° outside the prescribed sector with the practical cut-off between 1° and 3°; and

- the vertical sectors under section 10(a)(i) should ensure that at least the required intensity is maintained at all angles from +/- 5deg the horizontal when measured at even keel

With NCSR 3/25, IACS noted that MSC.1/Circ.1427 clarified the measurement of the 5 deg sector relative to the ship at an even keel, does not address the inherent difficulties associated with the vertical arrangements of side lights, in particular, for very large ships, a line, 5 deg below the horizontal or less, often intersects with the ship's main deck due to the common practice of fitting sidelights close to the main deck of new ship designs so that sidelights were not visible within the 5 deg arc.

At NCSR 3, the S/C generally supported the development of a unified interpretation related to the placement of sidelights and invited IACS to develop a draft unified interpretation reflecting that the horizontal plane should be applied to the vertical sector so that a realistic and compliant arrangement is achieved so that the sidelight is visible within +/-5 deg from the horizontal line projected forward from the centre of the sidelight and parallel to the ship's centreline, but not necessarily throughout the horizontal plane applied throughout the entire vertical sector.

Based on the above, IACS submitted NCSR 4/24/1 which takes into account MSC.1/Circ.1427 and, with respect to the interpretation of "at or near the side", MSC.1/Circ.1260/Rev.1. NCSR 4 agreed the draft UI submitted by NCSR 4/24/1 and MSC, at their 98th session, approved the UI and issued it as MSC.1/Circ.1577.

IACS notes that para. 3 of the MSC.1/Circ.1577 invites the Member States to use the annexed unified interpretation as guidance regarding the design difficulties with the placement of sidelights according to annex I/9(a)(i) and annex I/10(a)(i) of COLREG 1972, as amended, on ships contracted for construction on or after 1 July 2019.

Members will uniformly implement the provisions of this circular on ships contracted for construction on or after 1 July 2019 when encountering design difficulties during

the approval of navigation light arrangements. The provisions of this Unified Interpretation is also to be applied when design difficulties are encountered on ships contracted for construction earlier than 1 July 2019 unless they are instructed otherwise in writing by the Administration on whose behalf they are authorized to act as a Recognized Organization.

3. Source / derivation of the proposed IACS Resolution

COLREG 1972 Annex I Sections 9(a)(i) and 10(a)(i), MSC.1/Circ.1427 and MSC.1/Circ.1260/Rev.1

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

NCSR 3 noted that any unified interpretation related to the placement of sidelights was an interim solution.

6. Attachments if any

N/A

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Nov 2022

History Files (HF) and Technical Background (TB) documents for UIs concerning Fire Test Procedure (UI FTP)

Res. No.	Title	Current Rev.	HF/TB?
UI FTP1	Adhesives used in A or B Class divisions	Del Dec 2020	HF
UI FTP2	Pipe and duct penetrations	Del Oct 2022	HF
UI FTP3	Fire Door	Rev.3 Apr 2021	HF
UI FTP4	Fire resistant windows on tankers	Rev.2 Nov 2022	HF
UI FTP5	Testing and approval of “A” class divisions – fastening of insulation material and details of joints	Corr.1 Sep 2022	HF
UI FTP6	Testing and approval of pipe penetrations and cable transits for use in “A” class divisions	Rev.1 July 2015	HF

UI FTP1 “Adhesives used in A or B class divisions“

Summary

UI FTP1 is deleted in light of para 3.2.4.2 of the fire test procedures specified in appendix 1 of the revised FTP Code (MSC.307(88)).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Dec 2020)	04 December 2020	-
New (June 2000)	June 2000	-

- **Del (Dec 2020)**

.1 Origin for Change:

☑ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

.2 Main Reasons for Change:

- Amendments to the fire test procedures specified in appendix 1 of the revised FTP Code (MSC.307(88)) incorporates FTP1 as the procedures require adhesives used in A or B Class divisions to be low flame spread.

.3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes:

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal:	6 May 2019	Made by Safety Panel
Panel Approval:	18 November 2020	(Ref: PS19002fISc)
GPG Approval:	04 December 2020	(Ref: 19001dIGb)

- **New (June 2000)**

No HF&TB document available

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Part B. Technical Background

List of Technical Background (TB) documents for UI FTP1:

◄▼►

Note: There is no separate Technical Background (TB) document for New (June 2000) and Del (Dec 2020).

UI FTP2 "Pipe and duct penetrations"

Summary

UI FTP2 is deleted as its contents are contained in the FTP Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Oct 2022)	31 October 2022	-
New (June 2000)	June 2000	-

- **Del (Oct 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

- The original version of FTP2 interpreted the fire resistance test procedures for "A", "B" and "F" class divisions as contained in Section 5.1 of Resolution A.754(18).

- The original version has been included in the mandatory 2010 FTP Code as 2.2.6.2 and 2.2.6.3, Section A.III of Appendix 2 to Annex 3.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Discussed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 23 October 2019	(Made by: Safety Panel)
Panel Approval	: 13 October 2022	(Ref: PS19002vISe)
GPG Approval	: 31 October 2022	(Ref: 19001wIGc)

- **New (June 2000)**

No records are available

****

Part B. Technical Background

List of Technical Background (TB) documents for UI FTP2:

Note: No TB documents are available for New (June 2000) and Del (Oct 2022).

UI FTP 3 "FIRE DOOR"

Summary

The UI was further harmonized with MSC.1/Circ.1319

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Apr 2021)	13 April 2021	1 January 2022
Rev.2 (July 2010)	22 July 2010	1 January 2011
Rev.1 (July 2006)	21 July 2006	1 January 2007
New (Dec 2004)	26 December 2004	1 July 2005

- **Rev.3 (Apr 2021)**

1 Origin of Change:

☐ Based on IMO Regulation *(FTP Code,* MSC.1/Circ.1319*)*

2 Main Reason for Change:

The UI was further harmonized with MSC.1/Circ.1319

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Revision is part of the review of Resolutions and Recommendations which have not been updated for the last ten years - GPG 85 FUA 9 (PS19002_)

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:
None

7 Dates:

Original Proposal: 31 December 2020 (Made by: Safety Panel)
Panel Approval: 17 March 2021 (Ref: PS19002qISd)
GPG Approval: 13 April 2021 (Ref: 19001jIGf)

- **Rev.2 (July 2010)**

.1 Origin of Change:

☑ Suggestion by IACS member within Comprehensive review of the FTP Code
☑ Other - MSC/Circ. 1273 and MSC.1/Circ.1319

.2 Main Reason for Change:

The revision of UI FTP3 has been deemed necessary to cover also very large doors exceeding small increase as defined in the UI FTP3 and MSC/Circ.1273.
In the new revision the text has been put in line with the MSC/Circ 1319 and both hinged and sliding fire doors have been included.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

Nil

.4 History of Decisions Made:

- August 2008 – Statutory Panel approved IACS TASK FORM A and FORM 1 for the revision of UI FTP3
- September 2008 – GPG approved IACS FORM A and FORM 1 for the above
- November 2008 – PT submitted the Rev.2 for IACS UI FTP 3, there was no qualifying majority to approve the UI and the Panel decided to prepare a submission to FP 53 (paper 53/4/5).
- February 2009 – The FP had a positive view of the IACS submission and decided to draft an MSC Circular on the basis of the IACS Paper FP 53/4/5.
- May 2009 – MSC 86 approved the draft MSC circular by issuing MSC.1/Circ.1319
- June 2009 – Statutory Panel decided that IACS UI FTP 3 should be revised also based on MSC.1/Circ.1319 and including both hinged and sliding fire doors.
- February 2010 – PT submitted the final proposal as Rev.2 for IACS UI FTP 3 to the Panel

.5 Other Resolutions Changes:

Nil

.6 Dates:

Original Proposal: *3 April 2008 Made by the Statutory Panel*
Panel submission to GPG: *29 June 2010 (Ref. 6140_PSe)*
GPG Approval: *22 July 2010 (Ref. 6140_IGm)*

- **Rev.1 (Jul 2006)**

Revised in accordance with the FTP code resolution A.754 (18).

See TB document in Part B.

- **New (Dec 2004)**

Developed based on the discussion within WP/FP in 2003 in its 34th meeting.

See TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI FTP3:

Annex 1. **TB for New (Dec 2004)**

See separate TB document in Annex 3.

Annex 2. **TB for Rev.1 (Jul 2006)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.2 (Jul 2010)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate TB for Rev.3 (Apr 2021) because the essence of the revision is further alignment with MSC.1/Circ.1319 text with no substantial change.*

Technical Background

UI FTP 3: FTP Code sub-section 5.3 and Annex 1, Part 3 – Test for "A", "B", and "F" class divisions

It is quite clear from section 2.3.1 of Resolution A 754(18) that fire doors are to be tested to the maximum size of the door leaf for which approval is to be sought.
However some Classification Societies (Administrations as well and testing laboratories) have accepted doors with dimensions 10% to 15% larger than tested.
This issue was raised within the WP/FP in 2003 and addressed at its 34th meeting. It was agreed that a proposal would be circulated for consideration. The criteria, and the fact that such doors should only be individually assessed and accepted for a specific project were agreed.
The last sentence was also agreed to link this interpretation to an ongoing job in the IMO Sub committee FP on what can be understood as very large fire doors.

Submitted by WP/FP+S Chairman.

Technical background to UI FTP 3 rev.1 (July 2006)

The last sentence of the existing text reading "Larger doors would need to be tested or calculated." was expanded in order to clearly indicate the criteria to be adopted for allowing the use of fire doors having dimensions larger than the relevant prototype tested in accordance with the Fire Test Procedures Code, specifically resolution A.754(18).

Submitted by Statutory Panel Chairman
10 July 2006

PermSec Note:
UI FTP 3 (Rev. 1) was submitted to FP 51 in July 2006 (subject no. 6140).
Attached.

Technical Background for UI FTP 3 Rev.2, July 2010

1. Scope and objectives

Revise the UI FTP3 with respect to very large doors exceeding small increase as defined in the UI FTP3.

2. Engineering background for technical basis and rationale

The revision mainly consisted in introducing 3 categories of larger doors, which were identified taking into account the ongoing work within the intersessional Correspondence Group on Comprehensive Review of the FTP Code established by FP 52. These three categories were:

- doors having dimensions not exceeding 15% width and height and 10% area of a tested door (item cleared by IMO MSC/Circ. 1273);
- doors larger than those abovementioned, but not exceeding 50% surface area of the tested door; and
- larger doors exceeding 50% surface area of the tested door.

Members agreed that the alternative verification method for larger doors could be used only if the dimensions of the door are greater than the maximum permitted by IMO furnace and the door involved has already been tested, with maximum dimensions permitted in furnace with satisfactory results. In this respect, it was agreed to set IMO Furnace dimensions (2.440 x 2.500) as minimum requirement.

3. Source/derivation of the proposed IACS Resolution

IMO FTP Code
MSC.1/Circ. 1319

4. Summary of Changes intended for the revised Resolution

IMO Furnace dimensions (2.440 x 2.500) are set as minimum requirement for fire performance evaluation and approval of the door. Only for the doors whose dimensions are greater than the set ones, the alternative verification method could be used.
3 categories of larger doors are introduced, i.e.:

- doors having dimensions not exceeding 15% width and height and 10% area of a tested door (item cleared by IMO MSC/Circ. 1273);
- doors larger than those abovementioned, but not exceeding 50% surface area of the tested door; and
- larger doors exceeding 50% surface area of the tested door.

This UI is revised to make the methodology contained therein equally applicable to hinged and sliding fire doors in order to maintain the consistency with MSC.1/Circ. 1319.

5. Points of discussions or possible discussions

The WG on comprehensive review of the FTP code established at FP52 (see FP52/WP.1) proposed that an overrun test as described in European Standard 1634-1 is used as the basis for accepting slightly larger doors than the ones tested to Res. A.754(18). This approach was considered sufficient to address the wording “comfortable margins” used in UI FTP3 Rev. 1. Such a UI was rejected by FP 51.
Pursuing the decision taken by FP 51, FP 52 agreed on the text of MSC.1/Circ. 1273, addressing the steps to be undertaken when larger fire doors are requested to be approved. On the basis of what contained in Recommendation 2 of the IACS Observer’s Report to FP52, the Statutory Panel then agreed to setting up a Project Team to revise the second part of the UI FTP3 to better present IACS’s view on the matter under discussion and submit it to FP53 for consideration.

The PT had to focus its work on the second part of IACS UI FTP3 to identify the fundamental requirements for testing and evaluation of doors where the dimensions exceed 15% width and height and 10% area of a tested door so as to provide as basis for accepting such doors without the need to carry out a full engineering analysis / assessment.
The task was then finalized on November 2008 upon unanimous agreement from all the PT Members. However, having not reached the qualifying majority within the Statutory Panel to approve the draft UI FTP 3, the Panel decided to prepare a submission to FP 53 containing the method developed by the PT for seeking FP views or comments on this issue.
FP 53 positively considered the views of IACS and agreed to a correspondent draft MSC circular containing the method proposed by IACS in document FP 53/4/5. This MSC/Circ was lately approved by MSC 86, with minor editorial amendments, as MSC.1/Circ. 1319.
The last version of UI FTP3 has been revised in order to make it consistent with the above mentioned MSC Circular. The only difference between the text in MSC.1/Circ. 1319 and the one presented in Re. 2 of UI FPT3 consists of the clear indication that the methodology contained therein is equally applicable to hinged and sliding fire doors (this was verbally agreed also by the WG on Comprehensive Review of the FTP Code established at FP 53).

FTP4 "Fire resistant windows on tankers"

Summary

UI FTP4 is updated to refer to the current testing of windows, fire dampers, pipe penetrations and cable transits contained in the Appendix of the FTP Code (MSC.307(88)).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2022)	14 November 2022	1 July 2023
Rev.1 (Aug 2006)	August 2006	1 January 2007
New (Sep 2005)	September 2005	1 January 2007

- **Rev.2 (Nov 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

- Paragraph 2.2 of Appendix A.I to resolution A.754(18) is repeated in the current paragraph 2.2 Appendix of the FTP Code (MSC.307(88)).
- UI FTP4, Rev.1 is updated as Rev.2 to refer to the current testing of windows, fire dampers, pipe penetrations and cable transits contained in the Appendix of the FTP Code (MSC.307(88)).

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Discussed in the Safety Panel by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 23 October 2019	(Made by: Safety Panel)
Panel Approval	: 28 October 2022	(Ref: PS19002vISf)
GPG Approval	: 14 November 2022	(Ref: 19001wIGd)

- **Rev.1 (Aug 2006)**

1 Origin of Change:

☑ GPG Chairman

2 Main Reason for Change:

FTP 4, Rev.1, has been editorially revised simply to incorporate reference to MSC.1/Circ.1203.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Submitted by GPG Chairman, 2 August 2006.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: Not known
Panel Approval: Not known
GPG Approval: August 2006

- **New (Sep 2005)**

1 Origin of Change:

☑ Suggestion by an IACS member

2 Main Reason for Change:

To clarify scope of application of A-60 class windows to be fitted at the forward bulkhead of accommodation block on tankers.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Submitted by Statutory Panel Chairman, Aug 2005 (SP5022)

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 18 April 2005
Panel Approval: August 2005
GPG Approval: September 2005

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Part B. Technical Background

List of Technical Background (TB) documents for UI FTP4:

Annex 1. **TB for New (Sep 2005)**

See separate TB document in Annex 1.

Note: There are no TB documents are available for Rev.1 (Aug 2006) and Rev.2 (Nov 2022).

Technical Background (TB) document for UI FTP4 New (Sep 2005)

Fire resistant windows on tankers (Appendix A.I to regulation A.754(18))

This unified interpretation has been developed with the scope of clarifying that A-60 class windows to be fitted at the forward bulkhead of accommodation block on tankers are to be tested to the same condition that might be encountered in case of a fire in the cargo area. This condition was meant to be exactly the scenario predicted when the requirement relevant to the fire resistance of these windows was set.

Submitted by Statutory Panel Chairman
Aug 2005

UI FTP5 "Testing and approval of "A" class divisions – fastening of insulation material and details of joints"

Summary

UI FTP5 has been updated to reflect the current text in the 2010 FTP Code and Resolution A.754(18) and to refer to MSC.1/Circ.1435 which is the IMO circular which reflects UI FTP5

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2022)	12 September 2022	-
New (June 2010)	24 June 2010	1 July 2011

- **Corr.1 (Sep 2022)**

1 Origin of Change:

☑ Other 10th anniversary review

2 Main Reason for Change:

The referenced IMO instruments had been changed and an IMO circular reflecting UI FTP5 has been issued.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel reviewed UI FTP5 under subject PS19002_. After consideration in the Panel it was agreed that the UI should be updated to reflect the current text of the IMO instruments which are being interpreted and to make reference to MSC.1/Circ.1435.

5 Other Resolutions Changes:

UI SC239 (New, June 2010) is a related UI but no changes were identified as being required by this correction.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 12 July 2022	(Made by Safety Panel)
Panel Approval	: 25 August 2022	(Ref: PS19002qISj)
GPG Approval	: 12 September 2022	(Ref: 19001iIGj)

- **New (June 2010)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To demonstrate that the testing of "A" class assemblies are representative of that to be used on board ships, the Members agreed to develop this UI.

.3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

.4 History of Decisions Made:

This issue was discussed within the Statutory Panel by correspondence or at the Statutory Panel Meeting. The final draft of this UI was developed by the Statutory Panel.

.5 Other Resolutions Changes:

See also UI SC239 (New, June 2010)

.6 Dates:

Original Proposal	: 14 August 2008	(Made by the Statutory Panel)
Panel submission to GPG	: 02 June 2010	(Ref. 10077_PSa)
GPG Approval	: 24 June 2010	(Ref. 10077_IGb)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI FTP5:

Annex 1. **TB for New (June 2010)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) documents available for Corr.1 (Sep 2022).*

Technical Background (TB) document for UI FTP5 (New June 2010)

1. Scope and objectives

This UI was developed to demonstrate that the testing of "A" class assemblies is representative of that to be used on board ships.

2. Engineering background for technical basis and rationale

Insulation materials used in A-class divisions are normally fastened by means of steel pins and spring steel washers.

In practice (at the yards), pins are normally distributed evenly on bulkheads and decks. Thereafter, insulation mats are mounted and the washers secured to the pins. This assembly method will result in various pinning distances between the insulation joints and the closest insulation pins (see examples of horizontal joints in figure 1).

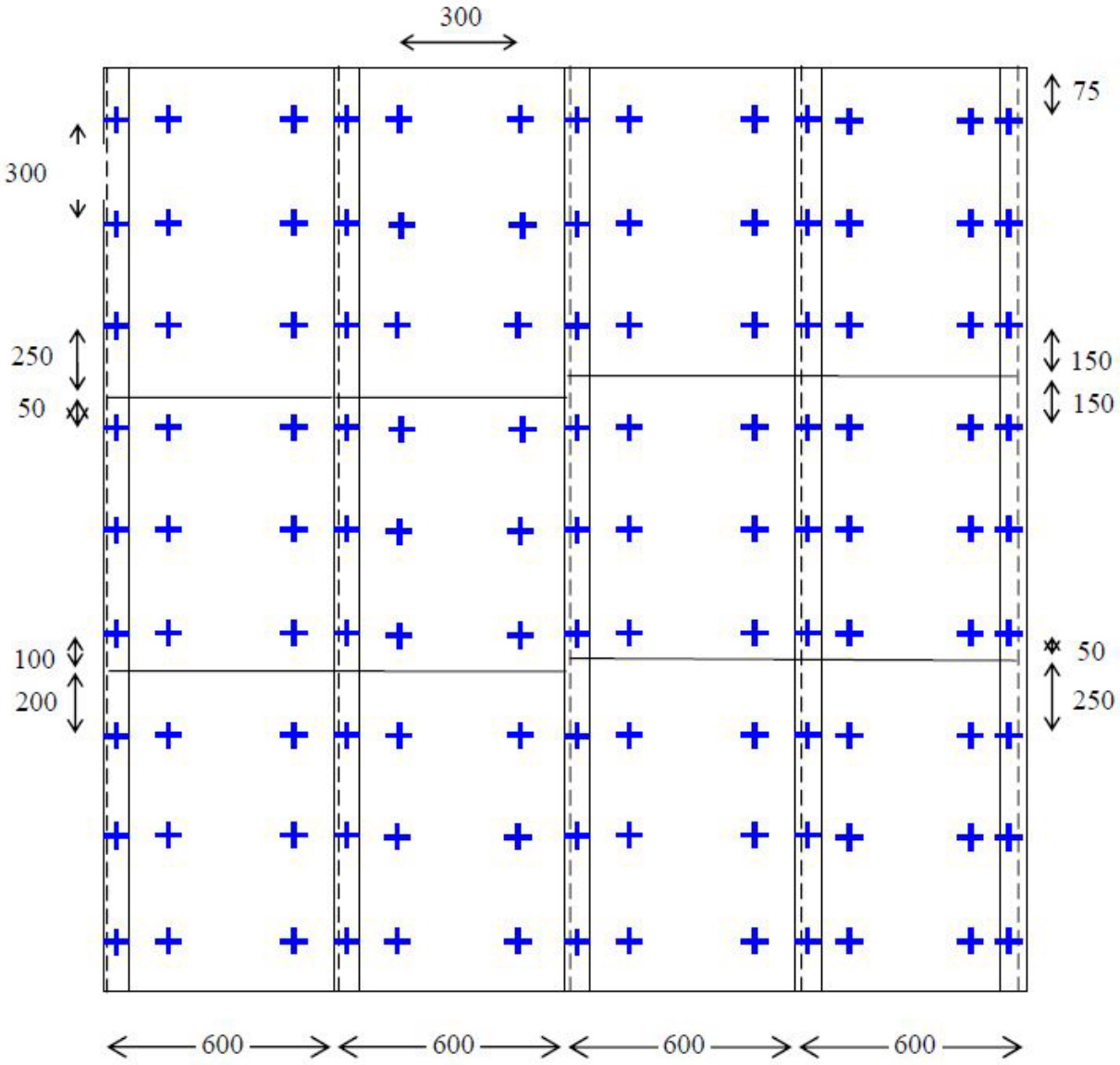

Figure 1

However, when testing A-60 insulation, it is not uncommon that the manufacturers of insulation materials use additional pins along the insulation joints to ensure that the test will not fail at the joints.

Since the yards will normally prefer to use a fixed pinning distance independent of type of insulation material used and will be reluctant to provide additional pins along the joints between the insulation mats, UI FTP5 has been developed so that the testing of bulkheads and decks is performed in a manner that is consistent with actual use of the end product.

After lengthy discussion within the Statutory Panel, it was agreed that the specifications listed in this UI be indicated in test reports and included in type approvals.

3. Source/derivation of the proposed IACS Resolution

During the development of this UI, comment and practice of shipyard and manufacturer have been sought and taken account of.

4. Summary of Changes intended for the revised Resolution:

N.A.

5. Points of discussions or possible discussions

Members discussed the application statement in following points:
The implementation date for this UI FTP is 1 July 2011 and for the UI SC239 is 1 January 2012. The reasoning behind these implementation dates took into account:
1) that the surveyor is to ensure insulation is installed in accordance with type approval report, regardless if the type approval is provided in accordance with the new FTP UI or not; and
2) that the FTP UI will allow existing type approvals to expire thus avoiding a wholesale renewal of the certification on or before the implementation date of the new FTP UI.

6. Attachments if any

N.A.

UI FTP6 "Testing and approval of pipe penetrations and cable transits for use in "A" class divisions (IMO FTP Code 2010 Annex 1 Part 3)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2015)	17 July 2015	01 January 2016
New (Feb 2013)	13 February 2013	01 January 2014

- **Rev.1 (July 2015)**

.1 Origin for Change:

☑ Suggestion by Safety Panel Chairman

.2 Main Reason for Change:

Align UI FTP6 with the text of MSC.1/Circ. 1488.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by the safety Panel Chairman. Members unanimously agreed with aligning UI FTP6 with the text of MSC.1/Circ.1488.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: April 2015 (By a Safety Panel Chairman) Panel
Panel Approval: 26 June 2015 (Ref: SP11021O)
GPG Approval: 17 July 2015 (Ref: 13040_IGh)

- **New (Feb 2013)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by DNV. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: September 2011 (By a Member)
Panel Approval: 24 January 2013 (By Statutory Panel)
GPG Approval: 13 February 2013 (Ref: 13040_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI FTP6:

Annex 1. **TB for New (Feb 2013)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) documents available for Rev.1 (July 2015).*

◄▲►

Technical Background document for UI FTP6 (New, Feb 2013)

1. Scope and objectives

The scope of the UI is to clarify and harmonize additional design and test requirements for pipe penetrations and cable transits that do not incorporate the traditional welded structural steel sleeve with non-removable filling.

2. Engineering background for technical basis and rationale

IMO FTP Code 2010 Annex 1 Part 3 Appendix 1 item 1.13 reads:

The designs of the specimens proposed in this appendix are considered to reflect the worst case situations in order to provide maximum usefulness of the classifications to end-use applications. However, the Administration may accept or request special test arrangements which provide additional information required for approval, especially of those types of constructions which do not utilize the conventional components of horizontal and vertical divisions, e.g., where cabins may be of a modular type construction involving continuous connections between bulkheads, decks and ceilings

Traditionally A-class penetrations for cables and pipes have been constructed from structural steel sleeves welded into the A-class structure, and filled with materials that will prevent the passage of hot smoke and flames. These steel sleeves have been of varying length depending on what has passed fire testing, but being made from structural steel they have in addition to their fire technical properties been beneficial for maintaining structural strength in the area where the hole was made. Also, due to the thickness of the structural steel these sleeves have been easy to weld in place, also for holes that are not necessarily perfectly round and decks/bulkheads that are not perfectly flat.

Lately, a huge number of penetrations have been designed that incorporate one or more of the following properties:

a) Penetrations that are made of thin-plated sleeves that are welded or bolted to the divisions. These sleeves will not provide stiffening of the divisions in way of the hole and they may be difficult to weld due to the thin plate thickness, and in addition pose a big challenge for the yards with respect to the requirements for perfect dimensions for the holes and deck plate or bulkhead where they are installed.

b) Penetrations incorporating intumescent material that will swell only if exposed to high temperatures have been proposed. If these penetrations are not directly heated by the fire they may not swell enough to prevent the passage of smoke through the penetration.

c) Penetrations packed with insulation material that can be easily removed by hand.

When installed by the manufacturer prior to testing under “perfect” conditions all the above penetrations will pass the fire test in accordance with the FTP Code and as such can be type approved under the current regime for use in A-class divisions on any SOLAS vessel.

IMO 2010 FTP Code Annex 1 Part 3 Appendix 1 item 1.13 leaves to the Administration to “accept or request special test arrangements which provide additional information required for approval”. This UI has been developed to aid ROs in defining appropriate additional testing and design requirements to be complied with prior to issuing approvals for pipe penetrations and cable transits that do not utilize conventional components of horizontal and vertical divisions.

3. Source / derivation of the proposed IACS Resolution

IMO 2010 FTP Code
USCG NVIC 9-97
Transport Canada - Guide to Structural Fire Protection (1993) - TP 11469 E

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

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Sep 2023

History Files (HF) and Technical Background (TB) documents for UIs concerning IMO Gas Code (UI GC)

Res. No.	Title	Current Rev.	HF/TB?
UI GC1		Deleted (1996)	No
UI GC2	Interpretation of the second sentence of paragraph 13.2.1	Rev.1 Dec 2018	HF
UI GC3		Deleted (1997)	No
UI GC4		Deleted (1997)	No
UI GC5	Closing devices for air intakes	Rev.1 Feb 2016	HF
UI GC6	Cargo tank clearances	Rev.1 Feb 2016	HF
UI GC7	Carriage of products not covered by the Code	Rev.1 June 2016	HF
UI GC8	Permissible stresses in way of supports of type C cargo tanks	Rev.1 June 2016	HF
UI GC9	Guidance for sizing pressure relief systems for interbarrier spaces	Rev.1 Dec 2018	HF
UI GC10	Reliquefaction plant of motor-driven LNG carriers	Rev.1 Dec 2018	HF
UI GC11	Loading of cargo C tanks for ships constructed before 1 July 2016 and subject to IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (MSC.5(48))	Rev.1 Feb 2016	HF
UI GC12	Secondary Barrier Testing Requirements	Rev.2 Aug 2015	HF
UI GC13	Verification before and after the first loaded voyage	Rev.3 Aug 2023	HF

Res. No.	Title	Current Rev.	HF/TB?
UI GC14	Pump Vents in Machinery Spaces (IGC Code Chapters 3.7.4 as amended by Res. MSC. 103(73) and IGC Code Chapters 3.7.5 as amended by Res. MSC. 370(93))	Apr 2015	HF
UI GC15	Closing Devices for Air Intakes	Rev.1 Aug 2017	HF
UI GC16	Cargo tank clearances (on ships constructed on or after 1 July 2016)	Mar 2016	HF
UI GC17	Unprotected openings	Jun 2016	HF
UI GC18	Test for cargo tank's high level alarm (on ships built on or after 1 July 2016)	Corr.1 Mar 2017	HF
UI GC19	External surface area of the tank for determining sizing of pressure relief valve (paragraph 8.4.1.2 and figure 8.1)	Aug 2017	HF
UI GC20	Tee welds in type A or type B independent tanks	Apr 2019	HF
UI GC21	Welds of type C independent bi-lobe tank with centreline bulkhead	Apr 2019	HF
UI GC22	Water spray system	Rev.1 Apr 2020	HF
UI GC23	Cargo tank structure heating arrangement power supply	Corr.1 Dec 2019	HF
UI GC24	Fire Test for Emergency Shutdown Valves	Rev.1 Feb 2019	HF
UI GC25	Cargo piping insulation	Corr.1 Dec 2019	HF
UI GC26	Type testing requirements for valves	Corr.1 Dec 2019	HF
UI GC27	Interpretation of paragraph 13.2.2	Corr.1 Dec 2019	HF
UI GC28	Guidance for sizing pressure relief systems for interbarrier spaces	Corr.1 Feb 2021	HF
UI GC29	Integrated systems	Corr.1 Dec 2019	HF
UI GC30	Emergency fire pump	Apr 2020	HF
UI GC31	Discharge test of dry chemical powder fire-extinguishing systems	June 2020	HF
UI GC32	Outer Duct in Gas Fuel Piping Systems	Rev.1 Feb 2022	HF
UI GC33	Cargo Sampling	Feb 2021	HF
UI GC34	Cargo Filters	Feb 2021	HF
UI GC35	Inhibition of Cargo Pump Operation and Opening of Manifold ESD valves with Level Alarms Overridden	Feb 2021	HF
UI GC36	Oxygen Deficiency Monitoring Equipment in a Nitrogen Generator Room Area	Feb 2021	HF

Res. No.	Title	Current Rev.	HF/TB?
UI GC37	Suitable Pressure Relief System for Air Inlet, Scavenge Spaces, Exhaust System and Crank Case	Feb 2021	HF
UI GC38	Deck areas above F.O. tanks installed at the after end of the aftermost hold space	Mar 2022	HF
UI GC39	Interpretation of 2014 IGC Code (MSC.370(93), as amended) Paragraphs 11.3.1, 11.4.1, 11.4.3 and 18.10.3.2 w.r.t additional bunkering manifold equipment fitted on L.N.G. Bunkering Ships	Sep 2023	HF

UI GC2 "Interpretation of second sentence of paragraph 13.2.1"

Summary:

This is an existing document, initial interpretation of 13.2.1 of the IGC Code (MSC.5(48) as amended).

With respect the second sentence of IGC Code(MSC.5(48) 'Where only one level gauge is fitted it should be arranged so that any necessary maintenance can be carried out while the cargo tank is in service'.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2018)	21 December 2018	on ships constructed on or after 1 July 1986 but before 1 July 2016
New (1977)	No records	-

- **Rev.1 (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked IACS panel members to review the applicable UIs. It was noted that interpretation as provided in UI GC2 remain applicable for ships constructed before 1 July 2016 complying with MSC.5(48), however many of the clarifications provided in UI GC2 having been included in the revised IGC Code (MSC.370(93)), it was proposed by the panel members that existing UI GC2 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised

and the new IGC code has been adopted (Resolution MSC. 370(93) and where necessary propose revision, deletion or amendment of the application statements.

.5 Other Resolutions Changes

- UI GC9
- UI GC10
- UI SC6
- REC.85
- REC.114

.6 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 29 November 2018 (Ref: PM5901fIMn)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

- **New (1977)**

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC2:

Annex 1. **TB for Rev.1 (Dec 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document for New (1977).

Technical Background (TB) document for UI GC2 (Rev.1 Dec 2018)

1. Scope and objectives

The UI provides clarification of Chapter 13 paragraph 13.2.1 for more specific guidance for changes carried out in the IGC Code as per (MSC.5(48)) regarding the arrangements of the liquid level gauge fitted in the cargo tanks.

2. Engineering background for technical basis and rationale

The second sentence of paragraph 13.2.1 of IGC Code (MSC.5 (48)) states that:

“Where only one liquid level gauge is fitted it should be so arranged that any necessary maintenance can be carried out while the cargo tank is in service.”

In order to assess whether or not only one level gauge is acceptable in relation to the aforesaid sentence, “any maintenance” means that any active part (e.g. electronics, float, etc.) of the level gauge can be overhauled while the cargo tank is in service.

3. Source / derivation of the proposed IACS Resolution

UI GC2 (1977) “Interpretation of the second sentence of paragraph 13.2.1”

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC5 "Closing Devices for Air Intakes"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2016)	29 February 2016	1 July 2016
New (1985)	No record	1 January 1986

- **Rev.1 (Feb 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clearly indicate that the existing UI GC5 does not apply to the revised IGC Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In light of the revised IGC Code (MSC.370(93)), GPG tasked safety panel to review applicable UIs. UI GC5 was found affected due to the revised IGC Code (MSC.370(93)) and it was proposed by the panel members that existing UI GC 5 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48). However noting that revised IGC Code (MSC.370(93)) paragraph 3.2.6 regarding capability of closing devices for air intakes, outlets and other openings into service spaces being operated from inside the space, does not provide clarity with respect to applicability of the requirement to engine room casings and steering gear compartments, a new UI in the same line as the GC5 was decided by the panel to be developed.

GPG agreed to retain the existing UI GC5. Permsec was requested to update the application statement for the existing UI GC5.

No TB has been prepared.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 15 January 2016 by a GPG member
GPG Approval: 29 February 2016 (Ref: 15042_IGh)

- **New (1985)**

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC5:

◄▲►

Note: *There are no Technical Background (TB) documents available for New (1985) and Rev.1 (Feb 2016).*

UI GC6 "Cargo tank clearances"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2016)	29 February 2016	1 July 2016
New (1986)	No record	1 January 1986

- **Rev.1 (Feb 2016)**

.1 Origin for Change:

☑ Other *(following task assigned by GPG)*

.2 Main Reason for Change:

Following the entry into force on 1st January 2016 of the IMO resolution MSC.370(93), which amends the IGC Code (IMO Resolution MSC.5(48)).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel has been tasked by the GPG (GPG task 15042) to review the applicable IACS URs, UIs and RECs under its responsibility.

Panel, following the issue of the resolution MSC.370(93), noted that the majority of the interpretations given in UI GC6 had been incorporated into the revised text of the IGC Code, as given in the annex to IMO resolution MSC.370(93). The interpretations not incorporated related to requirements for sizes of clear openings given in paragraphs 3.5.3.1.2 and 3.5.3.1.3.

Noting the amendments to the IGC Code made under IMO resolution MSC.370(93) apply to ships whose keels are laid, or which are at a similar stage of construction, on or after 1 July 2016, the Panel agreed to update UI GC6 to make it applicable to ships with keels laid, or at a similar stage of construction, before 1 July 2016 and to issue a new Unified Interpretation dealing with paragraphs 3.5.3.1.2 and 3.5.3.1.3 of the Annex to resolution MSC.370(93).

Panel agreed also the need to update the UI GC6 by introducing the correct references to the various amendments to resolution MSC 5(48) (the original text of the IGC Code).

All the modifications agreed have been applied in the revision 1 of the Unified Interpretation UIGC6.

No TB has been prepared.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 10 April 2015 made by GPG (Ref: 15042_IGd)
Panel Approval: 2 February 2016 (Ref: PSU15029)
GPG Approval: 29 February 2016 (Ref: 15042_IGh)

- **New (1986)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI GC6:

◄▲►

Note: *There are no Technical Background (TB) documents available for New (1986) and Rev.1 (Feb 2016).*

UI GC7 “Carriage of products not covered by the code”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2016)	21 June 2016	1 July 2016
NEW (1986)	-	-

- **Rev. 1 (June 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk has been updated and as a result the UI needs to be updated so that it aligns with the new Gas Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Hull Panel carried out a review of the updates to the Gas Code in order to determine what changes needed to be made to UI GC7. It was concluded that the references to the Gas Code as well as the equation need to be updated. In addition, the opportunity was taken to rewrite the symbols list so that it is in a more suitable format.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 8 Sep 2015 Made by: An IACS Member
Panel Approval: January 2016 (Ref: PH14029)
GPG Approval: 21 June 2016 (Ref: 15042_IGo)

- **NEW (1986)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

There are a number of products which may be carried but which are not covered by the IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk. The purpose of this UI is to ensure that Class Societies treat the carriage of such products in the same way.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC7:

Annex 1. **TB for Rev. 1 (June 2016)**

See separate TB document in Annex 1.

◄▲►

Note: *There is no separate Technical Background (TB) document available for New (1986)*

Technical Background (TB) document for UI GC7 (Rev.1 June 2016)

1. Scope and objectives

The purpose of this revision to the UI is to align it with the latest version of the Gas Code.

2. Engineering background for technical basis and rationale

The numbering used in the Gas Code has changed. In addition, the equation given in the UI needs to be converted to the correct units.

3. Source / derivation of the proposed IACS Resolution

IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk.

4. Summary of Changes intended for the revised Resolution

1) Gas Code section numbering updated
2) Equation converted from bar to MPa
3) Symbols list amended to a more suitable format

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC8 “Permissible stresses in way of supports of Type C cargo tanks”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2016)	21 June 2016	1 July 2016
NEW (1986)	*No record*	-

- **Rev. 1 (June 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk has been updated and as a result the UI needs to be updated so that it aligns with the new Gas Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Hull Panel carried out a review of the updates to the Gas Code in order to determine what changes needed to be made to UI GC8. It was concluded that the references to the Gas Code needed to be updated. In addition the opportunity was taken to rearrange the text and clarify the requirements of the UI.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 8 Sep 2015 Made by: An IACS Member
Panel Approval: January 2016 (Ref: PH14029)
GPG Approval: 21 June 2016 (Ref: 15042_IGo)

- **NEW (1986)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk gives allowable stresses for the plastic deformation of type C tanks however there is no guidance provided on how to modify these stresses taking into account accidental loads. The purpose of this UI is to ensure when Class Societies calculate the equivalent stresses using finite element methods that certain assumptions are made.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC8:

Annex 1. **TB for Rev. 1 (June 2016)**

See separate TB document in Annex 1.

◄▲►

Note: *There is no separate Technical Background (TB) document available for New (1986).*

Technical Background (TB) document for UI GC8 (Rev.1 June 2016)

1. Scope and objectives

The purpose of this revision to the UI is to align it with the latest version of the Gas Code.

2. Engineering background for technical basis and rationale

The numbering used in the Gas Code has changed. In addition, the opportunity was taken to clarify the UI.

3. Source / derivation of the proposed IACS Resolution

IMO International Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk

4. Summary of Changes intended for the revised Resolution:

1). Gas Code section numbering updated
2). Requirements of section 1 clarified as follows:
- Load cases to be considered
- Application confined to horizontal cylindrical tanks

3). Application to calculation of reaction forces clarified

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC9 "Guidance for sizing pressure relief systems for interbarrier spaces"

Summary:

This is an existing document, initial interpretation of 8.1 of the IGC Code (MSC 5(48) as amended concerning the sizing of the pressure relieving devices for interbarrier spaces.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2018)	21 December 2018	on ships constructed on or after 1 January 1988 but before 1 July 2016
New (1988)	No records	-

- **Rev.1 (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked IACS panel members to review the applicable UIs. It was noted that interpretation as provided in UI GC9 remain applicable for ships constructed before 1 July 2016 complying with MSC.5(48), however many of the clarifications provided in UI GC9 having been included in the revised IGC Code (MSC.370(93)), it was proposed by the panel members that existing UI GC9 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:
None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93) and where necessary propose revision, deletion or amendment of the application statements

.5 Other Resolutions Changes

- UI GC2
- UI SC6
- UI GC10
- REC.85
- REC.114

.6 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 29 November 2018 (Ref: PM5901fIMn)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

- **New (1988)**

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC9:

Annex 1. **TB for Rev.1 (Dec 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document for New (1988).

Technical Background (TB) document for UI GC9 (Rev.1 Dec 2018)

1. Scope and objectives

The UI provides clarification of Chapter 8 Second Sentence of paragraph 8.1 of the IGC Code (MSC.5(48)) for more specific guidance regarding the sizing of the pressure relieving devices for interbarrier spaces of various tanks.

2. Engineering background for technical basis and rationale

The second sentence of paragraph 8.1 of IGC Code (MSC 5(48)) states that:

Hold spaces, interbarrier spaces and cargo piping which may be subject to pressures beyond their design capabilities should also be provided with a suitable pressure relief system

In order to assess whether “suitable pressure relief system” is provided to interbarrier spaces for various type of cargo tanks, the following is to be taken into account:

- leakage rate as provided under section 4.7.2 taking due account for the liquid evaporation,
- pumping capacity and
- other relevant factors.

Also, the interbarrier space pressure relief is an emergency requirement for protection of the hull structure from being overstressed in case of primary barrier failure.

3. Source / derivation of the proposed IACS Resolution

UI GC9 (1988) Guidance for sizing pressure relief systems for interbarrier spaces

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC10 "Reliquefaction plant of motor-driven LNG-carriers"

Summary:

This is an existing document, initial interpretation paragraph 7.2.1 of the IGC Code (MSC 5(48) as amended concerning controlling the cargo pressure/temperature.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2018)	21 December 2018	on ships constructed on or after 1 January 1988 but before 1 July 2016
New (1988)	No records	-

- **Rev.1 (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked IACS panel members to review the applicable UIs. It was noted that interpretation as provided in UI GC10 remain applicable for ships constructed before 1 July 2016 complying with MSC.5(48), however many of the clarifications provided in UI GC10 having been included in the revised IGC Code (MSC.370(93)), it was proposed by the panel members that existing UI GC10 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:
None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93) and where necessary propose revision, deletion or amendment of the application statements

.5 Other Resolutions Changes

- UI GC2
- UI GC9
- UI SC6
- REC.85
- REC.114

.6 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 29 November 2018 (Ref: PM5901fIMn)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

- **New (1988)**

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC10:

Annex 1. **TB for Rev.1 (Dec 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document for New (1988).

Technical Background (TB) document for UI GC10 (Rev.1 Dec 2018)

1. Scope and objectives

The UI provides clarification paragraph 7.2.1 of the IGC Code (MSC.5(48)) for more specific application guidance regarding control of cargo pressure and temperature

2. Engineering background for technical basis and rationale

The second sentence of paragraph 7.2.1 reads as follows:

“Unless an alternative means of controlling the cargo pressure/temperature is provided to the satisfaction of the Administration, a stand-by unit (or units) affording space capacity at least equal to the largest required single unit should be provided”.

Section 7.2 is based on the assumption that paragraph 7.1.1 is being complied with by using means defined in sub-paragraph 7.1.1.1. That is to say, a mechanical refrigeration system is fitted as the primary means of maintaining the cargo tank pressure below MARVS.

Section 7.2 should apply to refrigeration systems when fitted on LNG carriers, ie standby capacity will be required as detailed in 7.2.1. A stand-by LNG/refrigerant heat exchanger need not be provided and the fitted LNG/refrigerant heat exchanger will not be required to have 25% excess capacity over that for normal requirements1). Other heat exchangers utilizing water cooling should have a stand-by or have at least 25 per cent excess capacity.

Auxiliary boiler(s) capable of burning the boil-off vapours and disposing of the generated steam or an alternative waste heat system acceptable to the Society. Consideration will be given to systems burning only part of the boil-off vapour if it can be shown that MARVS will not be reached within a period of 21 days.

3. Source / derivation of the proposed IACS Resolution

UI GC10 (1988) Reliquefaction plant of moter-driven LNG-carriers.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC11 "Loading of cargo C tanks for ships constructed before 1 July 2016 and subject to IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (MSC.5(48))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2016)	2 February 2016	1 July 2016
New (Mar 2006)	*No record*	1 July 2006

- **Rev.1 (Feb 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Revised IGC Code (MSC.370(93)) has included the clarification provided in GC11 Rev.0 in paragraph 15.5.2 in respect of filling limits for Type C tanks.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked safety panel to review applicable UIs. UI GC11 was found affected due to the revised IGC Code (MSC.370(93)). Revised IGC Code (MSC.370(93)) was noted to have included the clarification provided in GC11 Rev.0 in paragraph 15.5.2 in respect of filling limits for Type C tanks. Hence it was proposed by the panel members that existing UI GC11 is to be revised to specify that interpretation as in GC11 is only applicable to ships constructed before 1 July 2016 and subject to MSC.5(48).

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: October 2015 by Safety Panel
Panel Approval: 20 November 2015 (Ref: PS15004a)
GPG Approval: 2 February 2016 (Ref: 15042_IGg)

- **New (Mar 2006)**

No records available.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC11:

Annex 1. **TB for New (Mar 2006)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Feb.2016)**

See separate TB document in Annex 2.

◄▼►

Technical background

Loading of Cargo C tanks
UI GC11 (March 2006)

The amendments to IGC Code adopted by resolution MSC.32(63) have introduced, among others (see item 15.1.5), the possibility, for type C cargo tanks to be filled at 98% of their volume, provided that the tank vent system complies with the criteria set out in the added new item 8.2.18.

Alternatively, the filling limits of type C cargo tanks may be up to 98% of their volume where additional pressure-relieving systems complying with paragraph 8.3 are installed. It is noted that this possibility was already foreseen in the original text of the IGC Code (meaning before resolution MSC.32(63)).

The meaning of the last sentence of the above new item 8.2.18 reading:
This paragraph may apply to all ships regardless the date of construction
as well as the one of new paragraph 15.3:
Chapter 15 applies to all ships regardless of the dated of construction
appear to be misleading.

Said sentences could generate the doubt that type C cargo tank vent system on ships built before 1 July 1998 may be required to comply with the said item 8.2.18 to allow 98% filling limits, whilst the alternative installation of additional pressure-relieving systems (as per paragraph 8.3) in order to permit the filling limits of type C cargo tanks up to 98% of their volume, can be questioned.

The UI was developed for clarifying that type C cargo tanks can be loaded in accordance with the provisions of 15.1.5 or, alternatively, to the provisions of 15.1.2 regardless of the date of construction of the ship.

Technical Background (TB) document for UI GC11 (Rev.1 Feb 2016)

1. Scope and objectives

The UI provides clarification with respect to maximum loading limit to which a Type C cargo tank can be loaded.

2. Engineering background for technical basis and rationale

Paragraph 15.1.2 of the IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk reads:

"The maximum loading limit (LL) to which a cargo tank may be loaded should be determined by the following formula :

$LL = FL\rho_R/\rho_L$

where:

LL = loading limit expressed in percent which means the maximum allowable liquid volume relative to the tank volume to which the tank may be loaded;

FL = filling limits as specified in 15.1.1 or 15.1.3;

ρ_R = *relative density of cargo at the reference temperature; and*

ρ_L = *relative density of cargo at the loading temperature and pressure."*

Paragraph 15.1.5 reads:

"The Administration may allow type C tanks to be loaded according to the following formula provided that the tank vent system has been approved in accordance with 8.2.18:

$L_L = FL\rho_R/\rho_L$

where:

LL = loading limit as specified in 15.1.2;

FL = filling limits as specified in 15.1.1 or 15.1.3;

ρ_R = *relative density of cargo at the highest temperature which the cargo may reach upon termination of loading, during transport, or at unloading, under the ambient design temperature conditions described in 7.1.2; and*

ρ_L = *as specified in 15.1.2.*

This paragraph does not apply to products requiring a type 1G ship."

IGC Code MSC.5(48) clarified that regardless of the date of construction of the ship, type C cargo tanks can be loaded in accordance with the provisions of paragraph 15.1.5 or, alternatively, to the provisions of paragraph 15.1.2.

However the above clarification found to have been included in paragraph 15.5.2 in respect of filling limits for Type C tanks as per interpretation provided earlier in GC 11 Rev.0.

Hence the interpretation considered requiring change to indicate that the interpretation as in GC 11 is only applicable to ships constructed before 1 July 2016 and subject to MSC.5(48).

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

Not applicable.

5. Points of discussions or possible discussions

In the light of the revised IGC Code (MSC.370(93)), GPG tasked safety panel to review applicable UIs. UI GC 11 was found affected due to the revised IGC Code (MSC.370(93)). Revised IGC Code (MSC.370(93)) noted to have included the clarification provided in GC11 Rev.0 in paragraph 15.5.2 in respect of filling limits for Type C tanks. Hence it was proposed by the panel members that existing UI GC 11 is to be revised to specify that interpretation as in GC 11 is only applicable to ships constructed before 1 July 2016 and subject to MSC.5(48).

6. Attachments if any

N/A.

UI GC12 "Secondary Barrier Testing Requirements"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Aug 2015)	17 August 2015	1 July 2016
Rev.1 (Oct 2013)	11 October 2013	1 July 2014
Corr.1 (Nov 2007)	5 November 2007	-
NEW (Sept 2007)	30 September 2007	1 July 2008

- **Rev. 2 (Aug 2015)**

.1 Origin of Change:

☑ Based on the proposal of GPG

.2 Main Reason for Change:

IACS GPG tasked the Survey Panel to examine the amendment of item (GI) 2.1.2.10 of the HSSC Guideline annexed to IMO resolution A. 1053(27), as amended and proposed by IMO Subcommittee III 1. The task has the scope to verify whether the new text cope the interpretation offered by IACS with the revision 1 of the UI GC12 and whether this last and the UR Z16 would need to be amended.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Survey Panel discussed the issue by correspondence and during the 21st Survey Panel meeting.

Initially Members discussed on the opportunity to apply the methodology of verification of the glued secondary barriers also to the periodical verifications required in paragraph 4.7.7 of the IGC Code. In that view there was an initial proposal to modify the UI by introducing the requisite also for the renewal surveys.

A Panel member offered his suggestions in order to focus the matter by explaining that the test concerned shall be applied only one time in the barrier life, i.e. at the time of construction, in order to verify the tightness of the glued sheets which constitute the secondary barrier.

Another Panel member noted also that the paragraph 4.7.7 of the IGC Code addresses not the periodical test but, rather, the design requirement that a secondary barrier shall be designed in such way that the periodical tests may be executed.

The Panel, finally, agreed with the principle that the test on glued secondary barrier, of the membrane containment system of a gas carrier, need to be tested before and after the initial cooling down at the time of the ship's construction.

With the aim to clarify the concept Panel concurred the modification of the UI GC12 by introducing the wording "At the time of construction" at the beginning of the first bullet of the text

At the same time Panel revised the UR Z16 and did not recognise any need of updating.

No technical background is expected for the present revision.

.5 Other Resolutions Changes:

.6 Dates:

Panel Approval: 21th Panel Meeting (17-19 March 2015) (Ref: PSU14036)
GPG Approval: 17 Aug 2015 (Ref: 14096aIGk)

- **Rev.1 (Oct 2013)**

.1 Origin of Change:

☑ Based on the proposal of an IACS Member

.2 Main Reason for Change:

An IACS member proposed to review IACS UR Z16 section 2.2.8 and to better define "significant differences" with a view to achieving more uniform and consistent application of the requirement by IACS Societies. A project team was formed to review SBTT results among members with vessels having a glued secondary barrier. The project team also recommended a revision to UI GC12 regarding testing of the SBTT at the time of construction.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

A project team was formed to review SBTT results among members with vessels having a glued secondary barrier. Due to the formation of the project team, the system designer proposed new acceptance criteria which require additional testing once a threshold value is exceeded. The project team reviewed the new criteria and recommended the changes to UR Z16 and UI GC12. The changes were approved by the Survey Panel.

.5 Other Resolutions Changes:

UR Z16

.6 Dates:

Panel Approval: 18th Panel Meeting (4-5 September 2013) (Ref: PSU12029)
GPG Approval: 11 October 2013 (Ref: 6179aIGj)

- **Corr.1 (Nov 2007)**

Correction to implantation statement (applicable to ‘tests’) and correction of typos (Ref: 6179_)

- **NEW (Sept 2007)**

Ref: 6179_. See TB in Part B for details.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC12:

Annex 1. **TB for Original Resolution (Sept 2007)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Oct 2013)**

See separate TB document in Annex 2.

◄▼►

Note: There is no separate Technical Background (TB) document for Corr.1 (Nov 2007) and Rev.2 (Aug 2015).

Technical Background

UI GC12 (New, Sept 2007 & Corr.1 Nov 2007)

"Secondary Barrier Testing Requirements"

Survey Panel Task 40: *Review issues raised in the Statutory Panel concerning survey requirements for paragraphs 4.10.4 and 4.10.16 and paragraph 1.5.4 for issuance of certificates of the IGC Code regarding the first loaded voyage of ships carrying liquefied gases in bulk.*

1. Objective

Review the issues raised in the Statutory Panel NK (SP5034_NKc) regarding the IGC Code verification and inspection following the first loaded voyage to define survey requirements for paragraphs 4.10.4 and 4.10.16 and paragraph 1.5.4 for issuance of certificates of the IGC Code. Where appropriate, clarify the issues raised in the Statutory Panel.

2. Background

Proposed by: IACS submission to FSI 14 (5136aIAa) for survey of ships carrying liquefied gases in bulk. Statutory Panel received comments from NK (SP5034_NKb) raising further questions on the extent of survey to be carried out and how it can be carried out. Statutory Panel recommended the Survey Panel to review the issues raised in SP5034_NKb. In addition, LR Statutory Panel member requested that the Panel should determine if testing requirements should be created for the secondary barriers of LNG carriers.

3. Methodology of Work

The Survey Panel has progressed its work through meetings as well as a Survey Panel Project Team consisting of ABS (Chair), BV, DNV, GL, LR and NK. The proposed scope of work as well as the draft recommendation by the Project Team was circulated to all Members for comment and agreement.

4. Discussion

(Secondary barrier)

The second part of the task was to consider testing requirements for the secondary barrier of LNG vessels.

The current practice of testing the secondary membrane was discussed and found only one shipyard was currently testing the secondary barrier after initial cool down and most of the others refusing to test.

The team also considered the leakage of the secondary barrier by two vessels after delivery which resulted in the vessels being removed from service to be repaired. After

investigation, it was felt that the vessel may have developed the leaks on gas trials, though no evidence exists to support this allegation.

It was concluded by the team that the only way to ensure that the secondary barrier was satisfactory when delivered was to require tightness testing of the secondary barrier after initial cool down for vessels with glued membranes.

The team also considered the current acceptance criteria by the containment system designer and felt that the criteria had proven to be questionable. Due to the lack of acceptance criteria, the team decided that values obtained before and after initial cool down shall be evaluated. If significant differences are observed in the before and after results for each tank or between tanks or other anomalies occur, an investigation is to be carried out.

In an effort to further progress these issues to harmonize with IMO, the Survey Panel developed proposed UIs based on the findings by the Project Team, which was unanimously agreed upon by all members.

The team then reviewed the requirements of UR Z16 and proposed a revision to incorporate the comparison of previous results and values obtained at Special Survey using the same approach of investigating differences in the before and after results for each tank or between tanks. The Project Team and all Survey Panel members agreed to the proposed amendments to UR Z16.

Submitted by Survey Panel Chair

12 June 2007

Permanent Secretariat note (October 2007):

Approved by GPG 30 September 2007 (6179_IGo) with an implementation date of 1 July 2008.

Additional note from GPG Chair relating to Corr.1 Nov 2007:

During the discussion in GPG on the application statement, it was initially agreed to read:

"This Unified Interpretation is to be applied by all Members and Associate from not later than 1 July 2008. However, Members and Associate are not precluded from applying this UI before this date."

However, later it was agreed that the application should be related to the *tests* and the application statement was amended accordingly. The last sentence of the application statement was agreed to be deleted as it was considered superfluous as early implementation is always possible with respect to IACS Resolutions, unless specifically specified or decided otherwise.

Technical Background for UI GC12 Rev.1, Oct 2013

1. Scope and objectives

An IACS member proposed to review IACS UR Z16 section 2.2.8 and to better define “significant differences” with a view to achieving more uniform and consistent application of the requirement by IACS Societies. A project team was formed to review SBTT results among members with vessels having a glued secondary barrier. The project team also recommended a revision to UI GC12 regarding testing of the SBTT at the time of construction.

2. Engineering background for technical basis and rationale

The system designer issued new acceptance criteria for SBTT testing which is reflected in revised UR Z16 and UI GC12.

3. Source / derivation of the proposed IACS Resolution

UR Z16 and GTT External Document No. 1136.

4. Summary of Changes intended for the revised Resolution:

The following amendment is made to UI GC12:

For containment systems with glued secondary barriers:

- A tightness test should be carried out in accordance with approved system designers’ procedures and acceptance criteria before and after initial cool down. Low differential pressures tests are not considered an acceptable test.

- If ~~significant differences in the results before and after cool down for each tank or between tanks or if other anomalies are observed,~~ the designer’s threshold values are exceeded, an investigation is to be carried out and additional testing such as ~~differential pressure,~~ thermographic or acoustic emissions testing should be carried out ~~as necessary~~.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC13 "Verifications before and after the first loaded voyage"

Summary

This revision (Rev.3) is to:

- update this resolution in line with 2014 IGC Code (Resolution MSC 370(93)),
- include its applicability to all gas carriers (not only LNG Carriers), and
- clarify the scope of the verifications to be carried out by surveyors.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Aug 2023)	15 August 2023	1 January 2024
Rev.2 (May 2019)	30 May 2019	1 July 2020
Rev.1 (Mar 2016)	11 March 2016	1 July 2016
New (Jan 2008)	18 January 2008	1 July 2008

- **Rev.3 (August 2023)**

.1 Origin of Change:

Suggestion by an IACS member

.2 Main Reason for Change:

This revision is to address the decision made by GPG to update this resolution in line with the revised IGC Code (Resolution MSC 370(93)), to include its applicability to all gas carriers (not only LNG Carriers) and to clarify the scope of the verifications to be carried out by surveyors at the time of the first full loading/unloading cargo operations.

.3 List of non-IACS Member classification societies contributing through the participating in IACS Working Group:

None

.4 History of Decisions Made:

The initial task included two topics. The first is to develop the survey requirements at first loading/unloading for all types of liquefied gas carriers, and the second is to clarify the testing of high-level alarms required by Paragraph 13.3.5 of the IGC Code for all liquefied gas carriers.

In respect to the first topic of the task, the IACS Project Team (PT) decided to remove the references to the requirements indicated in the 1983 IGC Code, as amended, because currently only the 2014 IGC Code (i.e. Resolution MSC.370 (93)), as

amended, applies to all new gas carriers (constructed on or after 1 July 2016). So, the survey requirements interpretations included in Rev 3 of this UI are as per required by the said 2014 IGC Code.

In respect to the second topic of the task, in discussions with SIGTTO, they indicated their objective to propose an interpretation to the IMO in relation to testing of high-level alarms. So, it was agreed that the IACS PT Manager (who is also the IACS liaison person with SIGTTO) should collaborate with a WG of SIGTTO on the development of the interpretation for testing of cargo tanks high level alarms required by Paragraph 13.3.5 of the said 2014 IGC Code.

So, Rev.3 of this UI is addressing the survey requirements at the first full loading/unloading cargo operations for all gas carries. The aspects related to the testing of the cargo tanks high level alarms were proposed by SIGTTO in close discussions with IACS. The draft text of the interpretation prepared by the WG of SIGTTO has been distributed to IACS Survey Panel members and no objection has been raised by them.

The draft unified interpretation was proposed by IACS and SIGTTO to the 8th session of the IMO CCC Sub-Committee via document CCC 8/12/2, and the Sub-Committee has agreed to the draft unified interpretation, where only editorially corrections have made to the IACS and SIGTTO proposal, with a view to approval by MSC 107.

MSC 107 approved the unified interpretation of the IGC Code as MSC.1/Circ.1669, where changes made to its draft (as per Annex 9 to document CCC 8/18) are considered only "editorial" (e.g., addition of the word "and" at sub-paragraphs just before the last sub-paragraph). However, use of the term "inter-barrier" not used in the IGC Code and use of a lower-case letter for "Master" have been avoided in Rev 3 of this UI.

.5 Other Resolutions Changes:

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal:	6 October 2016	(PSU16053_ISUa)
Panel Approval:	14 March 2023	(the 37th Survey Panel meeting)
GPG Approval:	15 August 2023	(21158fIGe)

- **Rev.2 (May 2019)**

.1 Origin of Change:

  - Suggestion by an IACS member

.2 Main Reason for Change:

This revision is to address the policy decision made by GPG using the common terminology 'Condition of Class'(CoC) instead of the terms 'Recommendation/ Condition of Class' based on the outcome of III 5.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

During the 29th panel meeting, the panel discussed about the comments of members, and concurred with the view to retain the present definitions of CoC in the IACS resolutions with the wording 'Recommendation' to be removed. The panel also agreed to use the term 'Statutory Condition' for the 'recommendation' of the statutory certificates in IACS resolutions and RECs, and when discussing the proposal of a member to consider the harmonization of the terms of 'recommendation' and 'condition of class' in RO Code, the panel unanimously agreed to take no action on the IMO instruments, leaving the relevant actions to be decided by the relevant IMO bodies when IACS feeds back to IMO the IACS action on the harmonization of the two terms.

Panel members concurred with the view that it is not necessary to develop a new procedure requirement, and agreed to set the implementation date of these IACS resolutions (other than RECs) as 1st July 2020.

Before the implementation date of 1st July 2020 for using the common terminology 'Condition of Class' only, 'Recommendations' and 'Condition of Class' are to be read as being different terms used by Societies for the same thing, i.e. requirements to the effect that specific measures, repairs, surveys etc. are to be carried out within a specific time limit in order to retain Classification.

No TB is expected for the present revision.

.5 Other Resolutions Changes:

The following IACS resolutions and Recommendations (RECs) were agreed to be revised:

- Procedural Requirements: PR1A, PR1B, PR1C, PR1D, PR1 Annex, PR3, PR12, PR20, PR35 and the attachment of PR16;
- Unified Requirements: Z7, Z7.1, Z7.2, Z10.1, Z10.2, Z10.3, Z10.4, Z10.5, Z15 and Z20
- Unified Interpretations: GC13
- Recommendations: Rec.41, Rec.75, Rec.96, Rec.98

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 14 January 2019 tasked by GPG (17044bIGm)
Panel Approval: 22 March 2019 (PSU19010)
GPG Approval: 30 May 2019 (17044bIGu)

- **Rev.1 (Mar 2016)**

.1 Origin for Change:

☑ Other *(following task assigned by GPG)*

.2 Main Reason for Change:

Following the entry into force on 1st January 2016 of the IMO resolution MSC.370(93), which amends the IGC Code (IMO Resolution MSC.5(48)).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel has been tasked by the GPG (GPG subject number 15042) to review the applicable IACS URs, UIs and RECs under its responsibility.

Panel, following the revision of the resolution MSC.370(93) noted that paragraphs 4.20.3.5 and 4.20.3.7 deal with the same matter that is subject of this interpretation.

Panel agreed to add the texts of both paragraphs since the existing interpretation may be applied also to them.

Panel agreed also the need to update the references to the various amendments to resolution MSC 5(48) (the original text of the IGC Code)

All the modifications have been applied in the revision 1 of the Unified Interpretation GC13.

No TB has been prepared.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 10 April 2015 made by GPG
Panel Approval: 3 February 2016 (Ref: PSU15029)
GPG Approval: 11 March 2016 (Ref: 15042_IGi)

- **New (Jan 2008)**

No record for HF, see TB in part B for details.

Part B. Technical Background

List of Technical Background (TB) documents for UI GC13:

Annex 1. **TB for New (Jan 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.3 (Aug 2023)**

See separate TB document in Annex 2.

Note: *There are no Technical Background (TB) document available for Rev.1 (Mar 2016) and Rev.2 (May 2019).*

Technical Background

UI GC13 (New, January 2008)

"Examination before and after the first loaded voyage"

PSU Task 40: *Review issues raised in the Statutory Panel concerning survey requirements for paragraphs 4.10.14 and 4.10.16 and paragraph 1.5.4 for issuance of certificates of the IGC Code regarding the first loaded voyage of ships carrying liquefied gases in bulk.*

1. Objective

Review the issues raised in the Statutory Panel (SP5034_) regarding the IGC Code verification and inspection following the first loaded voyage to define survey requirements for paragraphs 4.10.14 and 4.10.16 and paragraph 1.5.4 for issuance of certificates of the IGC Code. Where appropriate, clarify the issues raised in the Statutory Panel.

2. Background

Proposed by: IACS submission to FSI 14 (5136aIAa) for survey of ships carrying liquefied gases in bulk. Statutory Panel received comments from one Member raising further questions on the extent of survey to be carried out and how it can be carried out. Statutory Panel recommended the Survey Panel to review the issues. In addition, another Statutory Panel member requested that the Panel should determine if testing requirements should be created for the secondary barriers of LNG carriers.

3. Methodology of Work

The Survey Panel has progressed its work through meetings as well as a Survey Panel Project Team consisting of members from six Societies. The proposed scope of work as well as the draft recommendation by the Project Team was circulated to all Members for comment and agreement.

4. Discussion

(First loaded voyage)

The first part of the task concerned survey requirements for paragraphs 4.10.14 and 4.10.16 and paragraph 1.5.4 for issuance of certificates of the IGC Code regarding the first loaded voyage of ships carrying liquefied gases in bulk.

The Project Team reviewed the requirements of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk and discussed current practice among each Society.

The matter of certification was discussed and decided a short term IGC Certificate should be issued pending first loading and unloading in the presence of a Surveyor. The Classification Certificate was to be issued "conditionally" requiring first loading and unloading in the presence of a Surveyor.

The team discussed the survey requirements for the first loading and unloading. The requirements were developed based upon items that the team felt should be surveyed due to the vessel being fully loaded rather than the limited loading at gas trials.

The team initially attempted to develop requirements for all vessels carrying liquefied gases, but decided to limit the requirements to LNG vessels which have satisfactorily completed gas trials. If requested, the team can develop requirements for other type of vessels carrying liquefied gases.

Submitted by Survey Panel Chair
12 June 2007

Additional comments arising from GPG discussion:
One Member expressed the opinion that level sensor activating the ESD system need to be tested at the first loading and that this could be done practically and safely (e.g. by internal transfer using stripping or spray pumps operating at a lower capacity than the main pumps or the topping off rate from ashore). And deemed it essential to test the right location of this sensor, being this the only way to check that the positioning of the alarm sensor was correct under cryogenic conditions and thus assuring the correct operation of the ESD system (critical to avoid overfilling, especially in LNG vessels fitted with reliquifaction plants whilst the reliquifaction plant was in service). In view of the above, the Member suggested adding the following sentence: "The remaining higher alarms should be tested by methods alternative to the filling of the cargo tanks over the normal loading." to item 5 of section "First loading", so that it would have read: "Witness topping off process for cargo tanks including high level alarms activated during normal loading. The remaining higher alarms should be tested by methods alternative to the filling of the cargo tanks over the normal loading". However, this proposal did not get any support by other Members and was dropped.

Another Member expressed their association with the above views.

Permanent Secretariat note (January 2008):
Approved by GPG 18 January 2008 (6179_IGu) with an implementation date of 1 July 2008.

Technical Background (TB) document for UI GC13 (Rev.3 Aug 2023)

1. Scope and objectives

The scope of the UI (Rev.3) is to address the verifications to be carried out for the first loading/unloading of liquefied gas carriers in addition to the tests already listed under the existing UI GC13 (Rev.2).

2. Engineering background for technical basis and rationale

Not applicable.

3. Source/derivation of the proposed IACS Resolution

International Gas Code requirements for the verification of the first loading/unloading: the 2014 IGC Code (IMO Res. MSC.370(93)), paragraphs 4.20.3.5, 4.20.3.6, 4.20.3.7, 5.13.2.5, 13.3.5, 13.7.2.4 and 13.9.7

4. Summary of Changes intended for the revised Resolution:

Comprehensive revision has been conducted to the previous version (Rev.2) of this UI.

5. Points of discussions or possible discussions

One point that may require additional clarifications is about to provide an industry guidance to Owners/Crew on how to carry out the testing of the overfill sensors. Testing of the sensor is depending on the actual functionality of the sensor, such as float type, radar type, capacitance type.

The development of such industry guidance shall, however, not be part of a Unified Interpretation.

6. Attachments if any

None

UI GC14 "Pump Vents in Machinery Spaces (IGC Code Chapters 3.7.4 as amended by Res. MSC. 103(73) and IGC Code Chapters 3.7.5 as amended by Res. MSC. 370(93))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (April 2015)	14 April 2015	1 July 2016

- **New (April 2015)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Clarification of a vague expression within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The inquiry was raised by an IACS member to seek member's view regarding the application of IGC Chapter 3.7.4 as amended by Res. MSC. 103(73).

Reading literally, it is unclear whether the requirement of "Pump vents should not be open to machinery spaces" as stated in IGC Chapter 3.7.4 shall be applied to pumps in Machinery space led to dry duct keels only or to the pumps in the machinery spaces led to other spaces (i.e. ballast spaces, fuel-oil tank and gas-safe space) either.

Having considered current practices in yards and members, the requirement of "Pump vents should not be open to machinery spaces" have been applied to pumps in Machinery space led to dry duct keels only.

However, there may be some possibility of future controversy or strict application of IGC Chapter 3.7.4 differed from current practice, and it will put most existing ships to "non-compliance" status with significant expenses to owners and operators to comply IGC Chapter 3.7.4.

Accordingly, it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 13 December 2013, made by: a Member
Panel Approval: 26 March 2015, by: Safety Panel
GPG Approval: 14 April 2015 (Ref: 15059_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC14:

Annex 1. **TB for New (April 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI GC14 (New, April 2015)

1. Scope and objectives

UI GC14 provides interpretations of IGC Code Ch. 3.7.4 as amended by Res. MSC. 103 (73) and IGC Code Ch. 3.7.5 as amended by Res. MSC. 370(93), with respect to the requirement of bilge, ballast and oil fuel arrangements.

The UI has the scope to clarify whether the requirements of “Pump vents should not be open to machinery spaces” and “Pump vents shall not be open to machinery spaces” as stated in IGC Code Ch. 3.7.4 and Ch.3.7.5 shall be applied to pumps in Machinery space serving dry duct keels only or to the pumps in the machinery spaces serving other spaces (i.e. ballast spaces, fuel-oil tank and gas-safe space) either.

2. Engineering background for technical basis and rationale

In the discussions concerning IGC Code Ch. 3.7.4 and Ch. 3.7.5, majority of Safety Panel members agreed that the requirements of "Pump vents should not be open to machinery spaces” and “Pump vents shall not be open to machinery spaces” apply only to pumps in the machinery spaces serving dry duct keels through which ballast piping passes"

But some members raised a concern on a possibility of gas being introduced into machinery space from other spaces (i.e. ballast spaces, fuel-oil tank and gas-safe space) not only from dry duct keels with the following scenario, and insisted to apply the requirement of IGC Code Ch. 3.7.4 and Ch. 3.7.5 to the pumps in the machinery spaces serving other spaces.

A gas release at the loading manifold occurs during cargo loading, then the ballast pumps would be running and air from the deck would be going into the ballast tanks as they are being discharged. If the ballast lines are empty on completing de-ballasting operations, then gas from the ballast tanks could work its way back to the machinery space if there is an open vent.

However, after further considered the above scenario, members decided not to apply the requirement of "Pump vents should not be open to machinery spaces” to pumps in the machinery spaces serving other spaces with following reasons.

A gas release from the manifold area is theoretical and unlikely to be a measurable risk during ship operation. Moreover, gas release in any significant amounts in the manifold area is not part of normal operation and such practice is not allowed at most of modern terminals. Non-controllable gas release or leaks on deck during loading or discharging is not a normal operational condition either. Such leaks are relatively easy to detect and stop before they reach dangerous levels, stopping them is also a basic safety requirement when the ship is alongside.

Even though ballasting and de-ballasting of vessel at sea may coincide with accidental leaks in the cargo piping system or cargo plant, most of undetected leaks would be relatively small and before such gas reaches ballast tanks vents it will be considerably diluted with air, keeping them below flammable limits.

At the same time any major gas leak will present danger to the vessel, but at first through doors and ventilation openings in accommodation and ventilation intakes in engine room due to eddies even though such intakes are located outside defined gas-dangerous zones. And this is real danger, existing and learned from experience, although such major leaks are also much easier to detect.

Moreover, engine room compartments, where the ballast pumps are located, are well ventilated. Besides, such ventilation is typically arranged at “supply” scheme, i.e. they have slight over-pressure compare to ballast tanks preventing gas coming into the compartment from the ballast tank being at atmospheric pressure.

The ballast pumps are typically of centrifugal type and located below the water line in the engine room, therefore, normal position of pump air vents is “closed”. Accidental leaving them in open position is more relevant for case of dry duct keels.

Size of the tubes used for venting is small, considerably restricting amount of gas which may be transferred. Considering earlier mentioned “pre”-dilution and good ventilation in engine room, such amount will barely form any flammable atmosphere.

Operationally, the vent is opened only for short time at the pump start. To say more, some pumps may have shaft seal damage or wear leaking in amounts comparable to one which may be delivered by the vent opening, but the IGC Code still accepts pumps connected to ballast tanks to be located in engine room.

In most of cases there will be some ballast water remaining in the ballast piping/tanks acting as a water lock and preventing gas to enter the engine room.

3. Source / derivation of the proposed IACS Resolution

- IGC Code Ch. 3.7.4 as amended by Res.MSC.103(73)
- IGC Code Ch. 3.7.5 as amended by Res.MSC.370(93)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC15 "Closing Devices for Air Intakes"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2017)	22 August 2017	1 January 2018
New (Feb 2016)	29 February 2016	1 July 2016

- **Rev.1 (July 2017)**

.1 Origin for Change:

☑ Based on IMO Decision (CCC3 and MSC97)

.2 Main Reason for Change:

To align the UI GC15 (new) with the approved MSC Circular (MSC.1/Circ.1559).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS developed UI GC15 (new) in light of the revised IGC Code (MSC.370(93)) and submitted the UI to CCC3 for approval.

Reviewing the UI, CCC3 agreed to add some modifications, which were ultimately approved as per MSC.1/Circ.1559 at MSC 97.

In this regard, the Safety Panel agreed to align UI GC15 (new) with MSC.1/Circ.1559.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 21 April 2017 as PA in MSC 97 Observer's Report
Panel Approval: 25 July 2017 (Ref: PS15004a)
GPG Approval: 22 August 2017 (Ref: 15042_IGs)

- **New (Feb 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify paragraph 3.2.6 of the revised IGC Code (MSC.370(93)).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked the Safety Panel to review applicable UIs. UI GC5 was found affected due to the revised IGC Code (MSC.370(93)) and it was proposed by the panel members that existing UI GC 5 is to be retained and remain applicable to ships constructed before 1 July 2016 and complying with MSC.5(48). However noting that revised IGC Code (MSC.370(93)) paragraph 3.2.6, regarding capability of closing devices for air intakes, outlets and other openings into service spaces being operated from inside the space, does not provide clarity with respect to applicability of the requirement to engine room casings and steering gear compartments, a new UI was decided to be developed by the Safety Panel so as to be in line with GC 5.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: October 2015 by Safety Panel
Panel Approval: 20 November 2015 (Ref: PS15004a)
GPG Approval: 29 February 2016 (Ref: 15042_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC15:

Annex 1. **TB for New (Feb 2016)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Aug 2017)**

See separate TB document in Annex 2.

◄▼►

Technical Background (TB) document for UI GC15 (New Feb 2016)

1. Scope and objectives

The UI provides clarification based on paragraph 3.2.6 of IGC Code (MSC.370(93)) regarding capability of closing devices for air intakes, outlets and other openings into service spaces being operated from inside the space whether applicable to the engine room casings and steering gear compartments.

2. Engineering background for technical basis and rationale

Paragraph 3.2.6 of IGC Code (MSC.370(93)) reads:

"All air intakes, outlets and other openings into the accommodation spaces, service spaces and control stations shall be fitted with closing devices. When carrying toxic products, they shall be capable of being operated from inside the space. The requirement for fitting air intakes and openings with closing devices operated from inside the space for toxic products need not apply to spaces not normally manned, such as deck stores, forecastle stores, workshops. In addition, the requirement does not apply to cargo control rooms located within the cargo area."

The requirement for fitting air intakes and openings with closing devices operable from inside the space in ships intended to carry toxic products apply to spaces which are used for the ships' radio and main navigating equipment, cabins, mess rooms, toilets, hospitals, galleys, etc.

Engine room casings, steering gear compartments are considered as spaces not normally manned and hence not covered by paragraph 3.2.6 and therefore the requirement need not be applied to these spaces.

3. Source / derivation of the proposed IACS Resolution

UI GC5.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

In the light of the revised IGC Code (MSC.370(93)), GPG tasked Safety Panel to review applicable UIs. UI GC5 was found affected due to the revised IGC Code (MSC.370(93)) and it was proposed by the Panel members that existing UI GC5 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48). However noting that revised IGC Code (MSC.370(93)) paragraph 3.2.6 regarding capability of closing devices for air intakes, outlets and other openings into service spaces being operated from inside the space, does not provide clarity with respect to applicability of the requirement to engine room casings and steering gear compartments, a new UI in the same line as the UI GC5 was decided by the panel to be developed.

During ensuing discussions, the following points were discussed at length.

1) Inclusion of the examples of cabins, messrooms, toilets, hospitals etc. as part of accommodation spaces, leading to confusion for categorization of spaces not listed as examples.
2) The naming of steering gear compartment and engine room casing as spaces not regarded as accommodation/control stations/service spaces leading to possible confusion on the status of similar spaces like cargo machinery spaces/electric motor room/PSA rooms etc.

However, the following text of the UI was subsequently agreed by the majority, and forwarded to GPG for further consideration, including the objections raised by some members.

-QUOTE-
1. The requirement for fitting air intakes and openings with closing devices operable from inside the space in ships intended to carry toxic products apply to spaces which are used for the ships' radio and main navigating equipment, cabins, mess rooms, toilets, hospitals, galleys, etc. Engine room casings, steering gear compartments are generally considered as spaces not covered by paragraph 3.2.6 and therefore the requirement need not be applied to these spaces.

2. The closing devices are to give a reasonable degree of gas tightness. Ordinary steel fire-flaps without gaskets/seals are not be considered satisfactory.
-UNQUOTE-

At GPG, an amendment was proposed to the first paragraph of the interpretation addressing the first discussion point and subsequently agreed by the majority.

6. Attachments if any

N/A.

Technical Background (TB) document for UI GC15 (Rev.1 Aug 2017)

1. Scope and objectives

In line with MSC.1/Circ.1559 approved at MSC 97, UI GC15 (Rev.1) clarifies that:

.1 the remote operation cannot be accepted as an alternative means to control the closing devices to be operated from inside the space; and

.2 all the closing devices should be operable from outside of the space in any case.

2. Engineering background for technical basis and rationale

When UI GC15 (new) was considered at the Plenary of CCC3, the following comments were raised from some Member States:

.1 the operation of the closing devices from inside the space is clearly required by the IGC Code in case of carrying a toxic product. Therefore, it should not be relaxed by the operation from a centralized position, as shown in para 1 of UI GC15 (new); and

.2 it should be reminded that all closing devices shall be operable from outside of the space in accordance with SOLAS II-2/5.2.1.1 ("The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated…."), even when the closing device are made to be operable from inside by 3.2.6 of the IGC Code.

Based on the above comments, UI GC15 (new) was modified as follows and approved as MSC.1/Circ.1559 at MSC97:

.1 it was clarified in para 1 that only the closing devices that need not be operable from within the single spaces may be located in centralized positions; and

.2 the reference to SOLAS II-2/5.2.1.1 was added to para 4 as a reminder that all closing devices should be operable from outside of the protected space in any case.

3. Source / derivation of the proposed IACS Resolution

MSC.1/Circ.1559

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

(1) It was agreed within the Safety Panel that remote control is an optional function in addition to the local operations, not an alternative (Ref. PS15004aISz).

That is to say, the closing devices that need not be operable from within the single spaces may be remotely controlled, while it still should be operable from outside the space, as well. On the other hand, the closing devices that need be operable from within the single paces may be remotely controlled, as long as the function to operate such closing devices from inside the space is maintained.

(2) At the end of the initial Plenary discussion at CCC3, paras 1 and 4 of the UI were modified as underlined below, based on the remarks from some member states (Ref. CCC 3/WP.6):

"1.1 The closing devices need not be operable from within the single spaces and may be located in centralized positions. The centralized position should be accessible from all spaces protected by the closing devices.

...

1.4 The closing devices required when carrying toxic products shall be operable from inside and outside of the spaces."

However, during the margin of CCC3, IACS had a discussion with those delegations and other interested member states through correspondence as in the attachment to PS15004aIAb, which resulted in the texts shown in the current UI GC15 (Rev.1).

The summary of the justifications are as follows:

.1 the means of operations required by 3.2.6 of the revised IGC Code (MSC.370(93)) can be summarized as shown in the table below:

	Usually manned spaces	**Usually not manned spaces**
Space carrying toxic products	Inside the space	May not be inside the space
Space not carrying toxic products	May not be inside the space	May not be inside the space

As for the proposal to secure the accessibility to the centralized position from each protected space, as shown in para 1.1 above, it is related to the case of "carrying toxic products / Usually manned spaces".
As the Code clearly stipulates that, in such a case, the closing device should be operable from inside the space. So, there is no need to secure the accessibility to the centralized position.

.2 in accordance with 3.2.6 of the revised IGC Code (MSC.370(93)), spaces not normally manned are exempted from the requirements of operation from inside. Therefore, the modification as shown in para 1.4 above is not fully accurate in terms of "from inside and outside of the space."

6. Attachments if any

N/A

UI GC16 "Cargo tank clearances (on ships constructed on or after 1 July 2016)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Mar 2016)	11 March 2016	1 July 2016

- **New (Mar 2016)**

.1 Origin for Change:

☑ Other (*following task assigned by GPG*)

.2 Main Reason for Change:

Following the entry into force on 1st January 2016 of the IMO resolution MSC.370(93), which amends the IGC Code (IMO Resolution MSC.5(48))

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel has been tasked by the GPG (GPG task 15042) to review the applicable IACS URs, UIs and RECs under its responsibility.

Panel, following the issue of the resolution MSC.370(93), noted that the majority of the interpretations given in UI GC6 had been incorporated into the revised text of the IGC Code, as given in the annex to IMO resolution MSC.370(93). The interpretations not incorporated related to requirements for sizes of clear openings given in paragraphs 3.5.3.1.2 and 3.5.3.1.3.

Noting the amendments to the IGC Code made under IMO resolution MSC.370(93) apply to ships whose keels are laid, or which are at a similar stage of construction, on or after 1 July 2016, the Panel agreed to avoid any modification of the text of UI GC6 which might be misleading and instead agreed to issue a new Unified Interpretation applicable to those ships, dealing with paragraphs 3.5.3.1.2 and 3.5.3.1.3 of the Annex to resolution MSC.370(93).

Panel Members concurred that the interpretations of both paragraphs shall be the same of those already provided in IACS Unified Interpretation UI SC191 for the application of amended SOLAS regulation II-1/3-6 (resolution MSC.151(78)) and revised Technical provisions for means of access for inspections (resolution MSC.158(78)) for the same matter.

Panel approved the draft text of the new Unified Interpretation UI GC16.

No TB has been expected.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 10 April 2015 made by GPG (Ref: 15042_IGd)
Panel Approval: 3 February 2016 (Ref: PSU15029)
GPG Approval: 11 March 2016 (Ref: 15042_IGi)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC16:

◄▲►

Note: *There is no Technical Background (TB) document available for New (Mar 2016).*

UI GC17 "Unprotected openings"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2016)	3 June 2016	1 January 2017

- **New (June 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity *(Dutch Safety Board)*
☑ Other *(Based on Vessel Incident - Collision and capsizing of the tug Fairplay 22)*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24, that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed for the treatment of unprotected openings in respect of survival requirements under IGC Code Ch.2 Section 2.9.

.5 Other Resolutions Changes

Similar UIs were developed for ICLL Regulation 27, MARPOL Reg.27 & 28 and SOLAS/Ch.II-1-Reg.7-2, IBC Code Ch.2 Section 2.9.

.6 Dates:

Original Proposal: June 2014 made by Safety Panel
Panel Approval: April 2016 (Ref: SP12006r)
GPG Approval: 3 June 2016 (Ref: 15145bIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC17:

Annex 1. **TB for New (June 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC17 (New June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points / unprotected openings in the intact & damage stability calculation when they have to be left open for operational purposes. This should confirm that intact & damage stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis, where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in the intact stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed a unified interpretation for survival requirements as contained in IGC Code Ch.2 Section 2.9 based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as unprotected openings for the application of IGC Code Ch.2 Section 2.9.3.

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

N.A

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4) have to be considered as unprotected points, but only those which are left open during normal operation.

6. Attachments if any

None

UI GC18 "Test for Cargo tank's high level alarm (on ships built on or after 1 July 2016)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2017 Withdrawn)	06 July 2017	-
Corr.1 (Mar 2017)	01 March 2017	1 January 2018
New (Nov 2016)	28 November 2016	1 January 2018

- **Rev.1 (July 2017 Withdrawn)**

UI GC18 (Rev.1 July 2017) approved on 06 July 2017 was withdrawn on 05 June 2018 prior to coming into force on 1 July 2018 (Ref: 16199_IGn).

- **Corr.1 (Mar 2017)**

.1 Origin for Develop:

☑ Suggestion by IACS member

.2 Main Reasons for Develop:

The relevant requirements of IGC Code should be applicable to ships built on or after 1st July 2016 (as described in the title of UI CG18), but not "ships whose keels are laid, or which are at a similar stage of construction, on or after 1 January 2018" (quoted from Note 1 of the UI CG 18).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

It is proposed to revise the Note 1 of the UI CG 18 as:

"This UI is to be uniformly implemented by IACS Members ~~on ships whose keels are laid, or which are at a similar stage of construction,~~ on or after 1 January 2018."

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 31 January 2017, made by Survey panel
Panel Approval: 31 January 2017 (Ref: PSU16041)
GPG Approval: 01 March 2017 (Ref: 16199_IGe)

- **New (Nov 2016)**

.1 Origin of Change:

☑ Other *(following task assigned by Safety Panel)*

.2 Main Reason for Change:

Following the entry into force on 1st January 2016 of the IMO resolution MSC.370(93), which amends the IGC Code (IMO Resolution MSC.5(48))-

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel has been tasked by the Safety Panel (task PS1504220) to review the paragraph 13.3.5 of the IMO resolution MSC.370(93) (amended IGC Code) and verify whether the requirements therein contained might introduce any modification of the verifications linked to the Initial Survey for the issue of the "International Certificate of Fitness of Liquefied Gases in Bulk".

Panel members examined the query submitted by the Safety Panel plus the advice provided by a Safety Panel member and concluded that the requirements are those already applied under the previous edition of the IGC Code (IMO Res. MSC.5(48)).

At margin of the task and during the examination of the text of the paragraph 13.3.5 a Panel member noted that in this there is contained the vague expression "dry docking" which is not used in any other part of the Code, nor in the SOLAS Convention.

Having considered that:

- the expression dry-docking is not defined along the Code
- all kinds of the surveys verifications are set by the Code under paragraph 1.4.2, and
- the one under paragraph 13.3.5 is linked to those required under paragraph 1.4.2.2 relevant to the renewal survey of the "International Certificate of Fitness of Liquefied Gases in Bulk", which requires:
  A renewal survey at intervals specified by the Administration, but not exceeding five years, except where regulation 1.4.6.2.1, 1.4.6.5, 1.4.6.6 or 1.4.6.7 is applicable. The renewal survey shall be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable provisions of the Code.
- The renewal of the "International Certificate of Fitness of Liquefied Gases in Bulk" is linked to the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.

it has been concluded that:

the Code does not expect specifically any dry-docking survey or inspection of the outside of the ship's bottom under paragraph 1.4.2. Therefore considering also

the preamble of this paragraph it has been concluded that the drydock recalled in paragraph 13.3.5 is the inspection of the outside of the ship's bottom of the ship required by the SOLAS Regulation I/10(v) to be carried out in conjunction with the renewal survey of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.

Members also considered that two inspections of the outside of the ship's bottom are to be carried out during the five year period of validity of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate, according to the Regulation I/10(v) of the SOLAS 74 as amended, but recalling the facts that

- a cargo ship, having age less than 15 years, is admitted to carry out one of the two bottom inspections expected by the said regulation in afloat condition, according to the provisions of paragraph 4.6 of the IMO Resolution A. 1104(29) (HSSC Guidelines).
- the inspection that may be carried out in afloat condition is that corresponding to the middle period of validity of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.

Members concurred that the “dry-docking” survey recalled in paragraph 13.3.5 of the IMO resolution MSC 370(93) has to be interpreted as the inspection of the bottom of the ship linked to the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate

No TB has been expected

.5 Other Resolutions Changes:

Nil

.6 Dates:

Original Proposal: 04 August 2016 Made by Safety Panel (Ref: PS15020_PSa)
Panel Approval: 28 October 2016 (Ref: PSU16041)
GPG Approval: 28 November 2016 (Ref: 16199_IGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC18:

Note:

1) There are no separate Technical Background (TB) documents for New (Nov 2016), Corr.1 (Mar 2017) and Rev.1 (July 2017).

UI GC19 "External surface area of the tank for determining sizing of pressure relief valve (paragraph 8.4.1.2 and figure 8.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Aug 2017)	02 August 2017	1 January 2018

- **New (Aug 2017)**

.1 Origin of Change:

☑ Other

.2 Main Reason for Change:

To clarify paragraph 8.4.1.2 of the revised IGC Code (MSC.370(93).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the adoption of the revised IGC Code by Res. MSC.370(93), GPG tasked the machinery panel to review applicable UIs.

This particular issue was originated by document CCC 2/9/2, submitted by Japan, seeking clarifications on figure 8.1 and paragraph 8.4.1.2 of the revised IGC Code.

In this regard, the Sub-Committee acknowledged that "Lmin" ought to be defined but could not agree to the proposed unified interpretation set out in paragraph 11 of document CCC 2/9/2, particularly whether the minimum or the maximum longitudinal and transverse length should be used. Subsequently, the Sub-Committee invited interested Member States and international organizations to submit written proposals on the matter to CCC 3 (see CCC 2/15, paragraph 9.14).

IACS made a submission to CCC3/10/5, later approved by MSC and circulated, among others, in MSC.1/Circ.1559.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: CCC 2/9/2 (Japan)
Panel Approval: 10 June 2017 (Ref: PM16006)
GPG Approval: 02 August 2017 (Ref: 16117nIGk)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC19:

Annex 1. **TB for New (Aug 2017)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI GC19 (New Aug 2017)

1. Scope and objectives

The UI provides clarification about calculation of pressure relief valves that are to be determined according to paragraph 8.4.1 of the revised IGC Code.

2. Engineering background for technical basis and rationale

The sizes of pressure relief valves are determined according to paragraph 8.4.1 of the revised IGC Code. The external surface area of the tank, as defined in paragraph 1.2.14 of the Code, for different tank types is calculated as shown in figure 8.1 of the Code (see paragraph 8.4.1.2 of the revised IGC Code).

In figure 8.1 of the revised IGC Code, for prismatic tanks, the area that is excluded from the external surface area is still not clear, because the value "Lmin/10", which is specified in this figure, is not defined and no methods are specified for determining the area to be excluded.

It is noted that the same requirements, as discussed above, are specified in paragraph 6.7.3.1.1.2 and figure 6.7.1 of the IGF Code, as adopted by resolution MSC.391(95). It is considered that these provisions are likewise open to interpretation.

3. Source / derivation of the proposed IACS Resolution

Machinery Panel.

4. Summary of Changes intended for the revised Resolution:

N/A.

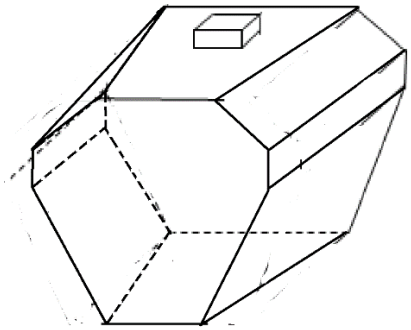
5. Points of discussions or possible discussions

To provide clarification with respect to the implementation of these requirements, IACS has prepared the following draft unified interpretation:

"For prismatic type tanks;

> A = external surface area minus flat bottom surface area (when distance between flat bottom and deck is equal to or less than 10% of the minimum dimension of the flat bottom (Lmin)).
>
> For tanks having a taper, the minimum dimension should be taken as the average width if this is less than the tank length."

It should be noted that the draft unified interpretation provided in paragraph 6 above is based on the information from IACS participants in the Working Group that developed the revised IGC Code. They were of the view that, for the then current range of gas carriers that are in service, the minimum dimension "Lmin" would be the tank width, and not the tank length. For tapered tanks, such as the GTT NO 96 design (a membrane system with cryogenic liner directly supported by the ship's inner hull) used as the forward tank (as shown below), it was also agreed that the average width should be used. However, this statement and information was not included in the revised IGC Code.



6. Attachments if any

N/A

UI GC20 “Tee welds in type A or type B independent tanks”

Summary

This UI provides clarification on Regulation 4.20.1.1 of the IGC Code (MSC.370(93)) regarding tank construction weld joints, such as the utilization of tee welds for localized constructions and tank corners which shall be made of bent plating aligned with the tank surfaces and connected with in-plane welds.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Apr 2019)	24 April 2019	1 July 2020

- **New (Apr 2019)**

.1 Origin for Change:

☒ Suggestion by IACS member

.2 Main Reason for Change:

The IGC requirements in 4.10.1.1 adopted in Dec 2000 were amended in 2014. The corresponding requirement was renumbered 4.20.1.1.
The 2 versions are as follows:
Dec 2000 Version:
4.10.1.1 All welded joints of the shells of independent tanks should be of the butt weld, full penetration type. For dome-to-shell connections, the Administration may approve tee welds of the full penetration type. Except for small penetrations on domes, nozzle welds are also generally to be designed with full penetration.

2014 amendment:
4.20.1.1 All welded joints of the shells of independent tanks shall be of the in-plane butt weld full penetration type. For dome-to-shell connections only, tee welds of the full penetration type may be used depending on the results of the tests carried out at the approval of the welding procedure. Except for small penetrations on domes, nozzle welds shall also be designed with full penetration.

The introduction of the words “in-plane” and “only” needs to be clarified for the connection of the corners of the tanks and where tee welds are acceptable in the tanks construction.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The question raised at the Hull Panel was discussed for defining the type of welds acceptable at the tank corners. History of the discussions in the working group in charge of the text development was considered. The Hull Panel issued the UI for clarifying that the tank corners must be bent plated connected to the tank with in-plane welds and the tee welds were still acceptable for localised sumps or suction wells, in addition to the dome mentioned in the requirement.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 22 August 2017 Made by: Hull Panel
Panel Approval: Hull Panel: 22 August 2017 (PH16016)
Safety Panel: 06 March 2018
GPG Approval: 24 April 2019 (Ref: 16238aIGk)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

◄▼►

Annex 1 Technical Background (TB) document for Original version New (Apr 2019)

1. Scope and objectives

The scope of this UI concerns the type A and type B independent tank primarily constructed of plane surfaces.
The objective of this UI is to clarify the type of welds acceptable in tanks defined in the scope mentioned above.

2. Engineering background for technical basis and rationale

The interpretation is based upon the fact that:

- The addition of the words “in-plane” and “only” in the new IGC code compared to the previous version was put in place by the Working Group in charge of the text to eliminate only the welded corners on prismatic tanks. The concern was considered well founded recognising that where two flat plates form a corner made up of pure weld metal the throat of the weld is subjected to high bending stress.
- No incident is noted on tank constructions with localised tee welds such as the sumps or the suction wells.
- This Regulation is not applicable to independent tanks of type C vessels; for the construction process of this type of tank, the Regulation 4.20.1.2 applies.

3. Source / derivation of the proposed IACS Resolution

IMO IGC Code (International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk)

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC21 “Welds of type C independent bi-lobe tank with centreline bulkhead”

Summary

This UI provides clarification on Regulation 4.20.1.2 of the IGC Code MSC.370(93)) regarding tank construction weld joints, such as the utilization of cruciform full penetration welded joints in a bi-lobe tank with centreline bulkhead.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Apr 2019)	24 April 2019	1 July 2020

- **New (Apr 2019)**

.1 Origin for Change:

☒ Suggestion by IACS member

.2 Main Reason for Change:

For the bi-lobe tanks, the IGC requirements in 4.20.1.2 need clarification for the weld detail between the longitudinal centreline bulkhead and the tank shell.
The last amendment of correspondent requirements was issued on 2014.

Current version of IGC code (2014 amendment):
4.20.1.2 Welding joint details for type C independent tanks, and for the liquid-tight primary barriers of type B independent tanks primarily constructed of curved surfaces, shall be as follows:
.1 all longitudinal and circumferential joints shall be of butt welded, full penetration, double vee or single vee type. Full penetration butt welds shall be obtained by double welding or by the use of backing rings. If used, backing rings shall be removed except from very small process pressure vessels. Other edge preparations may be permitted, depending on the results of the tests carried out at the approval of the welding procedure; and
.2 the bevel preparation of the joints between the tank body and domes and between domes and relevant fittings shall be designed according to a standard acceptable to the Administration or recognised organisation acting on its behalf. All welds connecting nozzles, domes or other penetrations of the vessel and all welds connecting flanges to the vessel or nozzles shall be full penetration welds.

The weld connection detail between the longitudinal centreline bulkhead and the tank shell is not explicitly covered by the IGC Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The question raised at the Hull Panel was discussed. The weld detail connection with bevel preparation of the shell plates is used from many years without problem. The Hull Panel decided to issue a UI to highlight explicitly that the concerned detail is acceptable.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 22 Aug 2017 Made by: Hull Panel
Panel Approval: Hull Panel: 22 Aug 2017 (PH16016)
Safety Panel: 06 Mar 2018
GPG Approval: 24 April 2019 (Ref: 16238aIGk)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

◄▼►

Annex 1 Technical Background (TB) document for Original version New (Apr 2019)

1. Scope and objectives

The scope of this UI concerns the type C bi-lobe tank primarily constructed of curved surfaces fitted with a centreline bulkhead.
The objective of this UI is to clarify the type of welds acceptable at the connection between the longitudinal centreline bulkhead and the tank shell plates for tanks defined in the scope mentioned above.

2. Engineering background for technical basis and rationale

The interpretation is based upon the fact that:

- No incident is noted on bi-lobe tanks with centreline bulkhead constructed with cruciform full penetration welds approved by the Administration or recognised organisation being considered as classical and well proven design.
- Example of typical cruciform joint preparation is shown in the following figure. Attention is drawn that other preparations are acceptable.

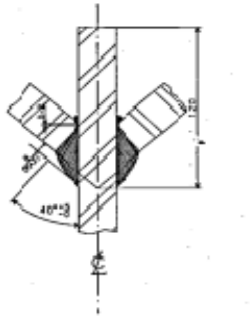


Figure 1: Typical cruciform joint at centreline bulkhead

3. Source / derivation of the proposed IACS Resolution

IMO IGC Code (International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC22 "Water spray system"

Summary

UI GC22 (Rev.1 Apr 2020) was developed with a view to align the UI GC22 (New June 2019) with the CCC 6 decision on approval of UI GC22 section c).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Apr 2020)	21 April 2020	1 January 2021
New (June 2019)	14 June 2019	1 July 2019
New (Apr 2018 Withdrawn)	14 June 2019	-
New (Apr 2018)	30 April 2018	1 July 2019

- **Rev.1 (Apr 2020)**

.1 Origin of Change:

☑ Based on IMO Decision (CCC 6)

.2 Main Reason for Change:

To align the UI GC22 (New June 2019) with the CCC 6 decision on approval of UI GC22 sections c).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS developed UI GC22 (New Apr 2018) with regard to interpretation of the para.11.3.1, 11.3.3 and 11.3.4 of the revised IGC Code (MSC.370 (93)) and submitted the UI to CCC 5 for approval.

Reviewing the UI GC22, CCC 5 agreed with section a) (interpretation of para.11.3.1) and b) (interpretation of para.11.3.3) of the UI only and approved these elements of UI GC22 as a draft MSC Circular.

In this regard Safety Panel agreed to develop UI GC22 (Rev.1) taking into account the comments provided by CCC 5 on section c) of UI GC22.

In process of approval of the draft UI GC22 (Rev.1) GPG agreed in 16238aIGq to withdraw the current UI GC 22 (Apr 2018) and immediately adopt new UI GC 22 with sections a) and b) only, with the same implementation date 1 July 2019.

Subsequently Draft section c) of UI GC 22 was submitted by IACS to CCC 6 and agreed by the CCC Sub-Committee and the UI amended accordingly.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

Not applicable.

.7 Dates:

Original Proposal: 03 June 2019 (by IACS GPG Chair)
Panel Approval: 19 Dec 2019 (Ref: PS15020_, PS17010u)
GPG Approval: 21 April 2020 (Ref: 16238_IGt)

- **New (June 2019)**

.1 Origin of Change:

☑ Based on IMO Decision (CCC 5)

.2 Main Reason for Change:

To align the UI GC22 (new, Apr 2018) with the CCC 5 decision on approval of UI GC22 sections a) and b) only.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS developed UI GC22 (new, Apr 2018) with regard to interpretation of the para.11.3.1, 11.3.3 and 11.3.4 of the revised IGC Code (MSC.370 (93)) and submitted the UI to CCC 5 for approval.

Reviewing the UI GC22, CCC 5 agreed with section a) (interpretation of para.11.3.1) and b) (interpretation of para.11.3.3) of the UI only and approved these elements of UI GC22 as a draft MSC Circular.

In this regard Safety Panel agreed to develop UI GC22 (Rev.1) taking into account the comments provided by CCC 5 on section c) of UI GC22.

In process of approval of the draft UI GC22 (Rev.1) GPG agreed in 16238aIGq to withdraw the current UI GC 22 (Apr 2018) and immediately adopt new UI GC 22 with sections a) and b) only, with the same implementation date 1 July 2019.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:
Not applicable.

.7 Dates:

Original Proposal: 03 June 2019 by an IACS GPG Chair
Panel Approval: 07 June 2019 (Ref: PS15020_, PS17010u)
GPG Approval: 14 June 2019 (Ref: 16238aIGv)

- **New (Apr 2018)**

.1 Origin of Change:

☑ Suggestion by IACS Member

.2 Main Reason for Change:

To clarify requirements modified by Resolution MSC.370(93) requirements to deck water spray system on liquefied gas carriers

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Upon adoption of 2014 amendments to IGC Code (MSC Resolution 370(93)) and entering the Resolution in force, IACS members were approached by yards and designers with request to clarify IACS understanding of the revises regulation in view of outlined regulation goal to ensure its uniform application.
Following rounds of discussion in IACS, enquiries were divided among IACS panels for handling.

This UI is product of Safety Panel preliminary work (prepared by PT) and round of discussions in the panel to finalise proposed unified interpretation.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 28 May 2017 by an IACS Member
Panel Approval: 19 December 2017 (Ref: PS15020 Task 4)
GPG Approval: 30 April 2018 (Ref: 6238_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC22:

Annex 1. **TB for New (Apr 2018)**

See separate TB document in Annex 1

Annex 2. **TB for New (June 2019)**

See separate TB document in Annex 2

Annex 3. **TB for Rev.1 (Apr 2020)**

See separate TB document in Annex 3

◄▼►

Technical Background (TB) document for UI GC22 (New Apr 2018)

1. Scope and objectives

The UI provides clarification of paragraphs 11.3 of the IGC Code Chapter 11 as amended in 2014 (MSC.370(93)) in line of definitions used in the paragraphs and modified requirements to deck water spray system coverage and required back-up arrangements.

2. Engineering background for technical basis and rationale

Ref 11.3.1 of the IGC Code

The PT understanding is that the remote life raft is a survival craft and in this case would require fire protection similar to other exposed lifesaving appliances as required by the IGC Code. The fact that the remote survival craft forward is located in the cargo area is a deviation from SOLAS which had to be accepted as only practical solution. This does not deny principle that escape has to be a “safe escape”.

Ref 11.3.3 of the IGC Code

The PT has reviewed the text of 1993 IGC Code and the new revised 2016 IGC Code. In the PT members’ opinion, the text is clearly escalates protective measures required in previous gas code and therefore increase demand for deck spray protection.

Ref 11.3.4 of the IGC Code

The PT members discussed and concluded that the general intention of the Code is to have provisions/possibility to connect fire water from the fire main to the deck spray system and such supply shall have sufficient capacity to meet this goal.
In view of the above, the size and capacity of emergency fire pump shall meet the requirement and supply sufficient quantity of fire water to fire main and deck water spray zones defined by the code.

3. Source / derivation of the proposed IACS Resolution

N/A.

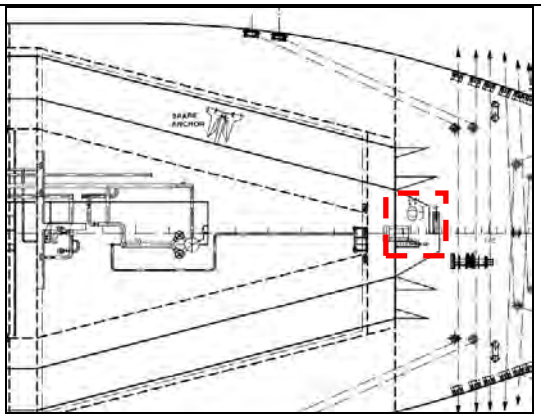
4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

Comments from IACS Members	PT’s Reply
(1) It was requested by one Panel Member to clarify if reference to sub-paragraph 6 is correct; the interpretation states “liferafts located in areas covered by deck water spray” while subparagraph 6 refers to exposed boundaries facing the	(1) Sub-paragraph 6, referred to in the sentence “Remote life rafts located in areas covered by deck water spray as required in sub-paragraph.6 may be considered as adequately protected”, is correct.

cargo area. (2) It was understood by one of Safety Panel Members that a remote life raft located on the upper deck which is protected by the trunk deck is considered to be “not exposed”. PT was requested to clarify if the interpretation intends to describe this arrangement or the intent is that the forward liferaft does not need a dedicated water spray system additional to the spray system protecting the areas.	Typical arrangement for smaller ships is that the remote life raft is located close to forecastle bulkhead. This sentence in interpretation means that deck water spray system protecting the structures required in sub-paragraph.6 may be also utilized for protection of remote life rafts, provided that the spray is adequately arranged. (2) This UI clarifies that 11.3.1-7. is applicable also to the exposed remote life raft facing cargo area and it is suggested that the definition of “not exposed” is excluded from this UI. The PT also thinks that the interpretation of “not exposed” would be a new item and ought to be discussed separately (and might require separate interpretation). Initially, the discussion in the PT was to propose a statement to exclude survival crafts and muster station located below of the cargo area plane from this requirement. However, considering extension of cargo area for purpose of fire-fighting 11.1.4, we feel that such locations will be still exposed to heat radiation in case of fire at extreme ends of the extended cargo area. Excluding such locations from category “facing cargo area” is, strictly speaking, against the paragraph requirement and we need at least SP consent to do such interpretation. Or alternatively a “common practice” statement may be prepared instead.

	 **Illustration: Location of remote liferaft in concern**
(3) An additional question was raised by Safety Panel Member asking whether the areas where embarkation ladders are deployed are to be also protected (the attachment indicates the areas as muster stations which appears to be incorrect in the Safety panel Member view). Since 11.3.1.7 of the Code applies to "muster stations" facing the cargo area, and normally muster and embarkation stations are on the aft part of the ship, the forward part does not contain a muster station. It is proposed that the interpretation clarifies this.	(3) The PT does not agree with proposal to add embarkation stations into the interpretation. Although the "embarkation stations" is not clearly defined by SOLAS, they are implicitly different from muster stations by meaning (ref SOLAS III/B/I/Regulation 11). However, the PT has no objections to include the embarkation stations into proposed recommendation for protection of launching routes if this recommendation and amendment are supported by the SP. With regard to muster and embarkation station locations forward, the IGC Code does not prohibit accommodation to be located in front of cargo area, as well as the muster stations located there.
(4) It was suggested by one Safety Panel Member that an alternative means such as a heat protection cover may be acceptable if deemed to be no less effective than water spray protection.	(4) In principle, the PT is agree with this proposal if supported by majority of SP members. Potential problem will be to define acceptable performance standard for such heat protection cover. Besides, the text of 11.3.1 requires spray protection from both, flammable and/or toxic vapours. *"… On ships carrying flammable and/***or toxic products***, a water-spray system, for cooling, fire prevention* ***and crew protection*** *shall be installed to cover: …"*
(5) One Panel Member did not agree with a specific interpretation in the draft UI for WATER-SPRAY SYSTEM, neither the draft Recommendation for the remote life rafts	(5) The PT considers that 11.3.1-7. is to be applicable also to remote life raft facing cargo area because this IGC Code requirement is clearly applicable to

launching stations by the following reasons:According to the draft UI and the Recommendation, the remotely located survival craft (ref. SOLAS III/Reg.31.1.4) shall be protected / or the exposed launching routes from the life rafts stowage location to the ship side are recommended to be protected by the water-spray system required by 11.3.1 of the IGC Code. Though there is no specific wording or background was provided in the Code, the Panel Member was of the view that the application of the WATER-SPRAY SYSTEM requirement in 11.3.1 of the IGC Code would be desirable for only the survival crafts which located close to accommodation spaces and service spaces and can accommodate the total number of persons on board. According to the Panel Member's understanding, some SOLAS regulations not apply to the remotely located survival crafts which can't not accommodate the total number of persons on board, such as SOALS III/Reg.6.2.2 (radar transponder), Reg.13.1.5 and Reg.13.4.4. Also, the design and installation of awfully long piping for the WATER-SPRAY SYSTEM to protect the remotely located survival crafts would be very difficult, and the maintenance of such piping would be problematic for ship owners. By the above, I would like to propose to drop the specific draft UI relating to the remotely located survival crafts protection by the WATER-SPRAY SYSTEM and the draft Rec. on guidance for applying the requirements of 11.3.1 of the IGC Code for remote life rafts launching stations.	"exposed" liferafts irrespective of SOLAS requirements or location of the craft, the only condition is "exposed". Besides, the remote life raft may be considered "an escape" route for trapped forward crew in case of an incident (fire or toxic cargo escape on deck).

6. Attachments if any

N/A.

Technical Background (TB) document for UI GC22 (new, June 2019)

1. Scope and objectives

Withdrawal of the Unified interpretation UI GC22 (new, Apr 2018) and replacement with UI GC22 (New, June 2019) with the same implementation date (1 July 2019), with a view to align the UI GC22 (New, Apr 2018) with the CCC 5 decision.

2. Engineering background for technical basis and rationale

IACS developed UI GC22 (new, Apr 2018) with regard to interpretation of the para.11.3.1, 11.3.3 and 11.3.4 of the revised IGC Code (MSC.370 (93)) and submitted the UI to CCC 5 at the annex to paper CCC 5/8/6 for approval.

The Sub-Committee concurred, without comment, to the interpretations of paragraphs 11.3.1 and 11.3.3 of the IGC Code on deck water spray systems in sections a) and b) of IACS UI GC22. However, Japan intervened regarding section c) of UI GC22, as reported in paragraph 8.25 of CCC 5/13. Based on this single intervention and the personal comment of the CCC 5 Chair that this element of UI GC22 had a connection to document CCC 5/8/2, the Sub-Committee invited IACS to take the comments that had been made into account; and, if deemed appropriate, refine the draft UI for paragraph 11.3.4 for submission to a future session of the Sub-Committee.

In this regard Safety Panel agreed to develop UI GC22 (Rev.1) taking into account the comments provided by CCC 5 on section c) of UI GC22.

In process of approval of the draft UI GC22 (Rev.1) GPG agreed in 16238aIGq to withdraw the current UI GC 22 (Apr 2018) and immediately adopt new UI GC 22 with sections a) and b) only, with the same implementation date 1 July 2019.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

UI GC22 (New, Apr 2018) was withdrawn and replaced with UI GC22 (New, June 2019) with the same implementation date (1 July 2019), with a view to align the UI GC22 (New, Apr 2018) with CCC 5 decision.

5. Points of discussions or possible discussions

Safety Panel unanimously agreed to withdraw the UI GC22 (New, Apr 2018) and replace it with UI GC22 (New, June 2019) with the same implementation date (1 July 2019), based on the outcome of CCC 5 and decision of GPG in 16238aIGq.

6. Attachments if any

Copy of UI GC22 (new, June 2019).

Technical Background (TB) document for UI GC22 (Rev.1 Apr 2020)

1. Scope and objectives

To align the UI GC22 (New June 2019) with the CCC 6 decision on approval of UI GC22 section c)

2. Engineering background for technical basis and rationale

IACS developed UI GC22 (New Apr 2018) with regard to interpretation of the para.11.3.1, 11.3.3 and 11.3.4 of the revised IGC Code (MSC.370 (93)) and submitted the UI to CCC 5 at the annex to paper CCC 5/8/6 for approval.

The Sub-Committee concurred, without comment, to the interpretations of paragraphs 11.3.1 and 11.3.3 of the IGC Code on deck water spray systems in sections a) and b) of IACS UI GC22. However, Japan intervened regarding section c) of UI GC22, as reported in paragraph 8.25 of CCC 5/13. Based on this single intervention and the personal comment of the CCC 5 Chair that this element of UI GC22 had a connection to document CCC 5/8/2, the Sub-Committee invited IACS to take the comments that had been made into account; and, if deemed appropriate, refine the draft UI for paragraph 11.3.4 for submission to a future session of the Sub-Committee.

In this regard Safety Panel agreed to develop UI GC22 (Rev.1) taking into account the comments provided by CCC 5 on section c) of UI GC22.

In process of approval of the draft UI GC22 (Rev.1) GPG agreed in 16238aIGq to withdraw the current UI GC 22 (Apr 2018) and immediately adopt new UI GC 22 with sections a) and b) only, with the same implementation date 1 July 2019.

Subsequently Draft section c) of UI GC 22 was submitted by IACS to CCC 6 and agreed by the CCC Sub-Committee.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

UI GC22 (New, June 2019) is aligned with the CCC 6 decision on approval of UI GC22 section c).

5. Points of discussions or possible discussions

Safety Panel unanimously agreed to align UI GC22 (New, June 2019) with the CCC 6 decision on approval of UI GC22 section c).

6. Attachments if any

Copy of UI GC22 (Rev.1, Nov 2019).

UI GC23 “Cargo tank structure heating arrangement power supply”

Summary

This UI provides a unified interpretation of the requirement in paragraph 4.19.1.6 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	3 December 2019	-
New (July 2018)	3 July 2018	1 July 2019

- **Corr.1 (Dec 2019)**

.1 Origin of Change:

☑ Request by non-IACS entity

.2 Main Reason for Change:

The UI GC23 (New 2018) was submitted to CCC5 by paper CCC5/8/8 and finally approved by MSC101, with some editorial modifications, and included in document MSC.1/Circ.1606.
The Machinery Panel has developed the UI GC23 (Corr.1, 2019) in order to accommodate the editorial modifications in MSC.1/Circ. 1606.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI GC23 (Corr.1, 2019) has been discussed and agreed by correspondence

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 4 October 2019 (Ref. PM19934_IMb)
Panel Approval: 29 October 2019 (Ref: PM19934_IMc)
GPG Approval: 3 December 2019 (Ref: 16238aIGy)

- **New (July 2018)**

.1 Origin of Change:

☑ Request by non-IACS entity (shipbuilders)

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Initial request from Safety panel on 4 august 2016 (ref PS15020_PSa)
UI agreed in the 27th Machinery Panel meeting (Feb/March 2018)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 04 August 2016 Made by Safety Panel member
Panel Approval: 12 June 2018 (Ref: PM15304b)
GPG Approval: 03 July 2018 (Ref: 16238aIGf)

Part B. Technical Background

List of Technical Background (TB) documents for UI

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document for Corr.1 (Dec 2019)

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Technical Background (TB) document for UI GC23 (New July 2018)

1 Scope and objectives

Provide an interpretation of IGC Regulation 4.19.1.6.

2 Engineering background for technical basis and rationale

The IGC code 4.19.1.6 specifies the following, with regard to heating the structural material as specified in 4.19.1.5, for cargo containment systems as:

"4.19.1.6 The means of heating referred to in 4.19.1.5 shall comply with the following requirements:

.1 the heating system shall be arranged so that, in the event of failure in any part of the system, standby heating can be maintained equal to not less than 100% of the theoretical heat requirement;

.2 the heating system shall be considered as an essential auxiliary. All electrical components of at least one of the systems provided in accordance with 4.19.1.5.1 shall be supplied from the emergency source of electrical power; and

.3 the design and construction of the heating system shall be included in the approval of the containment system by the Administration or recognized organization acting on its behalf."

The UI has considered two scenarios when implementing this regulation:

a. A blackout of the ship's mains - As the standby electric supply for the heating medium circulation and control units etc are powered by the ESB, it is envisaged that residual steam available for the glycol heat exchangers will maintain the cofferdam heating via the coils until the main generators are back in service.

b. Failure of the single boiler – The mains powered 100% electric heat exchanger will supply the heat input to the glycol circulating pump which will provide the cofferdam heating via the same coils.

When applying 4.19.1.6.1 it is not considered to be practicable to load the emergency generator with an electrical heating system (estimated to be in the order of hundreds of kW), instead a dedicated circuit powered from the main switchboard may be acceptable depending on a risk assessment that will determine whether the electrical supply is capable of being quickly reenergised in the case of loss of main power, e.g. shedding all load except the electrical heating system. Pumps and other electrical components will still be subject to the emergency generator requirement to allow the heated fluid to be circulated while the main generator is being restarted.

3 Source / derivation of the proposed IACS UI

The text of the UI is directly derived from the background given in 2 above.

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

The text of the UI has been unanimously agreed upon by the Machinery Panel and no points of discussions have been raised.

6 Attachments if any

N/A

UI GC24 “Fire Test for Emergency Shutdown Valves”

Summary

This UI provides a unified interpretation of the requirements for emergency shutdown valves as mentioned in paragraph 5.13.1.1.4 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2019)	16 February 2019	1 January 2020
New (July 2018)	03 July 2018	1 July 2019

- **Rev.1 (Feb 2019)**

.1 Origin of Change:

Suggestion by IACS member

.2 Main Reason for Change:

To align the new UI GC24 (July 2018) to the text agreed by CCC5 (CCC 5/13, Para 8.36).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 08 January 2019 (Recommendation 5.13 of the CCC5 IACS Observer’s Report)
Panel Approval: 22 January 2019 (Ref: PM19904_IMb)
GPG Approval: 16 February 2019 (Ref: 18098jIGd)

- **New (July 2018)**

.1 Origin of Change:

Suggestion by IACS member

.2 Main Reason for Change:

Issues arising from the revised IGC Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

UI agreed through correspondence.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 04 August 2016 (Made by Safety Panel member)
Panel Approval: 12 June 2018 (Ref: PM15304b)
GPG Approval: 03 July 2018 (Ref: 16238aIGf)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC24:

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

Annex 2. **TB for Rev.1 (January 2019)**

See separate TB document in Annex 2

Technical Background (TB) document for UI GC24 (New July 2018)

1 Scope and objectives

The IGC Code, which was amended by resolution MSC.370(93), provides revised international standards for the design and construction standards of ships carrying liquefied gases in bulk. The Machinery Panel has discussed how to implement the requirements of the revised IGC Code and has found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Subject of this UI is the interpretation of Paragraph 5.13.1.1.4 of the IGC Code which states:

5.13.1.1 Valves

Each type of valve intended to be used at a working temperature below -55oC shall be subject to the following type tests:

> *.4 for emergency shutdown valves, with materials having melting temperatures lower than 925°C, the type testing shall include a fire test to a standard acceptable to the Administration.*

2 Engineering background for technical basis and rationale

For emergency shutdown valves as mentioned in paragraph 5.13.1.1.4 of the IGC Code, it is concluded necessary to take into account the case where valves consist of materials having melting temperatures lower than 925°C but the materials are used only in the parts whose failure does not cause deterioration of shell or seat tightness intrinsically, for example, rubber handle covers. Thus, IACS clarified, from a technical viewpoint, such valves need not be required to undergo a fire test.

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

New Resolution.

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

Technical Background (TB) document for UI GC24 (Rev. 1 Feb 2019)

1 Scope and objectives

To align the new UI GC24 (July 2018) to the text agreed by CCC5 (CCC 5/13, Para 8.36).

2 Engineering background for technical basis and rationale

The text of the UI proposed by IACS to CCC5 (document CCC 5/8/9) was the following:

"Emergency shutdown valves, with materials having melting temperatures lower than 925°C does not include emergency shutdown valves which use materials having melting temperatures lower than 925°C in components such as rubber handle covers where failure would not cause deterioration of shell or seat tightness intrinsically."

But CCC5 agreed to refine this text to clarify better the intention of the UI as follow:

"Emergency shutdown valves, with materials having melting temperatures lower than 925°C" does not include an emergency shutdown valve in which components made of materials having melting temperatures lower than 925°C do not contribute to the shell or seat tightness of the valve.

The text of the UI was therefore aligned to those agreed by CCC5.

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

The text of the new UI GC24 (July 2018) was aligned to the text approved by CCC5.

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI GC25 "Cargo piping insulation"

Summary

This UI provides a unified interpretation of the phrase 'a thermal insulation system as required to minimize heat leak into the cargo during transfer operations' and the phrase 'cargo piping systems shall be provided with a thermal insulation system as required ... to protect personnel from direct contact with cold surfaces' in paragraph 5.12.3.1 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	28 December 2019	-
Rev.1 (May 2019)	13 May 2019	1 July 2020
New (July 2018 Withdrawn)	13 May 2019	-
New (July 2018)	4 July 2018	1 July 2019

- **Corr.1 (Dec 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The UI GC25 (Rev.1, May 2019) was submitted to CCC6 by the IACS paper CCC6/8/1 and agreed by CCC6 with only some editorial modifications (as included in document CCC6/14 Annex 9); as consequence the UI GC25 (Rev.1, May 2019) has been corrected in order to reflect the editorial modifications included in document CCC6/14 Annex 9.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and / or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI GC25 (Corr.1, 2019) was developed and agreed by correspondence within the panel.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 25 October 2019 (Ref. PM19941_IMa)
Panel Approval: 20 November 2019 (Ref. PM19941_IMb)
GPG Approval: 28 December 2019 (Ref: 19108ilGe)

- **Rev.1 (May 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member (Recommendation 5.11 of the CCC 5 IACS Observer's Report)

.2 Main Reason for Change:

To review the UI GC25 (new, July 2018) following the comments raised by CCC5 (Reference is made to CCC5/13 paragraphs 8.29 to 8.31) on the UI submitted by paper CCC 5/8/7.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and / or participating in IACS Working Group:

None

.4 History of Decisions Made:

The revised UI was developed and agreed by correspondence within the panel.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 8 January 2019 (Ref. 18098jIGb)
Panel Approval: 29th Panel meeting (26th to 28th March 2019)
GPG Approval: 13 May 2019 (Ref: 18098jIGj)

- **New (July 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and / or participating in IACS Working Group:

None

.4 History of Decisions Made:

Need for an interpretation related to cargo piping insulation identified following industry feedback to IACS member, initially raised under task PM5901 and transferred to new task PM15304a.

UI developed by correspondence within the panel.

UI agreed with PM15304aIMn (December 2017).

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 3 March 2016
Panel Approval: 14 June 2018 (Ref: PM15304a)
GPG Approval: 4 July 2018 (Ref: 17191_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC25:

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

Annex 2. **TB for Rev.1 (May 2019)**

See separate TB document in Annex 2

Note: There is no separate Technical Background (TB) document available for Corr.1 (Dec 2019)

◄▲►

Technical Background (TB) document for UI GC25 (New July 2018)

1. Scope and objectives

Clarification is required to provide more specific guidance for what insulation is to be installed to meet the requirement stated in IGC Code 5.12.3.1. Task PM15304a was initiated to develop an interpretation for this paragraph alongside interpretations for other elements of the IGC Code identified as requiring clarification. During correspondence it was agreed that the other issues did not require interpretation so PM15304a was restricted to the development of an interpretation for IGC 5.12.3.1.

2. Engineering background for technical basis and rationale

The IGC code requirement contains two provisions: thermal insulation is required to "minimize heat leak into the cargo during transfer" and "to protect personnel". To minimise heat leakage insulation would theoretically need to be infinitely thick, however, to protect personnel the insulation would only need a sufficient thickness for the surface of the insulation to reach the minimum ambient temperature stated in the Code.

The Panel considers it important to develop an interpretation for both insulation requirements to ensure that a satisfactory level of safety is achieved.

In parallel with the machinery panel, the Safety Panel initiated work on developing interpretations for various paragraphs of the IGC Code under task PS15020, this included paragraph 5.12.3.1. These were circulated under task PM15304b and provided a starting point for discussions under task PM15304a.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the IGC Code and input from Safety Panel members under task PS15020.

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

The panel agreed that the thermal insulation of the cargo piping to minimise heat ingress is primarily a design issue rather than a safety issue, insulation efficiency is more relevant for vessels operating with a reliquefaction plant and heat ingress through pipework could be accounted for and verified at the design stage. It was therefore agreed that this part of the interpretation refers to the overall heat calculation undertaken for the tank containment system and associated pressure/temperature control system. Designers are therefore responsible for showing that heat ingress through piping is duly considered at the design stage.

The panel agreed that the purpose of the insulation to protect personnel was to ensure that the accessible surfaces of the piping system were prevented from being cold enough that contact with them could result in pain, followed by numbness and

possibly in severe cases frostbite. Cold surfaces were defined as being those with a temperature colder than minus 10 degrees, and after discussion it was agreed that this should be included in the interpretation (a member society supported a less explicit interpretation). It was further agreed that the cargo piping systems design temperature could be used as criteria for determining whether surfaces of cargo piping systems are regarded as “cold surfaces” or not. The panel discussed design features (e.g. screening) that could restrict access and therefore reduce the scope of the IGC Code requirement. This resulted in the clarification of which aspects of the piping system could be considered as “Surfaces of cargo piping systems with which personnel is likely to contact under normal conditions”; in this regard Bellows were evaluated to be excluded from the scope of application of the IGC Code requirement for the reason that are expandable systems and insulating them may introduce cavities or spaces where sea water/salt may accumulate, thereby promoting pitting corrosion in particular in stainless steel used for cargo piping.

6. Attachments if any

None

Technical Background (TB) document for UI GC25 (Rev.1 May 2019)

1. Scope and objectives

The scope is the revision of the UI GC25 (new, July 2018) following the comments raised by CCC5 as follow:

“8.30 Following discussion, the Sub-Committee noted concerns that the proposed draft UIs could allow elements of the system, such as bellows, to be uninsulated and unprotected from contact in an area where personnel were likely to contact them under normal conditions. In this context, the Sub-Committee noted that design features, such as physical screening measures, should be used to prevent personnel directly contacting the exposed cold surfaces.

8.31 The Sub-Committee also noted a proposal to include, in the draft interpretation, a reference to surfaces of cargo piping systems where personnel seldom approach as an additional point to the section on "Surfaces of cargo piping systems with which personnel is likely to contact under normal conditions". In this context, the Sub-Committee agreed that the proposed addition was unnecessary as this was not a system "which personnel is likely to contact under normal conditions", i.e. as referred to in the phrase in the chapeau of the provision.”

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the IGC Code and input from Safety Panel members under task PS15020.

4. Summary of Changes intended for the revised Resolution:

The Machinery Panel decided to:
1) delete the wording “bellows”
2) simplify the second sentence of the interpretation by deleting the wording "Surfaces of cargo piping systems with which personnel is likely to contact under normal conditions" and rewording the sentence.
3) Introduce a note in the UI with the purpose to clarify that bellows protected with a thermal insulation, in particular those in stainless steel used for cargo piping, should be regularly inspected to detect possible signs of corrosion
4) Rewording the first sentence of the interpretation to improve the clarity.

5. Points of discussions or possible discussions

Regarding the bellows, a Member Society proposed to include in the UI the following clarification:

“Note: Bellows protected with a thermal insulation, in particular those in stainless steel used for cargo piping, should be regularly inspected to detect possible signs of corrosion.”

The proposal was accepted by the qualified majority. However, in recognizing the

view that the Note is not an interpretation to IGC Code 5.12.3.1 and UR Z series (e.g. UR Z16) would be more suitable to address such inspection requirements, it was decided to forward the concerned issue to Survey Panel for consideration and appropriate action. As a consequence, the Note was removed from UI GC25 (Rev. 1).

6. Attachments if any

None

UI GC26 "Type testing requirements for valves"

Summary:

This UI provides a unified interpretation of the wording "shall be certified to a recognized standard" in Chapter 5.13.1.1.2 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	28 December 2019	-
New (Oct 2018)	16 October 2018	1 January 2020

- **Corr.1 (Dec 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The UI GC26 (New, Oct 2018) was submitted to CCC6 by the IACS paper CCC6/8/1 and agreed by CCC6 with only some editorial modifications (as included in document CCC6/14 Annex 9); as consequence the UI GC26 (New, Oct 2018) has been corrected in order to reflect the editorial modifications included in document CCC6/14 Annex 9.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and / or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI GC26 (Corr.1, 2019) was developed and agreed by correspondence within the panel.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 25 October 2019 (Ref. PM19941_IMa)
Panel Approval: 20 November 2019 (Ref. PM19941_IMb)
GPG Approval: 28 December 2019 (Ref: 19108ilGe)

- **New (Oct 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

UI developed and agreed at 28th Machinery Panel meeting (September 2018).

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: Feb/ March 2018
Panel Approval: September 2018 (28th Machinery Panel meeting)
GPG Approval: 16 October 2018 (Ref. 15042_IGz)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC26:

Annex 1. **TB for New (Oct 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document available for Corr.1 (Dec 2019)

◄▼►

Technical Background (TB) document for UI GC26 (New Oct 2018)

1. Scope and objectives

To clarify that certification requirements for valves should be differentiated according to the intended application.

2. Engineering background for technical basis and rationale

The Panel considered that the wording "shall be certified to a recognized standard" in Chapter 5.13.1.1.2 of the IGC Code is unclear as to who should certify which type of valve. Therefore, members deemed that only those valves that are considered essential for the safety of the system, i.e. pressure relief valves, should be certified by the Administration or Recognized Organization acting on its behalf while other types of valves are to be certified by the manufacturer according to recognized standards.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

There was a suggestion by one member to waive certification requirements for valves not considered essential for the safety of the system, however, upon further consideration, the UI stating that those valves are to be certified by the manufacturer according to recognized standards was unanimously agreed.

6. Attachments if any

None

UI GC27 "Level indicators for cargo tanks"

Summary

This is a new document, and gives an interpretation of 13.2.2 of the IGC Code (MSC 370(93))

Paragraph 13.2.2 of IGC Code (MSC 370(93)): 'Where only one liquid level gauge is fitted, it shall be arranged so that it can be maintained in an operational condition without the need to empty or gas-free the tank'. is interpreted that "can be maintained' means that any part of the level gauge other than passive parts can be overhauled while the cargo tank is in service.

Where passive parts are those parts assumed not subject to failures under normal service conditions.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	28 December 2019	-
New (Dec 2018)	21 December 2018	1 January 2020

- **Corr.1 (Dec 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The UI GC27 (New, Dec 2018) was submitted to CCC6 by the IACS paper CCC6/8/1 and agreed by CCC6 with only some editorial modifications (as included in document CCC6/14 Annex 9); as consequence the UI GC27 (New, Dec 2018) has been corrected in order to reflect the editorial modifications included in document CCC6/14 Annex 9.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI GC27 (Corr.1, 2019) was developed and agreed by correspondence within the panel.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 25 October 2019 (Ref. PM19941_IMa)
Panel Approval: 20 November 2019 (Ref. PM19941_IMb)
GPG Approval: 28 December 2019 (Ref: 19108ilGe)

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The New GC27 (Dec 2018) (corresponding to the UI GC2) is applicable to ships for which the new IGC Code (Res. MSC.370(93)) is applicable.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901- Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93)) and, where necessary, propose revision, deletion or amendment of the application statements.

.5 Other Resolutions Changes

- UI GC9
- UI SC6
- REC.85
- REC.114

.6 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 29 November 2018 (Ref: PM5901fIMn)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC27:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document available for Corr.1 (Dec 2019)

◄▲►

Technical Background (TB) document for UI GC27 (New Dec 2018)

1. Scope and objectives

The UI provides clarification of Chapter 13 paragraph 13.2.2 for more specific guidance for changes carried out in the IGC Code as per (MSC 370(93)) regarding the arrangements of the liquid level gauge fitted in the cargo tanks.

2. Engineering background for technical basis and rationale

The second sentence of paragraph 13.2.2 of 2016 IGC Code (MSC.370 (93)) states that:

Where only one liquid level gauge is fitted, it shall be arranged so that it can be maintained in an operational condition without the need to empty or gas-free the tank

In order to assess whether or not only one level gauge is acceptable in relation to the aforesaid sentence, **'can be maintained'** means that any part of the level gauge other than passive parts can be overhauled while the cargo tank is in service.

Note: passive parts are those parts assumed not subject to failures under normal service conditions.

3. Source / derivation of the proposed IACS Resolution

UI GC2 (1977) “Interpretation of the second sentence of paragraph 13.2.1”

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC28 “Guidance for sizing pressure relief systems for interbarrier spaces”

Summary

In Corr.1, the implementation date has been changed from 1 January 2020 to 1 January 2021.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Feb 2021)	22 February 2021	-
Rev.1 (Dec 2019)	28 December 2019	1 January 2021 (Corrected by Corr.1)
New (Dec 2018 Withdrawn)	28 December 2019	-
New (Dec 2018)	21 December 2018	1 January 2020

- **Rev.1 Corr.1 (Feb 2021)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The IGC Code 2016 published by the IMO refers to IACS UI GC9 as pointed by a Member, the Member found out that the item 1.5 of said UI (which is the same interpretation as item 1.5 of Original version of IACS UI GC28) has already been applied to some ships constructed on or after 1 January 2020. The qualified majority of Machinery Panel agreed on changing the implementation date as a transitional measure to allow shipyards and ship designers to change their design in a practical manner.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3 List of non-IACS Member Classification Societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	2 November 2020 (Ref: PM20304bIMe)
Panel Approval:	27 November 2020 (Ref: PM20304bIMg)
GPG Approval:	22 February 2021 (Ref: 21002_IGc)

- **Rev.1 (Dec 2019)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The UI GC28 (New, Dec 2018) was submitted to CCC6 by the IACS paper CCC6/8/1 and agreed by CCC6 with the exception for paragraph 1.5 of the interpretation which was rejected by CCC6 (as included in document CCC6/14 Annex 9); as consequence the UI GC28 (New, Dec 2018) has been Withdrawn prior to its implementation date and revised in order to delete paragraph 1.5 of the interpretation thus reflecting the text agreed by CCC6 as included in document CCC6/14 Annex 9.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 25 October 2019 (Ref. PM19941_IMa)
Panel Approval: 20 November 2019 (Ref. PM19941_IMb)
GPG Approval: 28 December 2019 (Ref: 19108iLGe)

- **New (Dec 2018)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The New GC28 (Dec 2018) (corresponding to the UI GC9) is applicable to ships for which the new IGC Code (Res. MSC.370(93)) is applicable.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93)) and where necessary propose revision, deletion or amendment of the application statements.

5 Other Resolutions Changes:

- UI GC2
- UI SC6
- REC.85
- REC.114

6 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 29 November 2018 (Ref: PM5901fIMn)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC 28:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Dec 2019)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.1 Corr.1 (Feb 2021)**

See separate TB document in Annex 3.

Technical Background (TB) document for UI GC28 (New Dec 2018)

1. Scope and objectives

The UI provides clarification of Chapter 8 second sentence of paragraph 8.1 of IGC Code as per (MSC 370(93)) for more specific guidance regarding the sizing of the pressure relieving devices for interbarrier spaces of various tanks.

2. Engineering background for technical basis and rationale

The second sentence of paragraph 8.1 of 2016 IGC Code (MSC.370 (93)) states that:

Hold spaces and interbarrier spaces, which may be subject to pressures beyond their design capabilities, shall also be provided with a suitable pressure relief system.

In order to assess whether "suitable pressure relief system" is provided to interbarrier spaces for various type of cargo tanks, the following is to be taken into account:

- leakage rate as provided under section 4.7.2 taking due account for the liquid evaporation,

- pumping capacity and

- other relevant factors.

Also, the interbarrier space pressure relief is an emergency requirement for protection of the hull structure from being overstressed in case of primary barrier failure.

3. Source / derivation of the proposed IACS Resolution

UI GC9 (1988) Guidance for sizing pressure relief systems for interbarrier spaces

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI GC28 (Rev.1 Dec 2019)

1. Scope and objectives

To revise the UI GC28 (New, Dec 2018) in order to delete paragraph 1.5 of the interpretation thus reflecting the text agreed by CCC6 as included in document CCC6/14 Annex 9.

2. Engineering background for technical basis and rationale

Paragraph 1.5 of the interpretation as proposed in the UI GC28 (New, Dec 2018) reads as follow:

"1.5 Interbarrier space pressure relief devices in the scope of this interpretation are emergency devices for protecting the hull structure from being unduly overstressed in case of a pressure rise in the interbarrier space due to primary barrier failure. Therefore such devices need not comply with the requirements of 8.2.10, 8.2.11.1 and 8.2.11.2 of the IGC-Code."

During the CCC6 meeting, the Sub-Committee noted the concerns expressed on paragraph 1.5 going in the direction that it was not appropriate for the UI to disapply all the mentioned provisions of the Code; as consequence CCC6 agreed to the UI proposed by IACS with the exception for paragraph 1.5 which was rejected (as per text agreed by CCC6 as included in document CCC6/14 Annex 9).

3. Source / derivation of the proposed IACS Resolution

/

4. Summary of Changes intended for the revised Resolution:

1) Paragraph 1.5 proposed in the UI GC28 (New, Dec 2018) has been deleted
2) Editorial modification: in paragraph 1.1 of the interpretation proposed in the UI GC28 (New, Dec 2018) the wording "developed" has been deleted.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI GC28 (Rev.1 Corr.1 Feb 2021)

1. Scope and objectives

UI GC28(Rev.1) with the implementation date of 1 January 2020 (very earlier than the date of publication of the relevant IMO MSC Circular approved at the 102nd session of MSC held in November 2020) does not take into account the need of a transitional measure to allow shipyards and ship designers to change their design, in a practical manner. Corr.1 has been developed to set such a transitional measure.

2. Engineering background for technical basis and rationale

A) Implementation date change

The implementation statement has been changed as follows:

> *Rev.1 of this Unified Interpretation is to be uniformly implemented by IACS Societies on ships constructed on or after 1 January ~~2020~~2021.*

B) Format for references to IMO instruments (where the number of amendments is small)

Format:
regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

Before approval of Corr.1, the following was discussed for clarification purpose:

The IGC Code in 8.2.2 requiring that “Interbarrier spaces shall be provided with pressure relief devices” has a Footnote 8 referring to IACS UI GC9 1988, which actually is the same to UI GC28 (New (Dec 2018)) on the amended Code.

Following the publication of UI GC28 Rev.1, an inquiry was raised by a member society on the deleted paragraph 1.5, relating to pressure relief devices of interbarrier spaces (8.2.2 of the IGC Code). The way the initiating member society reads the code 8.2.10 and 8.2.11.1 would be applicable to the cargo tank PRVs only, whereas 8.2.11.2 would apply to the interbarrier space as well (incl. hold space in case of type A tanks). In this regard the suggestion to the Panel was that the previous para. 1.5 could remain reading “*Interbarrier space pressure relief devices in the scope of this interpretation are emergency devices for protecting the hull structure from being unduly overstressed in case of a pressure rise in the interbarrier space due to primary barrier failure. Therefore, such devices need not*

comply with the requirements of 8.2.10, and 8.2.11.1 ~~and 8.2.11.2~~ of the IGC-Code". Although a qualified majority on the above understanding has been reached, there was no unanimous support to the above proposal. A member society's view is that if the proposed text was included in the UI it would create confusion in reference to membrane tanks interbarrier PRV and Type B tanks annular space. Another member society's view is that they do not read para 8.2.10 and 8.2.11.1 the same way as the member initiating the inquiry, because apparently 8.2.12 extends the application of 8.2.10, 8.2.11.1 and 8.2.11.2 to all vents, and consider that in order to make the requirements clear, an amendment to the Code would be necessary.

The Panel decided that reinstatement of paragraph 1.5 would not be a preferred way forward as objections to the paragraph were already raised at IMO CCC6 Subcommittee. In this regard and as it has been also noted that IGC Code para. 8.1 is included in the proposal by Marshall Islands, IACS and SIGTTO to IMO in their paper MSC 102/21/1, suggesting a focused review of the IGC Code, it has been agreed that the above is recorded in this section of the TB for future reference.

6. Attachments if any

None

UI GC29 "Integrated systems"

Summary

This UI provides a unified interpretation of the wording "integrated system" in paragraph 13.9.3 of the IGC Code (Res. MSC370(93)).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	28 December 2019	-
New (May 2019)	8 May 2019	1 July 2020

- **Corr.1 (Dec 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The UI GC29 (New, May 2019) was submitted to CCC6 by the IACS paper CCC6/8/1 and agreed by CCC6 with only some editorial modifications (as included in document CCC6/14 Annex 9); as consequence the UI GC29 (New, May 2019) has been corrected in order to reflect the editorial modifications included in document CCC6/14 Annex 9.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and / or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI GC29 (Corr.1, 2019) was developed and agreed by correspondence within the panel.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 25 October 2019 (Ref. PM19941_IMa)
Panel Approval: 20 November 2019 (Ref. PM19941_IMb)
GPG Approval: 28 December 2019 (Ref: 19108ilGe)

New (May 2019)

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To make “integrated system” mentioned in paragraph 13.9.3 of IGC Code clear.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Form A agreed by Panel and submitted to GPG by 18155_PMa dated 09/10/2018.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: March 2018 Made by a Member
Panel Approval: 16 April 2019 (Ref: PM18601_IMh)
GPG Approval: 8 May 2019 (Ref: 18155_IGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI GC29:

Annex 1. **TB for New (May 2019)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document available for Corr.1 (Dec 2019)

◄▲►

Technical Background (TB) document for UI GC29 (New May 2019)

1. Scope and objectives

To make “integrated system” mentioned in paragraph 13.9.3 of IGC Code clear.

2. Engineering background for technical basis and rationale

This task was triggered by a member’s suggestion regarding IGC code.

In accordance with 13.9.3 of IGC Code, risk assessment is to be conducted for “integrated system”. However, since cargo handling system of liquefied gas carriers consists of a lot of systems and the related systems are different by type of liquefied gas carrier, it is not clear which systems are included in the “integrated system” and for which systems risk assessment is required.

Accordingly, in order to make the “integrated systems” being in the scope of this requirement clear, the unified interpretation was developed in accordance with MSC/Circ.891 which is guidelines for the on-board use and application of computers.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

None

5. Points of discussions or possible discussion

Cyber Systems Panel reviewed the draft UI and suggested that the purpose of centralized access achieved by integrated systems should be limited to “monitoring/alarm information and/or command/control”. In addition, Cyber Systems Panel proposed a few editorial modifications.

The Machinery Panel finally agreed that the centralized access also applies to the safety information, in addition to the monitoring/alarm information.

6. Attachments if any

None

UI GC30 “Emergency fire pump”

Summary

There exists confusion about determining the capacity of the emergency fire pump when water spray, hydrants and foam system are fitted. The UI clarifies the requirements.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Apr 2020)	15 April 2020	1 January 2021

- **New (Apr 2020)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

With the introduction of the revised IGC Code (MSC.370(93)) various issues have been identified as being unclear. One of these is the calculation for the capacity of the emergency fire pump.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

On October 2017, the matter was raised in the Safety Panel by a member.

After discussion, IACS submitted CCC 5/8/2 on May 2018 to seek clarification of the CCC Sub-Committee on the capacity of em’cy fire pump under the IGC Code, as adopted by MSC Res. 370(93).

CCC 5 convened on September 2018, provided the clarification on the em’cy fire pump capacity, andinvited IACS to develop a unified interpretation and submit it to CCC.

IACS Safety Panel discussed and prepared a pertinent draft unified interpretation from February 2019 to May 2019. Thereafter, IACS submitted CCC 6/8/2, the paper of which contained a pertinent draft UI in its Annex 1, to CCC 6 on June 2019.

On September 2019, CCC 6 agreed with the draft UI with a view toward submission to MSC 102 for approval. A corresponding IACS UI was adopted.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

The capacity of the emergency fire pump should be independent of how it is operated (remotely or by onboard personnel), so there should be no impact on MASS.

7 Dates:

Original Proposal:	10 March 2020 (Made by: IACS member)
Panel Approval:	10 March 2020 (Ref: 19108iPSa)
GPG Approval:	15 April 2020 (Ref: 19108iIGi)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Apr 2020)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC30 (New Apr 2020)

1. Scope and objectives

The requirement in paragraph 11.3.4 of the IGC Code (resolution MSC.370(93)) for the emergency fire pump to provide sufficient capacity to pump water for the water spray system protecting the boundaries of superstructures, deckhouses, lifeboats, liferafts and muster stations facing the cargo area when the main fire pumps are disabled is not clear about whether this capacity has to be in addition to that needed to cover the foam extinguishing system in the engine room (when fitted).

The UI is intended to clearly describe the maximum capacity calculation for the emergency fire pump.

2. Engineering background for technical basis and rationale

It is possible for a ship to have three heavy demands on the fire extinguishing system:

1. The water spray system provided to protect the boundaries of superstructures, deckhouses, lifeboats, liferafts and muster stations facing the cargo area; and
2. The foam extinguishing system protecting the engine room; and
3. The 2 fire hydrants provided to ensure that water can reach any part of the deck in the cargo area and those portions of the cargo containment system and tank covers that are above the deck.

The requirements in SOLAS and the FSS Code, state that where a fire extinguishing system, such as a main sea water fire pump, fixed CO2 system etc., is provided for extinguishing more than one space on board a ship; the maximum capacity of such a fire extinguishing system need not be more than the largest capacity required for any one space so protected. This principle is based on the assumption that fire incidents will not occur simultaneously in more than one space that is protected by the fire extinguishing system.

Therefore, it is considered that the emergency fire pump, where a fire in one compartment could disable both main fire pumps, should be of sufficient capacity to satisfy the most demanding of either

1. The foam system and the 2 fire hydrants; or
2. The water spray system and the 2 fire hydrants.

3. Source / derivation of the proposed IACS Resolution

SOLAS, the FSS Code and the IGC Code all refer.

4. Summary of Changes intended for the revised Resolution:

Original document so all new text.

5. Points of discussions or possible discussions

The issue of whether the capacity should meet only the demand of the greater of (foam + hydrants) or (water spray + hydrants) or the demand from foam + water spray + hydrants was discussed. The former assumes that one incident has to be met at a time. The latter assumes that the main fire pumps are inoperable due to a fire in

the engine room which will require extinguishing with the foam system at the same time as the cargo area and superstructures etc. require protection.

There was also discussion as to whether a unified interpretation or a change to the regulation was needed.

The issue of whether a pump which is used solely for the water spray system and fitted in “one compartment” (usually the ER) is regarded as “one of the fire pumps” mentioned in paragraph 11.3.4 of the IGC Code (resolution MSC.370(93)) also generated some discussion. This was considered to be addressing a matter which was not the fire pump (main or emergency) and would require separate consideration.

The draft UI was agreed with minor editorial changes by CCC 6.

6. Attachments if any

None

UI GC31 "Discharge test of dry chemical powder fire-extinguishing systems"

Summary

The testing requirements for the Dry chemical powder fire-extinguishing systems (2014 IGC Code 11.4.8) states a "discharge of sufficient amounts of dry chemical powder to verify that the system is in proper working order". This term "sufficient amounts" was considered to be ambiguous and this UI aims to clarify the requirements of onboard discharge testing of dry chemical powder fire-extinguishing systems, as outlined under paragraph 11.4.8 of IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2020)	19 June 2020	1 January 2021

- **New (June 2020)**

1 Origin of Change:

☑ Other *(Specify: IACS Member Raised Query)*

2 Main Reason for Change:

The testing requirements for the Dry chemical powder fire-extinguishing systems (2014 IGC Code 11.4.8) states a "discharge of sufficient amounts of dry chemical powder to verify that the system is in proper working order". This UI aims to clarify the detail of onboard discharge testing of dry chemical powder required under paragraph 11.4.8 of IGC Code.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Matter was raised by a Panel member in June 2017.

After some discussion it was agreed to submit a draft UI to SSE 5 (SSE 5/12/4). SSE 5 did not support the draft UI.

Safety Panel further discussed the issue considering the comments raised at SSE 5 and prepared a new submission to SSE 6 (SSE 6/12/7).

SSE 6 agreed with the updated draft UI, and MSC 101 approved it as a part of MSC.1/Circ.1617.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	June 2017	Made by: (Specify: IACS member)
Panel Approval:	28 May 2020	(Ref: PS17010kISy)
GPG Approval:	19 June 2020	(Ref: 17175dGh)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (June 2020)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC31 (New June 2020)

1. Scope and objectives

To make the detail of onboard discharge testing of dry chemical powder required paragraph 11.4.8 of IGC Code clear.

2. Engineering background for technical basis and rationale

This task was triggered by a member's suggestion regarding IGC code.

In regulation 11.4.8 of IGC Code, it is required that the pipes, valves, fittings and assembled systems to be subjected to a tightness test and functional testing of the remote and local release stations. In its initial test, discharge of sufficient amounts of dry chemical powder shall be included to verify whether the system is working in proper order.

However, the understanding on this requirement have been varied among owner, shipyard and class and to resolve that situation, IACS have continuously submitted papers to the 5th and 6th Session of IMO Sub-committee on Ship Systems and Equipment seeking the clarification on following points;

- Necessity to discharge the powder from all the monitors,

- Amount of powder that needed to be discharged,

- Concerns on the negative affect to the marine environment caused by discharge of powder toward the sea.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

In the submitted papers to IMO, IACS introduced the following view on testing arrangement;

Subject that it is verified that dry chemical powder is discharged properly from at least one monitor and one hand hose line arranged in the most onerous location, the discharge from one monitor and one hand hose line, may be accepted instead of discharging dry chemical powder from all the monitors and hose line(s) on board.

Through the discussion, SIGTTO and some flag member states opposed this view and SIGTTO's view that powder should be discharged from all the monitors and hand hose lines at the testing has been agreed at SSE.

With regard to the sufficient amount of powder to be discharged, it is agreed that necessarily all the amount of filled powder does not have to be discharged.

In conjunction with the term ”sufficient amount of powder”, it should be noted that the 6th Session of IMO Sub-committee on Ship Systems and Equipment confirmed there is still a room for consideration on that term.

6. Attachments if any

None

UI GC32 "Outer Duct in Gas Fuel Piping Systems"

Summary

In Rev.1 of this UI, the expression "duct" in Paragraphs 5.4.4 and 5.13.2.4 of the IGC Code and the requirement to be applied to gas valve unit rooms have been clarified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2022)	22 February 2022	1 January 2023
New (Feb 2021)	12 February 2021	1 July 2021

- **Rev.1 (Feb 2022)**

1 Origin of Change:

☑ Other (Maintenance of the UI based upon the amendment to MSC.1/Circ.1625)

2 Main Reason for Change:

Maintenance of the UI to keep consistency with the IMO unified interpretation (the amendment to MSC.1/Circ.1625 to be approved at MSC 105).

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Machinery Panel has reviewed the amendment to MSC.1/Circ.1625 (as per Annex 9 to CCC 7/15) to be approved at MSC 105 and has decided to update UI GC32 based upon the said amendment.

For the implementation date, 1 January 2023 has been chosen so that uniform application of this UI will be achieved given lack of unanimous acceptance of an earlier date (e.g., 1 July 2022).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 29 September 2021	(Ref: PM19941_IMzn)
Panel Approval	: 28 December 2021	(Ref: PM19941_IMzp)
GPG Approval	: 22 February 2022	(Ref: 21002_IGe)

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102 subject to deletion of the first Paragraph of the interpretation.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 04 August 2016	(Ref: PS15020_PSa)
Panel Approval	: 27 November 2020	(Ref: PM19941_IMr)
GPG Approval	: 12 February 2021	(Ref: 21002_IGb)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI GC32:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Feb 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI GC32 (New Feb 2021)

1. Scope and objectives

The IGC Code, which was amended by resolution MSC.370(93), provides revised international standards for the design and construction standards of ships carrying liquefied gases in bulk. The Machinery Panel has discussed how to implement the requirements of the revised IGC Code and has found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Subject of this UI is the interpretation of Paragraphs 5.4.4 and 5.13.2.4 of the IGC Code which states:

"*5.4.4 The design pressure of the outer pipe or duct of gas fuel systems shall not be less than the maximum working pressure of the inner gas pipe. Alternatively, for gas fuel piping systems with a working pressure greater than 1 MPa, the design pressure of the outer duct shall not be less than the maximum built-up pressure arising in the annular space considering the local instantaneous peak pressure in way of any rupture and the ventilation arrangements.*

5.13.2.4 In double wall gas-fuel piping systems, the outer pipe or duct shall also be pressure tested to show that it can withstand the expected maximum pressure at gas pipe rupture."

2. Engineering background for technical basis and rationale

This UI clarifies the design pressure of the outer pipe to cover the case whereby the space between the outer pipe/duct and the inner pipe is pressurized with inert gas at a pressure greater than the inner pipe, or the inner pipe working pressure is not greater than 1.0 MPa.

As the term “maximum built-up pressure arising in the annular space” is clarified in the IGF Code, that specific paragraph of the IGF Code is stated for ready reference.

With regard to 5.13.2.4 of the IGC Code, the UI instructs that the expected maximum pressure at gas pipe rupture is the same to that design pressure of 5.4.4 of the Code.

3. Source / derivation of the proposed IACS Resolution

Members experience and engineering judgement.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The interpretation of the term (outer) “duct” should be further discussed at the IMO level (the CCC Sub-Committee) as instructed by MSC 102 as stated in Paragraph 15.9.1 of MSC 102/WP.1 as follows: *instructed the CCC Sub-Committee to further consider the draft unified interpretation in paragraph 3.1 and invited interested Member States and international organizations to submit further comments and proposals to CCC 7, under the agenda item ″Unified interpretation of provisions of IMO safety, security and environment-related conventions″[...]*

6. Attachments if any

None

Technical Background (TB) document for UI GC32 (Rev.1 Feb 2022)

1. Scope and objectives

Maintenance of the UI to keep consistency with the IMO unified interpretation (the amendment to MSC.1/Circ.1625 to be approved at MSC 105)

2. Engineering background for technical basis and rationale

This UI clarifies the equipment enclosure required in Paragraphs 16.4.3.1 and 16.4.3.2 of the IGC Code (e.g. the GVU enclosure) and the structural pipe duct, which is an outer duct forming part of a structure such as a hull structure or superstructure or deck house (where permitted) other than gas valve unit rooms, intended to contain any release of gas from inner pipe or equipment are regarded as the "duct" referred to in Paragraphs 5.4.4 and 5.13.2.4 of the IGC Code.

The requirement to be applied to gas valve units, whose pressure testing is not feasible/practicable, has also been clarified.

3. Source/derivation of the proposed IACS Resolution

Annex 9 to document CCC 7/15

4. Summary of Changes intended for the revised Resolution:

The following paragraph is inserted as the first paragraph, and the existing paragraphs have been renumbered accordingly.

1. The expression "duct" in 5.4.4 and 5.13.2.4 means to include the equipment enclosure required in 16.4.3.1 and 16.4.3.2 (e.g. GVU enclosure) as well as the structural pipe duct intended to contain any release of gas from inner pipe or equipment. The term "structural pipe duct" means an outer duct forming part of a structure such as a hull structure or superstructure or deck house, where permitted, other than gas valve unit rooms.

   The gas valve unit rooms are to be:
   i. gastight toward other enclosed spaces;
   ii. equipped with mechanical exhaust ventilation having a capacity of at least 30 air changes per hour and arranged to maintain a pressure less than the atmospheric pressure; and
   iii. able to withstand the maximum built-up pressure arising in the room in case of a gas pipe rupture, as documented by suitable calculations taking into account the ventilation arrangements.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC33 “Cargo Sampling”

Summary

This UI provides a unified interpretation on the scope of application of the requirements in paragraphs 5.6.5 and 18.9 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2021)	12 February 2021	1 July 2021

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	4 August 2016 (Ref: PS15020_PSa)
Panel Approval:	27 November 2020 (Ref: PM19941_IMr)
GPG Approval:	12 February 2021 (Ref: 21002_IGb)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI G33x:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC33 (New Feb 2021)

1. Scope and objectives

The UI provides clarification on paragraphs 5.6.5 and 18.9 of the IGC Code (MSC.370(93)) regarding the application of the Code requirements to cargo sampling.

2. Engineering background for technical basis and rationale

The cargo sampling device, as an industrial practice, has only been provided on board gas carriers carrying liquefied petroleum gas or chemical gases or dual-code chemicals. Cargo sampling for gas carriers carrying liquefied natural gas (LNG) has been carried out ashore.

Some shipowners have raised concern regarding the risks involved if the sampling device for a cryogenic cargo is provided onboard, as the ship's crew on an LNG carrier is not familiar with taking samples of such cargoes.

According to the document "Revision of the International Code for the Construction and Equipment of Ships Carrying liquefied gases in Bulk (IGC Code), MSC 83/25/15(United Kingdom and SIGTTO)", it is understood that the requirement for cargo sampling was developed to carry out environmentally acceptable cargo sampling of LPG and chemical gases.

Following discussion, IACS, understands that the requirements for cargo sampling are applicable only if a sampling system is fitted onboard. Connections in relation to systems that control the atmosphere in cargo tanks during inerting or gassing up are not considered as cargo sampling connections.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The proposal developing the following interpretation was discussed by Machinery Panel:

> "Connections used for control of atmosphere in cargo tanks during inerting or gassing up are not considered as cargo sampling connections. Such sampling shall as a minimum be in compliance with sampling arrangements for vapour lines."

While the former sentence about applying scope was agreed with members, the latter was not agreed due to getting out of the scope for this interpretation, regarding design of the connections used for control of atmosphere in cargo tanks.

6. Attachments if any

None

UI GC34 “Cargo Filters”

Summary

This UI provides a unified interpretation of the requirement in paragraph 5.6.6 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2021)	12 February 2021	1 July 2021

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	4 August 2016 (Ref: PS15020_PSa)
Panel Approval:	27 November 2020 (Ref: PM19941_IMr)
GPG Approval:	12 February 2021 (Ref: 21002_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC34:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC34 (New Feb 2021)

1. Scope and objectives

The IGC Code, which was amended by resolution MSC.370(93), provides revised international standards for the design and construction standards of ships carrying liquefied gases in bulk. The Machinery Panel has discussed how to implement the requirements of the revised IGC Code and has found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Subject of this UI is the interpretation of Paragraph 5.6.6 of the IGC Code which states:

"*5.6.6 The cargo liquid and vapour systems shall be capable of being fitted with filters to protect against damage by extraneous objects. Such filters may be permanent or temporary, and the standards of filtration shall be appropriate to the risk of debris, etc., entering the cargo system. Means shall be provided to indicate that filters are becoming blocked, and to isolate, depressurize and clean the filters safely*."

2. Engineering background for technical basis and rationale

Paragraph 5.6.6 of the IGC Code requires that filters can be fitted in the cargo liquid and vapour systems and that means shall be provided to indicate that filters are becoming blocked, and to isolate, depressurize and clean the filters safely.

IACS takes note of the joint SIGTTO/OCIMF “Recommendations for Liquefied Gas Carrier Manifolds” and deems that special consideration needs to be given to the situation where a filter is fitted between two presentation flanges (ship flange and shore flange). With regards to monitoring the filter condition and a cleaning opportunity, the shore connection will have a pressure gauge and valve as a standard fitting and, together with the ship pressure gauge and valve at the cross-over, the filter condition may be assessed and the device cleaned.

3. Source / derivation of the proposed IACS Resolution

Members experience and engineering judgement

Joint SIGTTO/OCIMF “Recommendations for Liquefied Gas Carrier Manifolds”

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC35 "Inhibition of Cargo Pump Operation and Opening of Manifold ESD valves with Level Alarms Overridden"

Summary

This UI provides a unified interpretation of Table 18.1, Note 4 and paragraph 13.3.7 of the IGC Code on the need of a hardware system such as an electric or mechanical interlocking device is to be provided to prevent inadvertent operation of cargo pumps and inadvertent opening of manifold ESD valves.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2021)	12 February 2021	1 July 2021

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	4 August 2016 (Ref: PS15020_PSa)
Panel Approval:	27 November 2020 (Ref: PM19941_IMr)
GPG Approval:	12 February 2021 (Ref: 21002_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC35:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC35 (New Feb 2021)

1. Scope and objectives

The IGC Code, which was amended by resolution MSC.370(93), provides revised international standards for the design and construction standards of ships carrying liquefied gases in bulk. The Machinery Panel has discussed how to implement the requirements of the revised IGC Code and has found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Subject of this UI is the interpretation of Table 18.1, Note 4 and paragraph 13.3.7 of the IGC Code which states:

> *Note 4: The override system permitted by 13.3.7 may be used at sea to prevent false alarms or shutdowns. When level alarms are overridden, operation of cargo pumps and the opening of manifold ESD valves shall be inhibited except when high-level alarm testing is carried out in accordance with 13.3.5 (see 18.10.3.4).*
>
> *13.3.7 Where arrangements are provided for overriding the overflow control system, they shall be such that inadvertent operation is prevented. When this override is operated, continuous visual indication shall be given at the relevant control station(s) and the navigation bridge.*

2. Engineering background for technical basis and rationale

With regard to the phrase “operation of cargo pumps and the opening of manifold ESD valves shall be inhibited”, discussion has been conducted as to whether operational measures such as following a caution plate posted at the relevant control station(s) may literally be considered as acceptable means satisfying the underlined sentence. However, it should be duly taken into account that fatal incidents may happen in cases of cargo pumps/manifold ESD valves are inadvertently operated/opened while the override system is used.

IACS, therefore, concluded that in applying the second sentence of Note 4 of Table 18.1, a hardware system such as an electric or mechanical interlocking device is to be provided to prevent inadvertent operation of cargo pumps and inadvertent opening of manifold ESD valves.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

A discussion at the IMO level may be required to further clarify how excessive cargo from the tank can be pumped out after the pump is shut down according to table at high level alarm activation and is inhibited when the alarm is overridden.

6. Attachments if any

None

UI GC36 "Oxygen Deficiency Monitoring Equipment in a Nitrogen Generator Room Area"

Summary

This UI provides a unified interpretation on the cases where oxygen deficiency monitoring is required in paragraph 13.6.4 of the IGC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2021)	12 February 2021	1 July 2021

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	4 August 2016 (Ref: PS15020_PSa)
Panel Approval:	27 November 2020 (Ref: PM19941_IMr)
GPG Approval:	12 February 2021 (Ref: 21002_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC36:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GC36 (New Feb 2021)

1. Scope and objectives

The IGC Code, which was amended by resolution MSC.370(93), provides revised international standards for the design and construction of ships carrying liquefied gases in bulk. The Machinery Panel has discussed how to implement the requirements of the revised IGC Code and has found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Subject of this UI is the interpretation of Paragraph 13.6.4 of the IGC Code, which specifies in which cases an oxygen deficiency monitoring system is required i.e.:

> *"13.6.4 Where indicated in column "f" in the table of chapter 19 ships certified for carriage of non-flammable products, oxygen deficiency monitoring shall be fitted in cargo machinery spaces and cargo tank hold spaces. Furthermore, oxygen deficiency monitoring equipment shall be installed in enclosed or semi-enclosed spaces containing equipment that may cause an oxygen-deficient environment such as nitrogen generators, inert gas generators or nitrogen cycle refrigerant systems."*

2. Engineering background for technical basis and rationale

The oxygen deficiency monitoring is required in two different cases:

- in the cargo machinery spaces and in the cargo tank hold spaces of ships certified for the carriage of non-flammable products, where indicated in column "f" of the table in chapter 19 and

- in enclosed or semi-enclosed spaces containing equipment that may cause an oxygen-deficient environment.

It is understood that the requirement for oxygen deficiency monitoring in enclosed or semi-enclosed spaces containing equipment that may cause an oxygen-deficient environment applies to all ships covered by the IGC Code, irrespective of the cargo carried by the ship and of the indication in column "f" of the table in chapter 19.

3. Source / derivation of the proposed IACS Resolution

Members experience and engineering judgement

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GC37 “Suitable Pressure Relief System for Air Inlet, Scavenge Spaces, Exhaust System and Crank Case”

Summary

This UI provides a unified interpretation of the Code requirements in paragraph 16.7.1.4 to clarify a criterion on the need to provide a suitable pressure relief system for air inlet, scavenge spaces, exhaust system, and crank case.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2021)	12 February 2021	1 July 2021

- **New (Feb 2021)**

1 Origin of Change:

☑ Suggestion by Safety Panel with message PS15020_PSa dated 2016-08-04 to Hull, Machinery and Survey Panel Chairmen.

2 Main Reason for Change:

Issues arising from the revised IGC Code

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The initial draft UI was discussed at the 27th Machinery Panel meeting (Feb/March 2018) and by correspondence.

The draft UI was submitted to the 6th session of IMO CCC Sub-Committee by IACS paper CCC6/8/1.

The draft UI was endorsed by the CCC Sub-Committee in the form of draft MSC Circular in Annex 9 to document CCC 6/14 submitted to MSC 102 for approval.

The UI was approved by MSC 102.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	4 August 2016 (Ref: PS15020_PSa)
Panel Approval:	27 November 2020 (Ref: PM19941_IMr)
GPG Approval:	12 February 2021 (Ref: 21002_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC37:

Annex 1. **TB for New (Feb 2021)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI GC37 (New Feb 2021)

1. Scope and objectives

The UI provides clarification on the first sentence of paragraph 16.7.1.4 of the IGC Code (MSC.370(93)) regarding the application of Code requirements to suitable pressure relief system for air inlet, scavenge spaces, exhaust system, and crank case.

2. Engineering background for technical basis and rationale

Typically, there are two types of gas fuel engines, one is a premixed combustion type (Otto-cycle), and the other is a direct injection combustion type (diesel cycle).

IACS members have been asked by shipbuilders and engine manufacturers whether paragraph 16.7.1.4 of the IGC Code should be applied to both engine types; notwithstanding that each engine type has a different risk profile depending upon the type of combustion.

Recently, the pressure relief system (e.g., rupture disc) of the exhaust system is only installed for the premixed combustion type (Otto-cycle) engine, but not provided for the direct injection combustion type engine (diesel cycle).

IACS considers that a suitable pressure relief system for the air inlet, scavenge space and exhaust system shall be provided unless the design accommodates the worst-case overpressure due to ignited gas leaks or otherwise justified by the safety concept of the engine (a document in which a detailed evaluation of the hazard potential of overpressure in air inlet manifolds, scavenge spaces and exhaust system shall be reflected).

3. Source / derivation of the proposed IACS Resolution

SOLAS regulation II-1/27.4

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

There was a discussion about the pressure relief system of crankcase, where the explosion relief valves shall already be provided in compliance with SOLAS regulation II-1/27.4. The members agreed that the explosion relief valve could be considered as a suitable pressure relief system. This is on the basis that the maximum pressure level in the crankcase when the engine is operated in the gas mode is lower than when the engine is operated in the liquid fuel mode.

6. Attachments if any

None

UI GC38 "Deck areas above F.O. tanks installed at the after end of the aftermost hold space"

Summary

This UI provides a unified interpretation of application of the design temperature for piping, fittings and related components within the cargo area in paragraph 11.3.6 of the IGC Code in line with MSC.1/Circ. 1617

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Mar 2022)	31 March 2022	1 July 2022

- **New (Mar 2022)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

None

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

One of IACS members received the inquiry related to application of the design temperature for piping, fittings and related components under IGC Code11.3.6 from the industry.

And IACS discussed above matter and developing UI was decided under PS17010h. As a result of the discussion, draft UI was developed by PS17010hISk (September 2017) and submitted to SSE 5 by paper SSE 5/12/8 for the confirmation of IACS view.

IACS view was agreed at SSE 5 and IACS were invited to submit a draft UI to SSE 6.Acordingly, IACS made submission SSE 6/12/4 which included the draft UI and was agreed by SSE6 for forwarding to MSC 101 for approval as a MSC circular

Draft UI, as approved by MSC 101, was issued as MSC.1/Circ. 1617.

Considering the approval of the draft UI at IMO and publication of MSC.1/Circ.1617, this new IACS UI in line with IMO agreed circular was developed.

Since IMO has already approved this UI text and published a MSC circular, it was decided that no further IMO submission is needed.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 29 August 2017
Panel Approval: 15 December 2017 (Ref: PS17010h)
GPG Approval (Submission paper to SSE 5): 2 January 2018 (Ref: 17175bIGc)
GPG Approval (Submission paper to SSE 6): 18 December 2018 (Ref:17175bIGe)
GPG Approval (IACS UI GC38): 31 March 2022 (Ref: 17175bIGg)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GC38:

Annex 1. **TB for New (Mar 2022)**

See separate TB document in Annex 1

Technical Background (TB) document for UI GC38 (New Mar 2022)

1. Scope and objectives

Task PS17010h was initiated to develop interpretations for application of the design temperature for piping, fittings and related components under IGC Code 11.3.6.

2. Engineering background for technical basis and rationale

According to IGC Code 11.3.6, the requirement of water-spray system is required piping, fittings and related components within the cargo area below.

All pipes, valves, nozzles and other fittings in the water-spray system shall be resistant to corrosion by seawater. Piping, fittings and related components within the cargo area (except gaskets) shall be designed to withstand 925°C. The water-spray system shall be arranged with in-line filters to prevent blockage of pipes and nozzles. In addition, means shall be provided to back-flush the system with fresh water.

Insistently, the above requirement is only for the water-spray system within the cargo area. On the other hand, the definition of "Cargo Area" in 11.1.4 is stipulated as follows.

For the purposes of firefighting, any weather deck areas above cofferdams, ballast or void spaces at the after end of the aftermost hold space or at the forward end of the forwardmost hold space shall be included in the cargo area.

It is normal that a "cofferdam" is installed between the accommodation space and the hold space, or forward spaces, on a LNG carrier. In that case, the weather deck areas above the cofferdams are regarded as the cargo area and are protected in accordance with paragraphs 11.1.4 and 11.3.6 of the IGC Code.

On the other hand, in cases where "F.O. tanks" are installed at the after end of the aftermost hold space or at the forward end of the forwardmost hold space instead of such cofferdams, IACS concludes that, based on a literal reading of the IGC Code, the weather deck areas above such "F.O. tanks" are not regarded as part of the cargo area, as defined in paragraph 11.1.4, and thus the water-spray system in those areas is not required to be "protected".

However, taking into account the protection needed in the event of a fire occurring in way of an arrangement as identified in paragraph above, IACS is of the view that the piping, fittings and related components of water-spray systems located on the weather deck areas above the F.O. tanks arranged at the after end of the aftermost hold space or at the forward end of the forwardmost hold space, should also be required to be designed to withstand 925°C.

3. Source/derivation of the proposed IACS Resolution

Members experience.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The points of discussions here is as to whether the weather deck areas above "F.O. tanks" are regarded as part of the "cargo area" and, consequently, whether the piping, fittings and related components of a water-spray system in such an area are to be designed to withstand 925°C.

As a result of discussion, the Panel agreed with deck areas above "F.O. tanks" are regarded as part of the "cargo area" and the designing to withstand 925°C is required, taking into account the protection needed in the event of a fire occurring at such arrangement. Also, developing UI for this matter was supported by majority's views.

During discussion at the IMO, it was concluded that the text which IACS had proposed to be included at the end of the interpretation, "i.e. piping, fittings and related components of water-spray systems shall be designed to withstand 925°C", should be deleted so that there was no confusion that the rest of the requirements must also be met. The IACS UI was amended to match.

6. Attachments if any

None

UI GC39 "Interpretation of 2014 IGC Code (MSC.370(93), as amended) Paragraphs 11.3.1 11.4.1, 11.4.3 and 18.10.3.2 w.r.t additional bunkering manifold equipment fitted on L.N.G. Bunkering Ships"

Summary

UI GC39 has been developed with a view to provide clarity on the provisions of 2014 IGC Code paragraphs 11.3.1, 11.4.1, 11.4.3 and 18.10.3.2, when considering LNG Bunkering ships fitted with cargo transfer equipment in addition to traditional cargo manifolds.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Sep 2023)	15 September 2023	01 July 2024

- **New (Sep 2023)**

1 Origin of Change:

☑ Other (*Specify: IACS Member Raised Query)*

2 Main Reason for Change:

Not applicable (New UI)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

A Safety Panel discussion was initiated with the aim to seek members' perspective on the application of IGC Code paragraphs 11.3.1, 11.4.1, 11.4.3 and 18.10.3.2 to LNG bunkering ships when considering cargo transfer equipment, in addition to traditional cargo manifolds such as transfer loading arms, bunkering booms, and transfer hose reels, installed at different locations along the ship. The IGC Code mandates that a water spray system and a fire detection system (using fusible plugs) are to be provided at the cargo manifolds. Reference is made to water spray systems requirements (as indicated in sub-paragraph 11.3.1.4 and associated ESD valves in sub-paragraph 11.3.1.5.), Dry chemical powder extinguishing system requirements (as indicated in paragraph 11.4.1 and 11.4.3) and fire detection (fusible plugs) as indicated in sub-paragraph 18.10.3.2.

After a review at the panel, members considered those additional cargo transfer equipment, as indicated above, shall also be considered as parts of "cargo manifolds" with regards to the requirements of the IGC Code as referenced above, and therefore the area where possible leakage may occur around the loading arm or bunkering boom shall be required to be protected. Installed water spray systems, fusible plugs, and discharge valves are to be considered with the same ESD functionality as conventional cargo manifolds.

The draft UI was submitted to the IMO as CCC 8/12/5 and agreed and published as IMO circular MSC.1/Circ.1668.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	*03 Nov 2021*	Made by: Safety Panel Member
Panel Approval:	29 August 2023	(Ref: PS21003xISu)
GPG Approval:	15 September 2023	(Ref: 21158jIGd)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution (New Sep 2023)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI GC39 (New, Sep 2023)

1. Scope and objectives

The scope of this interpretation is to provide clarity on the provisions of 2014 IGC Code paragraphs 11.3.1.4, 11.3.1.5, 11.4.1, 11.4.3 and 18.10.3.2, when considering LNG Bunkering ships fitted with additional cargo transfer equipment in addition to traditional cargo manifolds.

2. Engineering background for technical basis and rationale

The IGC Code mandates that a water spray system and a fire detection system (using fusible plugs) are to be provided at the cargo manifolds (reference is made to water spray system requirements as indicated in sub-paragraph 11.3.1.4, associated ESD valves in sub-paragraph 11.3.1.5., dry chemical powder extinguishing system requirements as indicated in paragraphs 11.4.1 and 11.4.3, and fire detection (fusible plugs) as indicated in sub-paragraph 18.10.3.2.). IACS understands that the additional cargo transfer equipment, as indicated above, shall also be considered as parts of "cargo manifolds" and therefore comply with the requirements of the IGC Code as referenced above, such that the area where possible leakage may occur (in the vicinity of the loading arm or bunkering boom) shall be protected with water spray systems and fusible plugs, and discharge valves to be considered with same ESD functionality as conventional cargo manifolds.

3. Source/derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

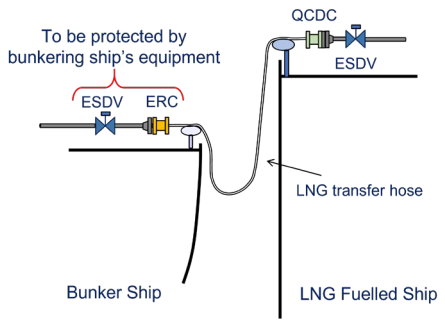
A general consensus among IACS members was achieved after a safety panel discussion was initiated with the aim to seek members' perspective on the application of IGC Code paragraphs 11.3.1.4, 11.3.1.5, 11.4.1, 11.4.3 and 18.10.3.2 to LNG bunkering ships when considering cargo transfer equipment, in addition to traditional cargo manifolds such as transfer loading arms, bunkering booms, and transfer hose reels, installed at different locations around the ship. The IGC Code mandates that water spray system and fire detection system (using fusible plugs) is to be provided at the cargo manifolds. Reference is made to water spray system requirements (as indicated in sub-paragraph 11.3.1.4 and associated ESD valves in sub-paragraph 11.3.1.5.), dry chemical powder extinguishing system requirements (as indicated in paragraphs 11.4.1 and 11.4.3), and fire detection (fusible plugs) as indicated in sub-paragraph 18.10.3.2. After a review, Panel Members considered the additional cargo transfer equipment, as indicated above, shall also be considered as part of "cargo manifolds" with regards to the requirements of the IGC Code as referenced above, so that the area where possible leakage may occur around the loading arm or bunkering boom shall be required to be protected with water spray systems and fusible plugs, and discharge valves to be considered with same ESD functionality as conventional

cargo manifolds. A draft UI was developed for recording the Panel's understanding on this matter.

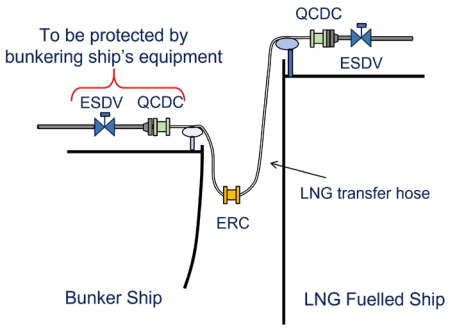
The followings are sample arrangements and protected areas as part of "cargo manifolds"
- Hoses connected to the traditional cargo manifold (Case 1)
The section between this traditional cargo manifolds and ERC/PERC or QCDC directly connected to the presentation flange of the cargo manifold for bunkering is considered as parts of "cargo manifolds".
This cargo manifold is protected by water spray system and fire detection system, but ERC/PERC or QCDC connected to the other vessels or between hoses are not needed to be protected by the systems provided for bunkering vessel.

- Loading arms or bunkering booms connected to the traditional cargo manifold (Case 2)
The section between the traditional cargo manifold and the end of the loading arms or bunkering booms, which are connected to the hose or the manifold of the other vessels, is considered as parts of "cargo manifolds".
The presentation flange, ERC/PERC, and QCDC connected to the loading arm or the bunkering boom are needed to be protected by the water spray system and fire detection system.

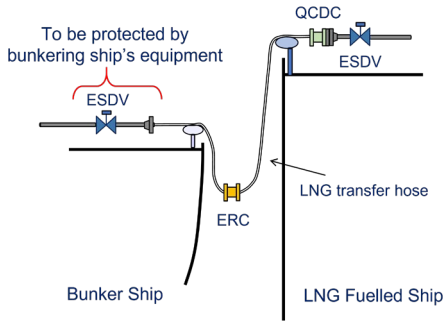
Case 1-A



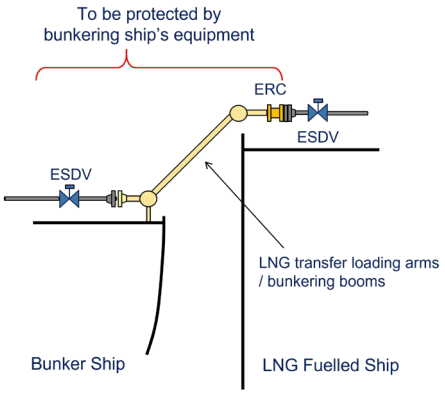
Case 1-B



Case 1-C



Case 2



6. Attachments if any

None

IACS

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Mar 2025

History Files (HF) and Technical Background (TB) documents for UIs concerning IGF Code (UI GF)

Res. No.	Title	Current Rev.	HF/TB?
UI GF1	Test for gas fuel tank's high level alarm	Jan 2017	HF
UI GF2	Ship Steel Protection against Liquefied Gas Fuel (Part A-1, paragraph 6.3.10)	Sep 2017	HF
UI GF3	Tank connection space for tanks on open deck and tank connection space equipment	Dec 2017	HF
UI GF4	Fuel preparation room	Dec 2017	HF
UI GF5	Appropriate location of premixed engines using fuel gas mixed with air before the turbocharger	Dec 2017	HF
UI GF6	Protection against cryogenic leakage and control of hazardous zones in fuel preparation rooms on open deck	Dec 2017	HF
UI GF7	External surface area of the tank for determining sizing of pressure relief valve	Dec 2017	HF
UI GF8	Control and maintenance of pressure and temperature of liquefied gas fuel tanks after the activation of the safety system	Dec 2017	HF
UI GF9	Special consideration within the risk assessment of closed or semi-enclosed bunkering stations	Dec 2017	HF
UI GF10	Ventilation of machinery spaces	Dec 2017	HF
UI GF11	Ventilation of double piping and gas valve unit spaces in gas safe engine-rooms	Dec 2017	HF
UI GF12	Ventilation inlet for double wall piping or duct	Dec 2017	HF
UI GF13	Fire protection of spaces containing equipment for the fuel preparation	May 2023	HF

Res. No.	Title	Current Rev.	HF/TB?
UI GF14	Hazardous area classification of fuel storage hold spaces	Jul 2018	HF
UI GF15	Alarms for loss of ventilation capacity	Jul 2018	HF
UI GF16	Liquefied gas fuel tank loading limit higher than calculated using the reference temperature	Dec 2018	HF
UI GF17	Other rooms with high fire risk	Dec 2018	HF
UI GF18	Level indicator in the bilge well of tank connection spaces of independent liquefied gas storage tanks	Feb 2019	HF
UI GF19	Fuel Supply to Consumers – single common flanges	Dec 2023	HF
UI GF20	Arrangements of fuel tanks in methyl/ethyl alcohol fuelled vessels	June 2024	HF
UI GF21	Arrangements of fuel tanks in methyl/ethyl alcohol fuelled vessels	Oct 2024	HF
UI GF22	Gas Fuel Vent Pipes – Single walled construction in Machinery spaces	Mar 2025	HF

UI GF1 "Test for gas fuel tank's high level alarm"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2017 Withdrawn)	06 July 2017	-
New (Jan 2017)	04 January 2017	01 January 2018

- **Rev.1 (July 2017 Withdrawn)**

UI GF1 (Rev.1 July 2017) approved on 06 July 2017 was withdrawn on 05 June 2018 prior to coming into force on 1 July 2018 (Ref: 16199_IGn).

New (Jan 2017)

.1 Origin for Change:

☑ Based on IMO Regulation (IGF Code)

.2 Main Reason for Change:

During discussions at the September 2015 Survey Panel Meeting, the members supported developing common survey requirements for gas fuelled ships considering the implementation of the IGF Code on ships constructed on or after 1 January 2017. During the development of the requirements, it was determined that a UI was needed for the term "each dry-docking".

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Survey Panel formed a Project Team to review the IGF Code to develop periodical survey requirements for the gas fuel systems. The Form A and Form 1 were approved by GPG on 10 Feb 2016. The project team held a workshop in Genoa on 14 March 2016 to develop the draft UR which was progressed through correspondence. During the development of the requirements, it was determined that a UI was needed for the term "each dry-docking". The team recommended that testing need only be carried out once every five years and recommended the UI clarifying the term, "each dry-docking". The project team submitted a draft UI to the Survey Panel on 29 June 2016 for their approval. The Survey Panel did not have any comments and the draft UI was discussed and finalized at the Survey Panel Meeting held 7 – 9 Sept 2016.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 29 June 2016 Made by: PT PSU27/2016
Panel Approval: 09 September 2016 (Ref: PSU15009)
GPG Approval: 04 January 2017 (Ref: 16003_IGe)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF1:

Annex 1. **TB for New (Jan 2017)**

See separate TB document in Annex 1.

Note:

1) There is no separate Technical Background (TB) document for Rev.1 (July 2017 Withdrawn).

◄▼►

Technical Background (TB) document for UI GF1 (New Jan 2017)

1. Scope and objectives

Interpretation of paragraph 15.4.2.3 of the International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95).

2. Engineering background for technical basis and rationale

N/A

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg. I/10.
IMO Res. A.1104(29)

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

Following the examination of the text of the paragraph 13.4.2.3 of the International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95).The project team PSU 27/2016 noted that this contains the vague expression “dry docking” which is not used in any other part of the Code, nor in the SOLAS Convention.

Having considered that the wording “dry-docking” is not defined along the text of the Code, it has been concluded that the Code itself does not expect specifically any dry-docking survey or inspection of the outside of the ship's bottom.

It has also noted that two inspections of the outside of the ship's bottom are to be carried out during the five year period of validity of the: Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate, according to the Regulation I/10(v) of the SOLAS 74 as amended, but recalling the facts that

- a cargo ship, having age less than 15 years, is admitted to carry out one of the two bottom inspections expected by the said regulation in afloat condition, according to the provisions of paragraph 5.6 of the IMO Resolution A. 1104(29) (HSSC Guidelines).

- the inspection that may be carried out in afloat condition is that corresponding to the middle period of validity of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.

Members concurred that the “dry-docking” survey recalled in paragraph 15.4.2.3 of the IMO resolution MSC 391(95) has to be interpreted as the inspection of the bottom of the ship linked to the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate

Similarly for passengers ships the paragraph 5.10.2 of IMO Resolution A.1104(29) (survey guidelines under the harmonized system of survey and certification (HSSC), 2015) expects that:

5.10.2 Where acceptable to the Administration, the minimum number of inspections in dry-dock of the outside of the bottom of a passenger ship (which is not a ro-ro passenger ship) in any five-year period may be reduced from two to one. In such cases the interval, between consecutive inspections in dry-dock, should not exceed 60 months.*

Therefore it has been concluded that the drydock recalled in paragraph 13.4.2.3 may correspond to the inspection of the outside of the ship's bottom of the ship to be carried out:

- in conjunction with the renewal survey of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate, for cargo ships (SOLAS Regulation I/10(v))

- Every a maximum of 60 months (IMO Resolution A.1104(29, paragraphs 5.10.1 and 5.10.2), for passengers ships.

6. Attachments if any

N/A

UI GF2 "Ship Steel Protection against Liquefied Gas Fuel (Part A-1, paragraph 6.3.10)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Sep 2017)	18 September 2017	1 January 2019

• New (Sep 2017)

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The task was triggered by IACS member, having received a question from a gas carrier designer as to whether or not drip trays specified in paragraph 6.3.10 of the IGF Code are required for tank connections in cases of liquefied gas fuel storage tanks arranged in a similar manner to cargo tanks of gas carriers.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

This IACS resolution has been converted in a form of UI based on the following IACS Common View in order to support gas carrier designers to acknowledge difference from requirements applied to gas carriers.

> *With reference to IGF code paragraph 6.3.10 IACS understands that whether a drip tray is needed or not depends on the location of tank connections, which are potential sources of release.*
>
> *When the tank is located above the deck, drip trays are to be provided to protect the deck from leakages from tank connections. Protective screens may also be required to avoid LNG sprays.*
>
> *When the tank is located below deck and the connections above deck (dome), drip trays are to be provided in way of the tank connections to protect the deck from leakages.*
>
> *When the tank and its connections are located below the deck, all tank connections are to be located in a dedicate space (tank connection space), which is designed to collect, contain and detect liquid and gas fuel leakage and safely release vapours. Drip trays in this case are not required.*

5 Other Resolutions Changes:

None

6 Dates:

Original Proposal: 17 December 2016, made by IACS Member
Panel Approval: 28 August 2017 (Ref: PM16909a)
GPG Approval: 18 September 2017 (Ref: 17088_IGe)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF2:

Note:

1) There is no separate Technical Background (TB) document for New (Sep 2017).

UI GF3 "Tank connection space for tanks on open deck and tank connection space equipment"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding the application of tank connection spaces and which equipment can be located therein.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI in its original form at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF3:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF3 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding the application of tank connection spaces and which equipment can be located therein.

2. Engineering background for technical basis and rationale

Sections 2.2.15.3, 6.3.4 and 6.3.10 of the IGF Code imply that a tank connection space is only required when LNG fuel tanks are located in enclosed spaces. However, IACS considers that a tank connection space should not be excluded from being applied to tanks on an open deck, where considered appropriate.

Noting section 3.2.4 of the IGF Code, a tank connection space will restrict hazardous zones on an open deck of ships that are not tankers. A tank connection space will also give environmental protection for essential safety equipment for the LNG fuel tank.

A tank connection space is considered only to contain potential sources of release, but not sources of ignition. Hence, a tank connection space may also contain passive equipment such as vaporizers or heat exchangers in addition to tank connections and tank valves. The tank connection space contains a number of safety features primarily designed for safe containment of LNG and gas leaks.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF4 "Fuel preparation room"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation of the definition of fuel preparation rooms.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI in its original form at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF4:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF4 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding the definition of fuel preparation rooms.

2. Engineering background for technical basis and rationale

The term "fuel preparation room" has evolved from the terms "compressor room" and "pump room" in the Interim Guidelines on safety for natural gas-fuelled engine installations in ships (resolution MSC.285(86)) and is based on the concept of compressor and pump rooms located above deck in the IGC Code. Hence, a tank connection space, even with passive equipment such as vaporizers or heat exchangers, installed inside is not regarded as a fuel preparation room.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF5"Appropriate location of premixed engines using fuel gas mixed with air before the turbocharger"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation of the appropriate location of premixed engines using fuel gas mixed with air before the turbocharger.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI in its original form at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF5:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF5 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation of the appropriate location of premixed engines using fuel gas mixed with air before the turbocharger.

2. Engineering background for technical basis and rationale

Premixed engines (i.e. gas or dual fuel engines where the gas is introduced before the turbocharger rather than direct into the cylinder or cylinder head port) were discussed in the Working Group at MSC 95 with respect to section 9.6.2 of the IGF Code and associated footnote 18, when it was confirmed that premixed engines should be located in ESD protected machinery spaces.

For premixed engines a single failure may result in a gas release into the machinery space. Hence, such engines must be located in an ESD protected machinery space.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF6 "Protection against cryogenic leakage and control of hazardous zones in fuel preparation rooms on open deck"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding protection against cryogenic leakage and control of hazardous zones in fuel preparation rooms on open deck.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI in its original form at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF6:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF6 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding protection against cryogenic leakage and control of hazardous zones in fuel preparation rooms on open deck.

2. Engineering background for technical basis and rationale

The IGF Code requires that a fuel preparation room located below deck shall be arranged in accordance with the regulations applicable for tank connection spaces. This implies that the material of the bulkheads of the fuel preparation room shall have a design temperature corresponding with the lowest temperature it can be subject to in a probable maximum leakage scenario, and that it is gastight towards non-hazardous spaces.

For a fuel preparation room located on an open deck, the IGF Code does not specify any prescriptive requirements. However, the functional requirements in sections 3.2.1 and 3.2.2. of the IGF Code are relevant for the fuel preparation room. Furthermore, IACS considers the functional requirement under section 6.2.1, on protection of ship materials from exposure to temperatures below acceptable limits, also to be relevant for fuel preparation rooms.

IACS considers that a fuel preparation room located on an open deck should be arranged in the same way as a fuel preparation room below deck. Protection against cryogenic leakages and control of hazardous zones are equally relevant for open deck locations.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF7 “External surface area of the tank for determining sizing of pressure relief valve”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Others

.2 Main Reason for Change:

To establish unified interpretation and clarify paragraph 6.7.3.1.1.2 of the IGF Code regarding sizing of pressure relief valve.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked machinery panel to review applicable UIs. The origin of the particular discussion was under document CCC 2/9/2 the context of which is equally applicable to the same requirement in 6.7.3.1.1.2 of the IGF Code.

The considered document CCC 2/9/2 (Japan), sought clarifications regarding figure 8.1 and paragraph 8.4.1.2 of the revised IGC Code. In this regard, the Sub-Committee acknowledged that "Lmin" ought to be defined but could not agree to the proposed unified interpretation set out in paragraph 11 of document CCC 2/9/2, particularly whether the minimum or the maximum longitudinal and transverse length should be used. Subsequently, the Sub-Committee invited interested Member States and international organizations to submit written proposals on the matter to CCC 3 (see CCC 2/15, paragraph 9.14).

IACS made a submission to CCC 3 under paper CCC 3/10/5, later approved by MSC under MSC.1/Circ.1559 for the IGC Code and MSC.1/Circ.1558 Paragraph 5 for the IGF Code.

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 30 June 2016 – CCC 3/10/5 (IACS) & CCC 2/9/2 (Japan)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF7:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF7 (New Dec 2017)

1. Scope and objectives

The UI provides clarification about calculation of pressure relief valves that are to be determined according to paragraph 6.7.3.1.1.2 of the IGF Code.

2. Engineering background for technical basis and rationale

The sizes of pressure relief valves are determined according to paragraph 6.7.3.1.1.2 of the IGF Code. The external surface area of the tank for different tank types is calculated as shown in figure 6.7.1 of the Code.

In figure 6.7.1 of the IGF Code, for prismatic tanks, the area that is excluded from the external surface area is still not clear, because the value "Lmin/10", which is specified in this figure, is not defined and no methods are specified for determining the area to be excluded.

3. Source / derivation of the proposed IACS Resolution

Machinery Panel.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

N/A.

6. Attachments if any

N/A

UI GF8 "Control and maintenance of pressure and temperature of liquefied gas fuel tanks after the activation of the safety system"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding control and maintenance of pressure and temperature of liquefied gas fuel tanks after the activation of the safety system.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016 including the following clarification in addition to the draft UI in CCC3/10/1: "The activation of the safety system alone is not deemed as an emergency situation.".

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF8:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF8 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding control and maintenance of pressure and temperature of liquefied gas fuel tanks after the activation of the safety system (paragraphs 6.9.1.1 and 6.9.1.2)

2. Engineering background for technical basis and rationale

Section 6.9.1.1 of the IGF Code states that the pressure and temperature of liquefied gas fuel tanks shall be maintained at all times. IACS considers that "at all times" includes those instances when the safety system is activated as a result of a fault condition and which may make the fuel gas supply system unavailable to some consumers.

Section 6.9.1.2 of the IGF Code states that venting of fuel vapour for control of the tank pressure is not acceptable except in emergency situations. Activation of the safety system is not necessarily regarded as an emergency situation.

Therefore, the pressure and temperature of liquefied gas fuel tanks shall be controlled and maintained within the design range at all times, including after activation of the safety system.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF9 "Special consideration within the risk assessment of closed or semi-enclosed bunkering stations"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding special consideration within the risk assessment of closed or semi-enclosed bunkering stations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI at MSC97 in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016 including the following minor modification to the draft UI in CCC3/10/1: "Monitoring of bunkering station by direct line of sight or by CCTV.".

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF9:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF9 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding special consideration within the risk assessment of closed or semi-enclosed bunkering stations (paragraphs 8.3.1.1).

2. Engineering background for technical basis and rationale

IACS considers that design features such as segregation, hazardous area, ventilation, leakage detection and related safety actions, access and monitoring should be included when considering closed or semi-enclosed bunkering stations.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF10 "Ventilation of machinery spaces"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding ventilation of machinery spaces containing gas fuelled consumers.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI at MSC97 in its original form in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF10:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF10 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding ventilation of machinery spaces containing gas fuelled consumers.

2. Engineering background for technical basis and rationale

It is understood that the intention of IGF 13.5.1 is to segregate the ventilation system for machinery spaces containing gas-fuelled consumers from the ventilation system for other spaces in the ship such as the accommodation, not other spaces in the machinery space area such as purifier rooms or workshops.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF11 "Ventilation of double piping and gas valve unit spaces in gas safe engine-rooms"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding ventilation of double piping and gas valve unit spaces in gas safe engine rooms.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI at MSC97 in its original form in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF11:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF11 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding ventilation of double piping and gas valve unit spaces in gas safe engine rooms.

2. Engineering background for technical basis and rationale

It is considered that segregation between the part of the system where there is potential for LNG leakages (e.g. tank connection space) and the part of the system where there is no potential for LNG leakages (e.g. double walled gas supply piping) is what is safety critical; not necessarily the segregation between the ventilation system for double piping inside and outside the machinery space.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF12 "Ventilation inlet for double wall piping or duct"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2017)	20 December 2017	01 January 2018

- **New (Dec 2017)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding location of ventilation inlet of double wall piping or duct.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PTPM11901 during PT workshops in December 2015 and February 2016. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC3 in CCC3/10/1. IMO approved the UI at MSC97 in its original form in November 2016 and included the UI in MSC.1/Circ.1558 issued 28 November 2016

.5 Other Resolutions Changes

N/A

.6 Dates:

Original Proposal: 3 June 2016 – CCC 3/10/1 (IACS)
Panel Approval: 22 November 2017 (Ref: PM11901)
GPG Approval: 20 December 2017 (Ref: 10191_IGzr)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF12:

Annex 1. **TB for New (Dec 2017)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI GF12 (New Dec 2017)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding location of ventilation inlet of double wall piping or duct.

2. Engineering background for technical basis and rationale

It is understood that air inlets for the annular space and the gas valve unit room shall be located in open air (non-hazardous area) for both low pressure and high pressure gas fuel. This understanding is supported by the requirement in the second sentence of section 13.8.3 of the IGF Code that the inlet is to be fitted with a guard and protected from the ingress of water.

The machinery space contains multiple ignition sources. Consequently, even in gas safe machinery spaces, allowing ventilation inlets to be taken from the machinery space is not best practice.

Inlets to ventilation systems for a hazardous area zone 1 give rise to a hazardous zone, which IACS understands cannot be located in the machinery space.

The actual ventilation rate is not defined by the requirement for 30 air changes per hour in the annular space between inner and outer pipe. Consequently, an assumption that the ventilation rate will be larger than the leakage rate to prevent gas in the machinery space cannot be made.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF13 "Fire protection of spaces containing equipment for the fuel preparation"

Summary

This revision UI provides a unified interpretation on ships constructed on or after 1 January 2024 as defined in paragraph 2.2.42 of the IGF Code and Chapter 11.3.1.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2023)	26 May 2023	1 January 2024
New (July 2018)	04 July 2018	1 July 2019

- **Rev.1 (May 2023)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Amendment of IGF code 11.8 by Resolution MSC.475(102).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

IGF paragraph 11.3.1 considered FPR as machinery space category A for fire protection purpose and is not clear if requiring structural fire protection only or also means of escape and active fire protection system.

Rev.1 of UI clarifies means of fire protection system based on Resolution MSC.475(102) for Fuel preparation rooms.

The Rev.1 UI was agreed by PM21919f_IMf (25 April 2023).

5 Other Resolutions Changes:

None

6 Dates:

Original Proposal:	31 May 2022	
Panel Approval:	25 April 2023	(Ref: PM21919f_IMf)
GPG Approval:	26 May 2023	(Ref:23077_IGd)

- **New (July 2018)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

None

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

IGF paragraph 11.3.1 is not clear if requiring structural fire protection only or also means of escape and active fire protection.

UI decided as an interim measure pending entry into force of a proposed amendment to IGF Code requiring active fire protection for Fuel preparation rooms.

The UI was agreed by PM17908_IMf (15 June 2018) and submitted to CCC5.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal: 29 September 2017
Panel Approval: 15 June 2018 (Ref: PM17908)
GPG Approval: 04 July 2018 (Ref: 10191_IGzza)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF13:

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

Annex 2. **TB for Rev.1 (May 2023)**

See separate TB document in Annex 2

Technical Background (TB) document for UI GF13 (New July 2018)

1. Scope and objectives

IGF paragraph 11.3.1 lacks clarity concerning the requirement of structural fire protection only or also active fire protection and means of escape.

The development of a UI was decided as an interim measure pending entry into force of proposed amendment to IGF Code requiring active fire protection for Fuel preparation rooms.

2. Engineering background for technical basis and rationale

IGF paragraph 11.3.1 indicates that any space containing equipment for the fuel preparation such as pumps, compressors, heat exchangers, vaporizers and pressure vessels shall be regarded as a machinery space of category A for fire protection purposes.

IGF paragraph 11.3.1 has evolved from paragraph 3.1.2 in the interim guidelines (Res. MSC.285(86)) for compressor rooms which are now fuel preparation rooms. It is therefore understood not to apply to tank connection spaces and other spaces only containing potential sources of release, but not sources of ignition.

IGF paragraph 11.3.1 is considered to be protecting other areas from the fire risk in the fuel preparation room. Whereas 11.3.3 is protecting the fuel containment system from the fire risk from other areas.

It is further noted that a TCS with only vaporizers and heat exchangers installed inside is already defined by MSC.1/Circ.1558 (UI GF4) as not to be a fuel preparation room.

IACS deems that Fuel preparation rooms including pumps or compressors or other potential ignition sources are to be provided with a fixed fire-extinguishing system.

IACS deems that, similar to the Interpretation given in MSC.1/Circ. 1558 Annex paragraph 2 for fuel preparation room, a space which has equipment such as vaporizers or heat exchangers that contain potential sources of release, but not sources of ignition installed inside, is not regarded as a fuel preparation room.

IACS deems that a space which contains only potential sources of release without potential ignition source is not required to be provided with a fixed fire-extinguishing system and means of escape like a machinery space of category A but is to have structural fire protection.

IACS deems that the fixed fire-extinguishing system to be installed are to comply with the provisions of SOLAS II-2/10.4.1.1 and the FSS Code taking into account the necessary concentrations/application rate required for extinguishing gas fires.

3. Source/derivation of the proposed IACS Resolution

Similarity to IGC Code (Resolution) chapter 11.5
Interpretation given in MSC.1/Circ. 1558 Annex paragraph 2

4. Summary of Changes intended for the revised Resolution

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

Technical Background (TB) document for UI GF13 (Rev.1 2023)

1. Scope and objectives

IGF paragraph 11.3.1 lacks clarity concerning the requirement of structural fire protection only or also active fire protection and means of escape.
The revision of a UI was made based on paragraph 2.2.42 of the IGF Code and Chapter 11.3. requiring active fire protection for Fuel preparation rooms.

2. Engineering background for technical basis and rationale

Amendment of IGF code 11.8 by Resolution MSC.475(102).

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

Specify fire active system requirements for fuel preparation room according to Resolution MSC.475(102)

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF14 "Hazardous area classification of fuel storage hold spaces"

Summary:

The UI provides a unified interpretation for the classification of hazardous area zones for fuel storage hold spaces.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2018)	04 July 2018	1 July 2019

- **New (July 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Lack of a unified interpretation regarding classification of hazardous area zones for fuel storage hold spaces.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PT PM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was developed by PT PM11901 during PT workshops in March 2017 and January 2018. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC5 in CCC5/8/XX.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 05 April 2017
Panel Approval: 06 June 2018 (Ref: PM11901)
GPG Approval: 04 July 2018 (Ref: 10191_IGzza)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF14:

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI GF14 (New July 2018)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding classification of hazardous area zones for fuel storage hold spaces.

2. Engineering background for technical basis and rationale

Paragraph 12.5.2.1 of the IGF Code specifically identifies fuel storage hold spaces as zone 1 hazardous area. The footnote 23 to this requirement states that fuel storage hold spaces for Type C tanks are normally not considered as zone 1, which implies they are normally considered zone 2 or non-hazardous. There is a need to provide consistent understanding of the approach, particularly since Type C tanks are the predominant form of LNG containment used on gas fuelled ships.

In numerous locations in the IGF Code there are certain relaxations for Type C fuel containment systems on the understanding that for Type C tanks the probability for structural failures and leakages through the primary barrier is extremely low and can be neglected. Examples of this are found in paragraphs 6.3.5, 6.4.2.4, 11.3.3, 12.5.2.9 and 15.8.1.6 of the IGF Code.

On the basis that Type C tanks are not to be considered as a source of release, IACS understands the fuel storage hold space for Type C tanks without leakages sources should be considered non-hazardous.

It is noted that the fuel storage hold space for a Type C tank with tank connections located in the hold space will also be a tank connection space per 2.2.15 and will thereby be a hazardous area zone 1 as per 12.5.2.1 of the IGF Code.

It is noted that the fuel storage hold spaces containing a Type C tank with its tank connection space (TCS), where the access to the TCS is from the hold space (through the required bolted hatch), shall be considered as hazardous area zone 2 as per 5.11.3 and 12.5.3.2 of the IGF Code.

3. Source / derivation of the proposed IACS Resolution

PT and machinery panel discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF15 “Alarms for loss of ventilation capacity”

Summary:

The UI provides a unified interpretation regarding acceptable means of monitoring ‘required ventilation capacity’.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2018)	04 July 2018	1 July 2019

- **New (July 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Lack of a unified interpretation for acceptable means of monitoring ‘required ventilation capacity’.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PT PM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

Discussed within IACS PT PM11901 meeting in January 2018 as one of the items to be considered for unified interpretations of the IGF code and draft UI prepared during that meeting.

PT members see the need to bring this forward as a UI to CCC5. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC5 in CCC5/8/XX.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 09 February 2018
Panel Approval: 06 June 2018 (Ref: PM11901)
GPG Approval: 04 July 2018 (Ref: 10191_IGzza)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF15:

Annex 1. **TB for New (July 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI GF15 (New July 2018)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding acceptable means of monitoring ‘required ventilation capacity’.

2. Engineering background for technical basis and rationale

Paragraph 15.10.1 of the IGF Code identifies a requirement for audible and visual alarm in case of loss of the required ventilating capacity.

The need for interpretation arises in what are considered acceptable arrangements to monitor “loss of the required ventilating capacity”.

The monitoring of the ventilation fan motor gives an indication that ventilation may be in operation and adequate but does not give a definitive indication of flow rate. The use of a flow sensor would provide an indication of flow but practical accuracy and sensitivity for detecting the 30 air changes / hour requirements may be inadequate and provide a high level of transient fluctuation and unnecessary shutdowns.

Typical installed arrangements include monitoring of fan motor operation and underpressure monitoring of the double barrier space or connected spaces, such as the GVU room, to ensure adequate ventilation is operational.

The Machinery Panel considers that the key purpose of the requirement in 15.10.1 is to confirm adequate ventilation to enable gas detection and not necessarily verify that the actual flow rate meets the exact required air changes / hour. For example, this can be determined by underpressure correlation. For this reason flow indicators, or underpressure monitoring combined with ventilation fan monitoring would also be acceptable arrangements.

3. Source / derivation of the proposed IACS Resolution

PT and Machinery Panel discussions

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI GF16 “Liquefied gas fuel tank loading limit higher than calculated using the reference temperature”

Summary:

This UI provides a unified interpretation of the “loading limit” as stated in IGF Code Part A, Section 6.8.2.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2018)	21 December 2018	1 January 2020

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding the application of the alternative loading limit option.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was drafted by PTPM11901 during the PT workshop in March 2017. The draft UI was circulated in the Machinery Panel and GPG prior to submission to IMO CCC4 within IACS paper CCC4/7. The U.S. commenting paper CCC 4/3/6Rev.1 did not support the UI and gained some support at CCC 4. However, after bi-lateral discussions and further discussion in the working group, it was possible to gain support for the first paragraph to the draft UI. Consequently, the final text of the UI, only including the first part of the draft UI, was prepared by the Working Group and agreed at CCC4 in CCC4/12 annex 3. IMO approved the UI at MSC99 in May 2018 and included the UI in MSC.1/Circ.1591 issued 11 June 2018.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: CCC 4/7 (by IACS 8 June 2017)
Panel Approval: 05 December 2018 (Ref: PM18901)
GPG Approval: 21 December 2018 (Ref: 17105hIGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF16:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

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Technical Background (TB) document for UI GF16 (New Dec 2018)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding application of the alternative liquefied gas fuel tank loading limit option.

2. Engineering background for technical basis and rationale

IACS understands that the intention of paragraph 6.8.2 of the IGF Code is to allow for a higher loading limit than calculated by paragraph 6.8.1, but never above 95%, when the probability of heating the tank contents is very low.

Furthermore, IACS understands paragraph 6.8.2 is only applicable when the calculated loading limit using the formulae in 6.8.1 gives a lower value than 95%.

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GF17 “Other rooms with high fire risk”

Summary:

This UI provides a unified interpretation of the wording "other rooms with high fire risk" in IGF Code Part A, Section 11.3.3

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2018)	21 December 2018	1 January 2020

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish unified interpretation regarding regulations for fire protection for the term “other rooms with high fire risk”.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM11901 is tasked to draft unified interpretations covering ambiguities in the IGF Code (Refer to Form A and Form 1 for Machinery Panel task no. PT PM26/2016 (PM11901)).

The UI was drafted by PTPM11901 during the PT workshop in March 2017. The draft UI was amended in the Machinery Panel and circulated in GPG prior to submission to IMO CCC4 within IACS paper CCC4/7. The final text of the UI was prepared by the Working Group and agreed at CCC4 in CCC4/12 annex 3. IMO approved the UI at MSC99 in May 2018 and included the UI in MSC.1/Circ.1591 issued 11 June 2018.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: CCC 4/7 (by IACS 8 June 2017)
Panel Approval: 05 December 2018 (Ref: PM18901)
GPG Approval: 21 December 2018 (Ref: 17105hIGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF17:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI GF17 (New Dec 2018)

1. Scope and objectives

The UI is intended to establish a unified interpretation regarding regulations for fire protection for the term “other rooms with high fire risk”

2. Engineering background for technical basis and rationale

There is no definition of "other rooms with high fire risk" in the IGF Code or SOLAS. A UI on "other rooms with high fire risk" is therefore needed to provide consistent application of the IGF Code.

Cargo spaces are defined in SOLAS regulation II-2/3.8 as "spaces used for cargo, cargo oil tanks, tanks for other liquid cargo and trunks to such spaces". Since cargo spaces have the potential to have a prolonged fire (air and fire load inside the cargo hold), IACS considers these spaces should be regarded as a high fire risk in this context.

It could be argued that vehicle, ro-ro and special category spaces are included in "cargo spaces", but these spaces are added in a separate entry for clarity.

It is confirmed by IMO that service spaces (high risk) and accommodation spaces of greater fire risk should also be considered as "other rooms with high fire risk".

3. Source / derivation of the proposed IACS Resolution

PT discussions

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GF18 “Level indicator in the bilge well of tank connection spaces of independent liquefied gas storage tanks”

Summary

This UI provides a unified interpretation of the wording “shall be provided with … a level indicator” in Paragraph 15.3.2 of the IGF Code, allowing the use of level switches.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2019)	22 February 2019	1 January 2020

- **New (Feb 2019)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Clarification of IGF requirement

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Draft submission was agreed by Machinery Panel on 16/6/2017.

The submission paper to CCC4 with draft interpretation was approved by GPG on 30/6/2017 (17088_IGb).

The interpretation per IACS submission paper CCC4/7/1 was endorsed by CCC4 (CCC4/12 7.7).

A Unified Interpretation was approved by MSC99 and published in MSC.1/Circ.1591.

It was decided to publish the Interpretation also as an IACS UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: Nov 2016
Panel Approval: 5 February 2019 (Ref. 17088_PMe)
GPG Approval: 22 February 2019 (Ref. 17088_IGj)

Part B. Technical Background

List of Technical Background (TB) documents for UI GF18:

Annex 1. **TB for New (Feb 2019)**

See separate TB document in Annex 1.

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Technical Background (TB) document for UI GF18 (New, Feb 2019)

1. Scope and objectives

To clarify the type of sensor required for indicating a high level in bilge wells.

2. Engineering background for technical basis and rationale

The Panel considered that the wording "*A bilge well in each tank connection space of an independent liquefied gas storage tank shall be provided with both a level indicator and a temperature sensor. Alarm shall be given at high level in the bilge well. Low temperature indication shall activate the safety system*" is unclear as to which type of level sensor should be used and what kind of signal is expected/required from the level indicator.

Members deemed that level indicator is understood to be required only for the purpose of indicating a level exceeding a predetermined threshold by activating an alarm, and is not required to indicate the actual level in the bilge well.

Therefore a level switch (float switch) is an instrument example considered to meet this requirement.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI GF19
"Fuel Supply to Consumers – single common flanges"

Summary

This UI is based on IMO MSC.1/Circ.1670 with respect to Fuel Supply to consumers- single common flanges, IGF Code Part A-1 Section 9.2.2 with clearly indicating application date in force.
Rev.1 improves the readability of the requirements and clarifies what should be confirmed when single common flanges are used.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2025)	23 June 2025	01 July 2026
New (Dec 2023)	18 December 2023	01 July 2024

- **Rev.1 (June 2025)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To review the UI GF19 (New, Dec 2023) based on industry inquiry.

3 Surveyability review of UR and Auditability review of PR

None.

4 Human Element issues assessment

None.

5 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

6 History of Decisions Made:

A member raised a question regarding whether the use of a single common flange for connecting with the GVU is permissible under UI GF19. The Machinery Panel confirmed that all members understood that a single common flange could be used at the GVU connection, and they decided to modify the text to clarify this point.

Furthermore, it was recognized that it is essential to verify the technical rationale when employing single common flanges to ensure compliance with the requirements of IGF Code 9.2.2.
The revised UI was developed and agreed through correspondence within the panel.

7 Other Resolutions Changes:

None.

8 Any hinderance to MASS, including any other new technologies:

None.

9 Dates:

Original Proposal	: 6 January 2025	(Made by:PM21919_IMzr)
Panel Approval	: 03 June 2025	(Ref: PM21919_IMzz)
GPG Approval	: 23 June 2025	(Ref: 24215cIGb)

- **New (December 2023)**

1 Origin of Change:

x Request by IACS members

2 Main Reason for Change:

New UI, based on IMO MSC.1/Circ.1670 with clearly indicating application date.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

IMO MSC.1/Circ.1670 has been issued without application date, according to discussion commenced in Machinery Panel about applicability of UI's date on the ship's contract.
Machinery Panel Members agreed that 01 July 2024 could be set as applicable date for said Circ. as new UI.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal:	14 November 2022	(Made by:PM21919lIMa)
Panel Approval:	04 December 2023	(Ref: PM21919lIMd)
GPG Approval:	18 December 2023	(Ref: 23224_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GF19:

Annex 1. **TB for New (Dec 2023)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (June 2025)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI GF19 New (Dec 2023)

1. Scope and objectives

To develop and agree an application date on referred UI for ship's construction according to IGF Code for particular Fuel supply to consumers – single common flanges as per IMO MSC.1/Circ.1670.

2. Engineering background for technical basis and rationale

Following IMO MSC.1/Circ.1670 approved at MSC 107th session held on 31 May to 9 June 2023.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

Machinery Panel agreement to apply unified application date.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

Technical Background (TB) document for UI GF19 (Rev.1 June 2025)

1. Scope and objectives

1) Specify the items that each society should confirm to verify compliance with IGF Code 9.2.2 when utilizing single common flanges.

2) Revise the current text to ensure a clear understanding.

2. Engineering background for technical basis and rationale

At MSC107 it was agreed that single common flanges and other component should not be used where one single failure itself may overcome both primary and secondary barriers and may result in a gas leak into the surrounding area and MSC issued the agreement as MSC.1/Circ.1670.

However, due to maintenance concerns, the use of single common flanges was accepted for connections to gas consumers including components such as gas valve units.

This time, the following two conditions were proposed for using single common flanges in a manner that prevents a gas leak into the surrounding area even in the case of aforementioned connections:

a) It is justified that the installation of a double flange connection (2 independent flanges, one on the gas pipe and one on the secondary enclosure) is not practicable, and
b) Technical justifications are submitted demonstrating that a single common flange meets the safety criteria in IGF 9.2.2 (i.e. no leak from the piping system into the surrounding area in case of failure of one sealing system).

Following the discussion, these two conditions were agreed upon. Also, taking into account previous discussions at IMO, it was specified that at least bolt loosening should be considered in requirement b).

In addition, the existing texts were reviewed to provide a clear understanding of the single common flange and the connection where single common flange may be used.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

Regarding the technical justification specified in b), it was suggested that it should be a prescriptive requirement rather than a functional requirement for uniform implementation among members. In response, in the second sentence of b), it was specified that bolt loosening should at least be considered to prevent flange failure, i.e., separations between mating surfaces of the flange due to loads caused by sudden movements (e.g., hog and sag of the ship or excessive vibration).

In addition to the above, regarding bolt rupture, consideration was given to the fact that the past discussion at IMO pointed out that the number of bolts was redundant according to the applicable standard. However, it was decided to include bolt rupture in the UI, because the external forces resulting from hog and sag of the ship may be higher than the values considered in the standard (e.g., EN 1092-1 standard, Annex E, paragraph E.3.1) depending on parameters such as pipe supporting arrangement and bolt tightening.

6. Attachments if any

None.

UI GF 20 "Arrangements of fuel tanks in methyl/ethyl alcohol fuelled vessels"

Summary

This UI provides interpretation of the provisions in MSC.1/Circ.1621 (Para 5.3) concerning the arrangements of fuel tanks in methyl/ethyl alcohol fuelled vessels.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2024)	18 June 2024	1 July 2025

- **New (June 2024)**

1 Origin of Change:

Suggested by IACS member.

2 Main Reason for Change:

IACS members have faced challenges while applying some of the MSC.1/Circ.1621 paragraph 5.3 provisions, in particular regarding the content of para 5.3.1 providing for tanks containing fuel not to be located within machinery spaces of category A, in combination with para 5.3.2 providing for integral fuel tanks being surrounded by protective cofferdams, except on those surfaces bound by shell plating below the lowest possible waterline, other fuel tanks containing methyl/ethyl alcohol, or fuel preparation space.

3 Surveyability review of UR and Auditability review of PR

Review of the surveyability of UI has not been carried out.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

The qualified majority deems that:

- Integral methyl/ethyl alcohol tanks may be placed in the area of the ship where the machinery spaces are located (machinery space block), provided that a cofferdam of at least 600mm width with A60 insulation is fitted between the tank and the Machinery Space, subject to compliance with the other requirements in MSC.1/Circ.1621 .

- Integral tanks arranged with a surrounding cofferdam are not regarded as being within Machinery Spaces of Category A

- Independent (free-standing) tanks cannot be placed inside a machinery spaces of category A, neither if a cofferdam of at least 600mm with A60 insulation on the boundaries facing the machinery space is surrounding the tank, because conflicting with paragraph 5.3.1 and paragraph 5.4.1 only allows them to be placed on the open deck or in a fuel storage hold space.

While initially the Resolution was supposed to be an UR, it was later agreed that the Guidelines per MSC.1/Circ.1621 constitute a guidance for application of the Alternative Design principle per para 2.3 of the IGF Code, and therefore a UI to IGF would be a better instrument, because the UI actually addresses provisions of a Statutory, even if non-mandatory instrument, which are applied by IACS Members in their role of ROs, i.e. on behalf of and upon instructions by the Flag Administration.

The implementation statement clarifies that application of the UI is limited to ships whose Flag Administration requires application of MSC.1/Circ.1621 .

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

No hinderance to MASS, including any other new technologies.

8 Dates:

Original Proposal	: 20 Sep 2023	(Made by: IACS member)
Panel Approval	: 16 May 2024	(Ref: PD22006aIDj)
GPG Approval	: 18 June 2024	(Ref: 22044bIGh)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GF20:

Annex 1. **TB for New (June 2024)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI GF20 (New, June 2024)

1. Scope and objectives

The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (Resolution MSC.1/Circ.391(95) - IGF Code) provides an international standard for ships using low-flashpoint fuel, other than ships covered by the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

At present the IGF Code contains detailed prescriptive requirements for natural gas (predominantly methane) only as fuel. All other gases or low-flashpoint fuels must apply the 'Alternative Design' process.

To support the IGF Code 'Alternative Design' process and to provide an international standard for ships using methyl/ethyl alcohol as fuel, the Maritime Safety Committee at its 102nd session approved the Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel as set out in MSC.1/Circ.1621

IACS members have faced challenges while applying some of the MSC.1/Circ.1621 paragraph 5.3 provisions, in particular regarding the content of para 5.3.1 providing for tanks containing fuel not to be located within machinery spaces of category A, in combination with para 5.3.2 providing for integral fuel tanks being surrounded by protective cofferdams, except on those surfaces bound by shell plating below the lowest possible waterline, other fuel tanks containing methyl/ethyl alcohol, or fuel preparation space

2. Engineering background for technical basis and rationale

It is considered that the cofferdams provide a number of safety functions to achieve an equivalent level of safety to conventional fuel oil installations, including:

(a) Provide a secondary barrier and safe collection space to prevent a release from the fuel tank reaching non-hazardous areas;
(b) Facilitate the detection of a leak from the tank; and
(c) Protect the fuel tank from external factors such as collision and dropped objects and, to a degree, fires.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

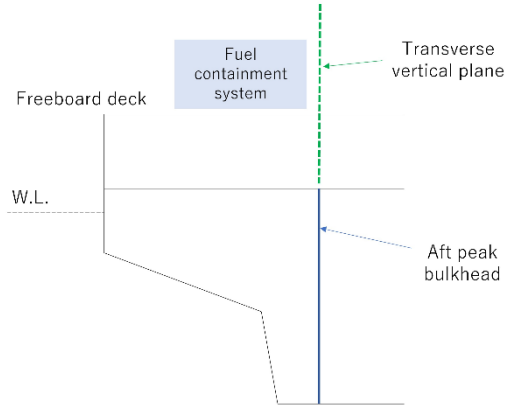
IACS considers that a cofferdam of at least 600mm width with A60 insulation fitted between an integral methyl/ethyl alcohol tank and a machinery space provides sufficient protection of both the tank and the machinery space from release of fuel and

spread of fire, to the extent that integral tanks arranged with a surrounding cofferdam are not regarded as being within Machinery Spaces of Category A.

Therefore, IACS considers integral methyl/ethyl alcohol tanks may be placed between the aftmost and foremost boundaries of the machinery spaces of Category A, provided that a cofferdam of at least 600mm width with A60 insulation is fitted between the tank and the machinery space.
Also, IACS considers that integral tanks arranged with a surrounding cofferdam are not regarded as being within Machinery Spaces of Category A

5. Points of discussions or possible discussions

There was discussion about possibility of including in the UI an interpretation of paragraph 5.3.3, (providing the fuel containment system to be abaft of the collision bulkhead and forward of the aft peak bulkhead) for possibly allowing location of methanol tanks aft of a transverse vertical plane in which the aft peak bulkhead is placed.



It was finally agreed not to include such interpretation in the UI.

6. Attachments if any

None.

UI GF 21 "CO2 fire extinguishing systems in methyl/ethyl alcohol fuelled vessels machinery spaces"

Summary

This UI provides interpretation of the provisions in MSC.1/Circ.1621 concerning the use of CO2 fire extinguishing systems in methyl/ethyl alcohol fuelled vessels machinery spaces and fuel preparation spaces.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Oct 2024)	26 October 2024	1 January 2026

- **New (Oct 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

IACS members have faced challenges while applying some of the MSC.1/Circ.1621 paragraph 11.7.1 provisions regarding the suitability of the medium for the extinguishing of methyl/ethyl alcohol fires, specifically when considering the use of CO2. The UI is intended to establish a unified interpretation regarding the concentration of CO2 to be used in machinery spaces and fuel preparation spaces.

3 Surveyability review of UR and Auditability review of PR

Review of the surveyability of UI has not been carried out.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

The qualified majority deems that a quantity of CO2 equivalent to 50 % of the gross volume of the space considered is suitable, however aspects such as inventory of methanol and the expected duration of a potential methanol fire in the space considered, may be considered in the risk assessment to confirm the suitability of a different quantity of fire-extinguishing agent.

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

No hinderance to MASS, including any other new technologies.

8 Dates:

Original Proposal	: 19 Feb 2024	(Made by: IACS member)
Panel Approval	: 04 October 2024	(Ref: PD24006)
GPG Approval	: 26 October 2024	(Ref: 24150_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI GF21:

Annex 1. **TB for New (Oct 2024)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI GF21 (New, Oct 2024)

1. Scope and objectives

The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (MSC.1/Circ.391(95) - IGF Code) provides an international standard for ships using low-flashpoint fuel, other than ships covered by the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

At present the IGF Code contains only detailed prescriptive requirements for natural gas (predominantly methane) as fuel. All other gases or low-flashpoint fuels must apply the 'Alternative Design' process.

To support the IGF Code 'Alternative Design' process and to provide an international standard for ships using methyl/ethyl alcohol as fuel, the Maritime Safety Committee at its 102nd session approved the Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel as set out in MSC.1/Circ.1621

IACS members have faced challenges while applying some of the MSC.1/Circ.1621 paragraph 11.7.1 provisions regarding the suitability of the medium for the extinguishing of methyl/ethyl alcohol fires, specifically when considering the use of CO2. The UI is intended to establish a unified interpretation regarding the concentration of CO2 to be used in machinery spaces and fuel preparation spaces.

2. Engineering background for technical basis and rationale

MSC.1/Circ. 1621 para 11.7.1 requires the following regarding the fire extinguishing systems of engine room and FPR:

"11.7.1 Machinery space and fuel preparation space where methyl/ethyl alcohol-fuelled engines or fuel pumps are arranged should be protected by an approved fixed fire-extinguishing system in accordance with SOLAS regulation II-2/10 and the FSS Code. In addition, the fire-extinguishing medium used should be suitable for the extinguishing of methyl/ethyl alcohol fires."

It is recognized that CO2 may be a suitable extinguishing medium and several sources gives indication on the concentration to be used depending on the situation:

a) The FSS Code requires the following for machinery spaces (using fuel oil):
"2.2.1.3 For machinery spaces the quantity of carbon dioxide carried shall be sufficient to give a minimum volume of free gas equal to the larger of the following volumes, either:
.1 forty percent of the gross volume of the largest machinery space so protected, the volume to exclude that part of the casing above the level at which the horizontal area of the casing is 40% or less of the horizontal area of the space concerned taken midway between the tank top and the lowest part of the casing; or
.2 thirty-five percent of the gross volume of the largest machinery space protected, including the casing;"

b) In the IBC Code applicable to chemical tankers, the required percentage of CO2 for cargo pump rooms is as follows:

"11.2.1 The cargo pump-room of any ship shall be provided with a fixed carbon dioxide fire-extinguishing system as specified in SOLAS regulation II-2/10.9.1.1. A notice shall be exhibited at the controls stating that the system is only to be used for fire-extinguishing and not for inerting purposes, due to the electrostatic ignition hazard. The alarms referred to in SOLAS regulation II-2/10.9.1.1.1 shall be safe for use in a flammable cargo vapour/air mixture. For the purpose of this requirement, an extinguishing system shall be provided which would be suitable for machinery spaces. However, the amount of gas carried shall be sufficient to provide a quantity of free gas equal to 45% of the gross volume of the cargo-pump room in all cases"

c) International standards on Carbon Dioxide Extinguishing Systems such as NFPA 12, BS 5306-4 are containing provisions to define the required quantity of CO2 to be used. An allowance for normal leakage is included in the calculation of the required quantity of carbon dioxide within those standards in addition to the design CO2 concentration. For that reason, the quantity of carbon dioxide required by NFPA (same calculation can be performed with BS) to protect a marine machinery space containing Diesel/hydrocarbons (material requiring a design CO2 concentration of 34%) is to be equal or larger than 41% of the gross volume of the machinery space (=0.74 kgCO2/m3 * 0.56 m3/kg = volume factor for large volumes * expansion factor) which is consistent with the IMO FSS code.
NFPA/BS specify that in the case of materials requiring a design CO2 concentration over 34% (e.g. methanol = 40%), the quantity of carbon dioxide calculated from the gross volume of the machinery space is to be increased by a material factor. In the case of methanol, the material factor is equal to 1.2 (see NFPA figure 5.3.4 page 24 or BS table 2 page 23) and gives a CO2 quantity of 48% of the gross volume.

d) The proFLASH report from RISE on methanol fire detection and extinguishment states that "the design concentration of carbon dioxide gas fire-extinguishing systems should be increased from 40 % to 55 % to achieve the same safety margin for methanol as for traditional fuels".

Considering the above elements, a value of 50% was deemed appropriate since it is in line with the principles/orders of magnitudes given in these key references.

Aside from CO2 concentration, others aspects may have to be considered for the suitability of CO2 fire extinguishing system including aspects such as time for CO2 deployment (including the time needed for headcounting and ensuring complete evacuation of the space before releasing CO2), the inventory of methanol in the space and methanol fire duration in the space considered, that may imply that at the time the CO2 is deployed the fire, even if originated form methanol, might have changed into an oil, paint and other materials fire that do not require an increased concentration of CO2 to be extinghuished. This may be considered during the risk assessment process.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

FSS Code: 2024
IBC Code : 2020

NFPA 12:2022
BS 5306-4:2012
proFLASH: Methanol fire detection and extinguishment, Franz Evegren, SP Rapport 2017:22

4. Summary of Changes intended for the revised Resolution:

IACS considers that CO2 fire extinguishing system may be used for the extinguishing of methyl/ethyl alcohol fire provided the quantity of CO2 is sufficient to give a minimum volume of free gas equal to 50% of the gross volume of the largest space protected including the machinery space casing.

Also, IACS considers that, as an alternative, the suitability of a different quantity of CO2 may be considered in the risk assessment, considering other aspects such as the time before deployment compared to the duration of potential methanol fire in the space considered.

5. Points of discussions or possible discussions

Different views expressed during eight (8) rounds of correspondence/discussions are covered in section to above (Engineering background for technical basis and rationale).

6. Attachments if any

None.

UI GF22 "Gas Fuel Vent Pipes – Single walled construction in Machinery spaces"

Summary

This UI provides interpretation for gas fuel vent piping when applying paragraph 9.6.1 of part A-1 of the IGF Code, as amended by Resolution MSC.551(108).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Mar 2024)	14 March 2024	1 July 2026

- **New (Mar 2025)**

1 Origin of Change:

☑ Other - Machinery Panel Task no. PM18914c

2 Main Reason for Change:

New document.

3 Surveyability review of UR and Auditability review of PR

Not applicable.

4 Human Element issues assessment

Not applicable

5 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

Initial request made by CIMAC WG2 to address the concern of fuel gas vent pipe in gas safe machinery space.

6 History of Decisions Made:

Machinery Panel assigned the task to PTPM 26 to develop relevant paper and unanimous agreement made in both PTPM26 and Panel on final draft of UI in question.

7 Other Resolutions Changes:

None.

8 Any hinderance to MASS, including any other new technologies:

None. Not applicable.

9 Dates:

Original Proposal	: 21 December 2021	(Made by: Machinery Panel)
Panel Approval	: 24 April 2024	(Ref: PM18914cIMo)
GPG Approval	: 15 March 2025	(Ref: 23182dIGj)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI GF22:

Annex 1. **TB for New (Mar 2025)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI GF22 (New Mar 2025)

1. Scope and objectives

This decision outlines the acceptance criteria for gas fuel vent pipes within gas-safe machinery spaces, specifically focusing on single-walled construction.

To establish conditions for the acceptance of single-walled gas fuel vent pipes within gas-safe machinery spaces, ensuring safety and compliance with IGF Code 9.6.1 regulation. These criteria aim to provide guidelines for the purging, venting, or bleeding of fuel gas lines while maintaining the integrity of the gas fuel system and safeguarding against potential hazards.

2. Engineering background for technical basis and rationale

Paragraph 9.6.1 of the IGF Code, as amended by Resolution MSC.551(108) outlines stringent requirements for fuel piping within gas-safe machinery spaces. It mandates either a double-wall piping system with inert gas pressurization or installation within a ventilated pipe or duct, ensuring enhanced safety measures against potential gas leaks or hazards.

9.6.1 of the IGF Code, Fuel piping in gas-safe machinery spaces shall be completely enclosed by a double pipe or duct fulfilling one of the following conditions:

.1 the gas piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the gas fuel pressure. Suitable alarms shall be provided to indicate a loss of inert gas pressure between the pipes. When the inner pipe contains high pressure gas, the system shall be so arranged that the pipe between the master gas valve and the engine is automatically purged with inert gas when the master gas valve is closed; or

.2 the gas fuel piping shall be installed within a ventilated pipe or duct. The air space between the gas fuel piping and the wall of the outer pipe or duct shall be equipped with mechanical under pressure ventilation having a capacity of at least 30 air changes per hour. This ventilation capacity may be reduced to 10 air changes per hour provided automatic filling of the duct with nitrogen upon detection of gas is arranged for. The fan motors shall comply with the required explosion protection in the installation area. The ventilation outlet shall be covered by a protection screen and placed in a position where no flammable gas-air mixture may be ignited; or

.3 other solutions providing an equivalent safety level may also be accepted by the Administration.

The Panel found that IGF Code does not explicitly specify whether vent piping for gas fuel is included in the fuel piping. However, based on the provisions of paragraph 9.5.2, it is inferred that vent piping is subject to the same requirements as fuel piping, except for specific exemptions in mechanically ventilated spaces.

Meantime the requirement in 9.5.1 need not be applied for fully welded fuel gas vent pipes led through mechanically ventilated spaces.

Actually despite the stringent regulations, engine manufacturers (CIMAC) have proposed single-walled vent piping solutions over several years, which have been widely accepted within the industry. This trend reflects the need for pragmatic solutions that balance safety requirements with practical engineering considerations and industry practices.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

Members agreed that Gas fuel vent pipes within gas-safe machinery spaces, designed for purging, venting, or bleeding fuel gas lines, must meet specific criteria for acceptance. These pipes, of single-walled construction, shall originate from a gas fuel piping system with a maximum operating pressure not exceeding 1 MPa, or the maximum built-up back pressure in the vent piping shall be calculated not to surpass 0.5 MPa and they shall be fully welded construction and open ended.

Rational behind 0.5 MPa is referring to 7.3.3.2 of IGF Code which refer to open ended lines where it is not to be less than 0.5 MPa.

Additionally, the gas-safe machinery space shall have permanent mechanical ventilation.

However, vent piping for internal combustion engines shall generally be of double-walled construction unless single-walled construction aligns with the engine's safety concept.

Considering the present state of affairs, IACS Machinery Panel considers that the minimum requirements for such vent piping is necessary for the purpose of ensuring safe distribution of fuel to the consumers. Therefore, IACS adopted the unified interpretation UI GF22 which was developed from the viewpoint of containment of gas fuel and ventilation.

Machinery Panel approached CIMAC for their feedback and view, CIMAC reviewed the IACS unified interpretation and confirm their acceptance.

MP has carried out scrutiny of attached UI against the three safeguard points and is found to have no risk of objection.

6. Attachments if any

None.

IACS

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May 2025

History Files (HF) and Technical Background (TB) documents for UIs concerning HSC Code (UI HSC)

Res. No.	Title	Current Rev.	HF/TB?
UI HSC1	Cupboard as part of the space	Del Nov 2021	HF
UI HSC2	Classification of Stairways	Del Nov 2021	HF
UI HSC3	Public spaces extending over 2 decks	Del Nov 2021	HF
UI HSC4	Ventilation Grille in Toilet Entrance Door	Del Nov 2021	HF
UI HSC5	Aluminium Lube Oil Sump or Tank	Del Mar 2021	HF
UI HSC6	Protection of Propeller Shaft	Rev.1 Nov 2021	HF
UI HSC7	Machinery Installation – Dead Craft Condition	Rev.1 Nov 2005	No
UI HSC8	Protection of load bearing structures	Corr.1 Sep 2022	HF
UI HSC9	Keel laying date for fibre-reinforced plastic (FRP) craft	Corr.1 Jan 2014	HF
UI HSC10	Inclusion of mediums of the fire-fighting systems in lightweight (2000 HSC Code Chapter 1, Regulation 1.4.34)	May 2016	HF
UI HSC11	Fire-Extinguishing Media Restrictions	May 2025	HF

UI HSC1: "Cupboard as part of the space"

Summary

This UI has been deleted with implementation date for deletion on 1 July 2022 as it is included in 2000 HSC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2021)	10 November 2021	1 July 2022
New (1996)	1996	

- **Del (Nov 2021)**

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Obsolete, as it is included in paragraph 7.3.2.2 of the 2000 HSC Code as amended by Resolution MSC.222(82), adopted on 8 December 2006.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Deletion discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 1 October 2021 (Made by: Panel member)
Panel Approval: 20 October 2021 (Ref: PS19002tISb)

GPG Approval: 10 November 2021 (Ref: 19001rIGb)

- **New (1996)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Nov 2021)**

See separate TB document in Annex 1.

◄▼►

Note: There are no technical background documents available for New (1996).

Technical Background (TB) document for UI HSC1 (Del Nov 2021)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Deleted as it is included in 2000 HSC Code.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Deleted

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC2: "Classification of stairways"

Summary

This UI has been deleted with implementation date for deletion on 1 July 2022 as it is included in 2000 HSC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2021)	10 November 2021	1 July 2022
New (1996)	1996	

- **Del (Nov 2021)**

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Obsolete, as it is included in 2000 HSC Code 7.3.1.3

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Deletion discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 1 October 2021 (Made by: Panel member)
Panel Approval: 20 October 2021 (Ref: PS19002tISb)
GPG Approval: 10 November 2021 (Ref: 19001rIGb)

- **New (1996)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Nov 2021)**

See separate TB document in Annex 1.

◂▼▸

Note: There are no technical background documents available for New (1996).

Technical Background (TB) document for UI HSC2 (Del Nov 2021)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Deleted as it is included in 2000 HSC Code 7.3.1.3.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Deleted

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC3: "Public spaces extending over 2 decks"

Summary

This UI has been deleted with implementation date for deletion on 1 July 2022 as it is included in 2000 HSC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2021)	10 November 2021	1 July 2022
New (1996)	1996	

- **Del (Nov 2021)**

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Obsolete, as it is included in paragraph 7.4.4.2 of the 2000 HSC Code as amended by resolution MSC.222(82), adopted on 8 December 2006.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Deletion discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 1 October 2021 (Made by: Panel member)
Panel Approval: 20 October 2021 (Ref: PS19002tISb)

GPG Approval: 10 November 2021 (Ref: 19001rIGb)

- **New (1996)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Nov 2021)**

See separate TB document in Annex 1.

◂▼▸

Note: There are no technical background documents available for New (1996).

Technical Background (TB) document for UI HSC3 (Del Nov 2021)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Deleted as it is included in 2000 HSC Code 7.4.4.2.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Deleted

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC4: "Ventilation Grille in Toilet Entrance Door"

Summary

This UI has been deleted with implementation date for deletion on 1 July 2022 as it is included in 2000 HSC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2021)	10 November 2021	1 July 2022
New (1997)	1996	

- **Del (Nov 2021)**

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Obsolete, as it is included in paragraph 7.4.2.7 of the 2000 HSC Code as amended by resolution MSC.222(82), adopted on 8 December 2006.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Deletion discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 1 October 2021 (Made by: Panel member)
Panel Approval: 20 October 2021 (Ref: PS19002tISb)

GPG Approval: 10 November 2021 (Ref: 19001rIGb)

- **New (1997)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Nov 2021)**

See separate TB document in Annex 1.

◂▼▸

Note: There are no technical background documents available for New (1997).

Technical Background (TB) document for UI HSC4 (Del Nov 2021)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Deleted as it is included in 2000 HSC Code 7.4.2.7.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Deleted

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC5 “Aluminium Lube Oil Sump or Tank”

Summary

UI HSC5 was deleted, taking into account that the content of this UI (New version) has already been incorporated in the amendments to the 2000 HSC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Mar 2021)	18 March 2021	-
New (1997)	1997	-

- **Del (Mar 2021)**

1 Origin of Change:

☑ Other (Periodical review carried out by Machinery Panel)

2 Main Reason for Change:

UI HSC5 was deleted, taking into account that the content of this UI (Original version) has already been incorporated in the amendments to the 2000 HSC Code.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 28 October 2019 (Ref: PM18939_IMd)
Panel Approval: 9 November 2020 (Ref: PM20906_IMf)
GPG Approval: 18 March 2021 (Ref: 20206cIGd)

- **New (1997)**

No history files or TB document available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI HSC5:

◄▼►

Note: *There are no Technical Background (TB) documents available for the original version (1997) and Del (Mar 2021).*

UI HSC6: "Protection of Propeller Shafts"

Summary

The UI HSC6 Rev.1 provides a reference to the HSC 2000, Ch. 9, part B, Sec 8.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2021)	11 November 2021	1 July 2022
New (1997)	1997	

- **Rev.1 (Nov 2021)**

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Revised to include a correct regulation in the 2000 HSC Code.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Revision discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 1 October 2021 (Made by: Panel member)
Panel Approval: 20 October 2021 (Ref: PS19002tISb)
GPG Approval: 10 November 2021 (Ref: 19001rIGb)

- **New (1997)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (Nov 2021)**

See separate TB document in Annex 1.

◂▼▸

Note: There are no technical background documents available for New (1997).

Technical Background (TB) document for UI HSC6 (Rev.1 Nov 2021)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Revised to include a reference to the HSC 2000, Ch. 9, part B, Sec 8.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Only reference regulation is amended. The interpretation is unchanged.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC8 "Protection of load bearing structures (HSC Code 7.4.2.3)"

Summary

UI HSC8 is updated to include a reference to the related MSC.1/Circ.1457.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2022)	25 September 2022	-
NEW (July 2012)	18 July 2012	1 January 2014

- **Corr.1 (Sep 2022)**

1 Origin of Change:

☐ Other (Regular review of UI at 10th anniversary)

2 Main Reason for Change:

At the regular review at the UI's 10th anniversary it was agreed that the UI should include a reference to the related IMO circular, MSC.1/Circ.1457.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel reviewed the UI and agreed by correspondence that it should be amended include a reference to MSC.1/Circ.1457. The Panel had some discussion on the application to HSC constructed to the 1994 HSC Code, but concluded that as it was written after the 2000 HSC Code entered into force it would not.

Additional text referring to the IMO circular was added at the end of the UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 05 July 2022	(Made by Safety Panel members)
Panel Approval	: 08 September 2022	(Ref: PS22018aISe)
GPG Approval	: 25 September 2022	(Ref: 22119aIGb)

- **New (July 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

HSC Code Ch.7.4.2.3 reads:
"Main load-carrying structures within areas of major fire hazard and areas of moderate fire hazard and structures supporting control stations shall be arranged to distribute load such that there will be no collapse of the construction of the hull and superstructure when it is exposed to fire for the appropriate fire protection time. The load-carrying structure shall also comply with the requirements of 7.4.2.4 and 7.4.2.5."

Protection time, extent of structural fire protection, fire testing and load case need to be interpreted in a uniform way.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion the Panel agreed to establish a project team under task number 32. This group drafted the proposed IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal	: 14 December 2009	(made by a Member)
Panel Approval	: June 2012	(by Statutory panel)
GPG Approval	: 18 July 2012	(Ref: 10156_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI HSC8:

Annex 1. **TB for New (July 2012)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) documents available for Corr.1 (Sep 2022).*

Technical Background (TB) document for UI HSC8 (New July 2012)

1. Scope and objectives

This UI is intended to clarify the scope of applicability of HSC Code Ch.7.4.2.3.

2. Engineering background for technical basis and rationale

HSC Code Ch.7.4.2.3 reads:
"Main load-carrying structures within areas of major fire hazard and areas of moderate fire hazard and structures supporting control stations shall be arranged to distribute load such that there will be no collapse of the construction of the hull and superstructure when it is exposed to fire for the appropriate fire protection time. The load-carrying structure shall also comply with the requirements of 7.4.2.4 and 7.4.2.5."

The intent of HSC Code 7.4.2.3 is that a fire in areas of moderate or major fire hazard will not impair the global structural integrity of the vessel and that spaces such as the wheelhouse will not collapse in case of a fire in other areas. Designers have advised that there are different approaches to this among class societies and flag Administrations. A Unified Interpretation would therefore be useful. The main issues in need of interpretation are:

- protection time
- extent of the design fire and the corresponding extent of the structural fire
- protection
- fire testing (which standards should for instance be applied to pillars)
- load case

3. Source/derivation of the proposed IACS Resolution

HSC Code 7.4.2.3.

4. Summary of Changes intended for the revised Resolution

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI HSC 9 "Keel Laying Date for Fibre-Reinforced Plastic (FRP) Craft"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2014)	10 January 2014	-
NEW (Mar 2013)	19 March 2013	1 January 2014

- **Corr. 1 (Jan 2014)**

.1 Origin of Change:

☒ Suggestion by an IACS member

.2 Main Reason for Change:

To insert an important missing word into the text of the UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Suggestion from a Statutory Panel member was agreed by correspondence.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 09 Dec 2013 Made by a Statutory Panel member
GPG Approval: 10 January 2014 (Ref: 13047_IGg)

- **New (Mar 2013)**

.1 Origin for Change:

☒ Suggestion by IACS members

.2 Main Reason for Change:

With the introduction of the NOx Tier I/II/III requirements and other emerging statutory legislation, it is necessary to agree a consistent interpretation for the term

“the keels of which are laid or which are at a similar stage of construction” for Fibre-Reinforced Plastic (FRP) Craft.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: November 2012 made by Statutory Panel
Panel Approval: 10 February 2013 by Statutory Panel
GPG Approval: 19 March 2013 (Ref: 13047_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (March 2013)**

See separate TB document in Annex 1.

****

Note: No Technical Background (TB) document has been prepared for Corr.1 (Jan 2014).

Technical Background for UI HSC 9 New, March 2013

1. Scope and objectives

This UI is intended to define a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" when applied to Fibre-Reinforced Plastic (FRP) Craft.

2. Engineering background for technical basis and rationale

The Keel Laying date can be difficult to define accurately when FRP Craft are considered. This has not caused a great problem in the past as FRP vessels are rare.

However MARPOL Annex VI uses the term "ship constructed," particularly in relation to NOx Tier I/II/III requirements (noting that Tier III applies to a marine diesel engine that is installed on a ship constructed on or after 1 January 2016).

For most composite vessels it would require the application of the latter, i.e. that the mass of 1% of the structural material is estimated from the laminate schedule and agreed between the Builder and the Surveyor. However, this is not a practical approach.

It was considered necessary therefore to agree a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" for Fibre-Reinforced Plastic (FRP) Craft.

3. Source / derivation of the proposed IACS Resolution

IMO Conventions and Codes (Performance Standards, Technical Standards, Resolutions and Circulars)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The initial suggestion was for the commencement of keel laying to be when the gel coat and back up reinforcements are laid and at the point of commencement of the main structural laminate.

Therefore where there is no gel coat then the structural laminate is the first item laid in the mould so that is the start of the Keel Layup.

To simplify this it was agreed that the start of Keel Layup is when the main structural laminate commences which in most cases will be after the gel coat is applied. Therefore the definition could bypass the gel coat stage because that is "equivalent" to a paint system on the outside of a steel hull.

A definition using the words "hull resin application" was rejected as it did not suit vessels that use a resin infusion technique - several weeks of loading the hull mould

with dry reinforcements may take place and the proposal would be the date when the hull is actually infused.

To satisfy all scenarios it was concluded that the start of Keel Layup is the “commencement of laying the main structural reinforcements of the hull". This definition suits moulding in a female mould or on a male plug. This definition excludes any gel coat and the associated gel coat back up reinforcements (i.e. typically light weight powder bound CSM back up layer(s)).

6. Attachments if any

None

UI HSC10 "Inclusion of mediums of the fire-fighting systems in lightweight (2000 HSC Code Chapter 1, Regulation 1.4.34)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2016)	10 May 2016	1 January 2017

- **New (May 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Extension of the scope of the unified interpretation UI SC273, clarifying if the weight of mediums of the fire-fighting systems are included in the lightweight, to HSC Code.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The interpretation UI SC273 "Inclusion of the weight of mediums of the fire-fighting systems in lightweight" was submitted by IACS to SDC 3. The Subcommittee agreed with the paper submitted by IACS and included the proposed text with minor modifications in the list of the draft unified interpretations for submission to MSC 96.

Within the safety panel it was highlighted that the UI SC273 did not refer to MARPOL Convention and HSC Code where lightweight is also defined.

After short discussion of a qualifying majority in the Safety Panel decided to prepare a speaking note to be presented to MSC 96 proposing the extension of the interpretation to MARPOL Convention and the 2000 HSC Code.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: April 2016 made by Safety Panel
Panel Approval: April 2016 (Ref: PS15003d)
GPG Approval: 10 May 2016 (Ref: 15145dIGg)

Part B. Technical Background

List of Technical Background (TB) documents for UI HSC10:

Annex 1. **TB for New (May 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI HSC10 (New May 2016)

1. Scope and objectives

To develop an interpretation in order to establish if the weight of mediums of the fire-fighting systems are included in the lightweight as defined in the 2000 HSC Code Chapter 1, Regulation 1.4.34 in the light of UI SC273 submitted to SDC 3 and agreed by the Subcommittee.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The definition of lightweight in the 2000 HSC Code Chapter 1, Regulation 1.4.34, is:

"Lightweight is the displacement of the craft in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, passengers and crew and their effects."

The above definition is similar to those contained in SOLAS regulations II-1/2.21 and II-2/3.28, 2008 IS Code, para. 2.23 where CO2 is not explicitly mentioned.

For what in the above, a qualifying majority in the Safety Panel decided to extend the text of the interpretation UI SC273 “Inclusion of the weight of mediums of the fire-fighting systems in lightweight” to the 2000 HSC Code by means of a dedicated HSC UI.

The text of the interpretation takes into consideration the slight modifications to UI SC273 agreed by SDC 3 when drafting the draft unified interpretations of SOLAS chapter II-1 for submitting to the MSC 96 session for approval.

Following the IMO’s decision to include fresh water used for the fixed fire-fighting systems in the ship's light weight, there was further discussion in the Panel concerning the source of fresh water that should be included: that in dedicated tanks, that in the piping system and/or that in shared use tanks. After discussion the Panel agreed that:

“1. The weight of water used as the medium for the fixed fire-fighting systems means the weight of water (including any surplus margin of water as may be so specified) for the operation of all fixed fire-fighting systems installed onboard that is carried in dedicated tanks (i.e. system + quantity of water in dedicated tanks for fire-fighting); and

2. The water for the fixed fire-fighting systems in shared use tank should not be included into lightweight due to the problems associated with free surface effects of that tank."

*Underlined text added on 17 July 2017 (Ref: 15145dIGk).

After a short round of discussions the new unified interpretation has been agreed.

6. Attachments if any

None.

UI HSC11 "Fire-extinguishing media restrictions"

Summary

This UI provides interpretations for implementation of the 1994 and 2000 HSC Codes, regulation 7.9.4, prohibiting the use or storage of fire-extinguishing media containing perfluorooctane sulfonic acid (PFOS).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2025)	29 May 2025	1 January 2026

- **New (May 2025)**

1 Origin of Change:

☑ Suggestion by IACS Member

2 Main Reason for Change:

None – this is a new UI.

3 Surveyability review of UR and Auditability review of PR

None.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

5 History of Decisions Made:

A query was raised by one Member on how compliance with the new SOLAS regulation II-2/1.2.10 and II-2/10.11, prohibiting the use of PFOS in fire-fighting foams, will be demonstrated for both new and existing ships. All Members were generally in agreement on how compliance should be demonstrated and five Members explicitly agreed that a unified interpretation should be developed to address the issue. The remaining Members either had no view or no objections to a new UI. An assessment was done against the "safeguards" established at MSC 108 and it was concluded by all Members that the UI would be within the scope of the "safeguards". Noting that, in addition to the amendments to SOLAS proposed by Resolution MSC.532(107), MSC 107 also adopted corresponding amendments prohibiting the use of PFOS for the 1994 and 2000 HSC Codes. Considering this, the panel agreed to develop a new UI for the HSC Codes. Finally, IACS agreed to submit a paper to IMO SSE 11 Sub-Committee with the draft UIs, including consideration of the MSC 108 "safeguards".

6 Other Resolutions Changes:

A similar new unified interpretation was developed for SOLAS II-2, Regulation 10.11 to account for amendments made under Resolution MSC.532(107).

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original Proposal	: 03 April 2024	(Made by: Safety Panel Member)
Panel Approval	: 05 May 2025	(Ref: PS24026_)
GPG Approval	: 29 May 2025	(Ref: 24139eIGe)

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Part B. Technical Background

List of Technical Background (TB) documents for UI HSC11:

Annex 1. **TB for New (May 2025)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI HSC11 (May 2025)

1. Scope and objectives

1 The 107th session of the Maritime Safety Committee adopted resolutions MSC.532(107), MSC.536(107) and MSC.537(107) which included amendments to SOLAS and the HSC Codes regarding prohibiting the use and storage of fire-extinguishing media containing (PFOS). The purpose of the amendments is to protect persons on board against exposure to dangerous substances used in firefighting, as well as to minimise the impact of fire-extinguishing media that are deemed detrimental to the environment.

2 IACS notes that both the SOLAS and HSC Code amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships.

3 To provide the necessary clarity, IACS has adopted new IACS UI SC309 and new IACS UI HSC11.

2. Engineering background for technical basis and rationale

1 SOLAS regulation II-2/10.11 addresses fire-extinguishing media restrictions.

2 SOLAS regulation II-2/10.11.2.2 addresses the use and storage of PFOS as follows:

"11.2.2 Use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) shall be prohibited."

3 IACS notes that the SOLAS amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships. To address this issue and ensure all IACS Members are applying the same criteria to demonstrate compliance, IACS developed a new UI clarifying specific terminology and detailing the minimum requirements to achieve compliance.

4 Regulation 7.9.4 of the 1994 and 2000 HSC Codes address fire-extinguishing media restrictions.

5 Regulation 7.9.4.1 of the 1994 HSC Code addresses the use and storage of PFOS as follows:

"7.9.4.1 The following restrictions should apply for the use, storage or disposal of perfluorooctane sulfonic acid (PFOS):

> *.1 on all craft, use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) should be prohibited no later than the date of the first survey* on or after 1 January 2026; and*
>
> *.2 the substances prohibited by the requirements of 7.9.4.1.1 should be delivered to appropriate shore-based reception facilities when removed from the craft.*

** Refer to the Unified interpretation of the term "first survey" referred to in SOLAS regulations (MSC.1/Circ.1290).”*

6 Regulation 7.9.4.1 of the 2000 HSC Code addresses the use and storage of PFOS as follows:

“7.9.4.1 The following restrictions shall apply for the use, storage or disposal of perfluorooctane sulfonic acid (PFOS):

.1 on craft constructed on or after 1 January 2026, use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) shall be prohibited;

.2 craft constructed before 1 January 2026 shall comply with the requirements of 7.9.4.1.1 no later than the date of the first survey on or after 1 January 2026; and*

.3 the substances prohibited by the requirements of 7.9.4.1.1 or 7.9.4.1.2 shall be delivered to appropriate shore-based reception facilities when removed from the craft.

_____

** Refer to the Unified interpretation of the term "first survey" referred to in SOLAS regulations (MSC.1/Circ.1290).”*

7 IACS notes that the HSC Code amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships. To address this issue and ensure all IACS Members are applying the same criteria to demonstrate compliance, IACS developed a new UI clarifying specific terminology and detailing the minimum requirements to achieve compliance.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

Regulation 7.9.4 of the 1994 and 2000 HSC Codes.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

IACS

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May 2024

History Files (HF) and Technical Background (TB) documents for UIs concerning Load Line Convention (UI LL)

Res. No.	Title	Current Rev.	HF/TB?
UI LL1	Application (Article (4))	Rev.1 Jul 2008	TB
UI LL2	Depth for freeboard (Regulation 3(6))	Rev.1 Jul 2008	TB
UI LL3	Superstructure (Regulation 3(10)(b))	Rev.1 Jul 2008	TB
UI LL4	Details of marking (Regulation 8)	Rev.1 Jul 2008	TB
UI LL5	Doors (Regulation 12)	Rev.1 Jul 2008	TB
UI LL6	Hatchways closed by weather tight covers of steel or other equivalent material fitted with gaskets and clamping devices (Regulation 16 and 27(7)(c))	Rev.3 Jul 2008	TB
UI LL7	Machinery space openings (Regulation 17(1), 26(1), 27(9) and 27(10))	Rev.2 Jul 2008	TB
UI LL8	Miscellaneous openings in freeboard and superstructure decks (Regulation 18(2) and 18(3))	Rev.2 Apr 2021	HF
UI LL9		Deleted	No
UI LL10	Air pipes (Regulation 20)	Rev.2 Nov 2020	HF
UI LL11	Scuppers, inlets and discharges (Regulation 22(1))	Rev.4 July 2022	TB
UI LL12	Side scutters (Regulation 23)	Deleted (Jul 2008)	TB
UI LL13	Freeing ports(Regulation 24(1) and 24(5))	Rev.1 Jul 2008	TB
UI LL14	Protection of the crew (Regulation 25(2))	Corr.1 Oct 2015	HF

Res. No.	Title	Current Rev.	HF/TB?
UI LL15	Length of superstructure(Regulation 34(1) and 34(2))	Rev.4 Nov 2021	HF
UI LL16	Sheer	Rev.2 Jan 2023	HF
UI LL17	Minimum bow height(Regulation 39(1) and 39(2))	Rev.1 Jul 2008	TB
UI LL18	Freeboard tables (Regulation 28)	Rev.1 Jul 2008	TB
UI LL19	Form of certificates (Article 18)	Rev.1 Jul 2008	TB
UI LL20	Hatch beams and cover stiffeners of variable cross section (Regulations 15(4), 15(5), 15(6), 15(7) and 16)	Rev.1 Jul 2008	TB
UI LL21	Cargo ports or similar openings below the uppermost load line (Regulation 21(2))	Rev.1 Jul 2008	TB
UI LL22	Position of the inboard end of discharges when timber freeboard is assigned (Regulation 22(1))	Rev.1 Jul 2008	TB
UI LL23	Freeing arrangement (Regulations 26(5), 27(7) and 36(1)(e))	Rev.1 Jul 2008	TB
UI LL24	Negative depth correction (Regulation 31(3))	Rev.1 Jul 2008	TB
UI LL25	Effective length of raised quarterdeck (Regulation 35(4))	Rev.1 Jul 2008	TB
UI LL26	Continuous hatchways as trunk (Regulation 36)	Rev.2 Jul 2008	TB
UI LL27	Less than standard hatch coamings on trunks of less than standard height (Regulation 36(4))	Rev.1 Jul 2008	TB
UI LL28	Deduction for superstructures and trunks (Regulation 37)	Rev.1 Jul 2008	TB
UI LL29	Sheer credit for superimposed superstructures (Regulation 38(5), 38(7) and 38(12))	Rev.2 Jul 2008	TB
UI LL30	Sheer allowance for excess height of superstructure (Regulation 38(7) and 38(12))	Rev.1 Jul 2008	TB
UI LL31	Deduction for excess sheer (Regulation 38(15))	Rev.1 Jul 2008	TB
UI LL32	Special requirements for vehicle ferries, ro-ro ships and other ships of similar type	Withdrawn (Oct 2007)	No
UI LL33	Timber freeboards for ships having reduced Type 'B' freeboards assigned	Rev.1 Jul 2008	TB
UI LL34	Freeboard for lighters and barges (Regulation 27(11))	Corr.1 Jul 2008	TB
UI LL35	Stowage of timber deck cargo ships on having timber freeboards assigned (Regulations 44 and 45)	Del June 2021	HF

Res. No.	Title	Current Rev.	HF/TB?
UI LL36	Minimum wall thickness of pipes (Regulations 19, 20 and 22)	Rev.2 Jul 2008	TB
UI LL37	Superstructures with sloping end bulkheads (Regulations 34, 35 and 38(12))	Rev.2 Jul 2008	TB
UI LL38	Bow height (Regulation 39(2))	Rev.2 Jul 2008	TB
UI LL39	Structure of a lower freeboard deck (Regulation 3(9))	Rev.1 Jul 2008	TB
UI LL40	Security of hatch covers (Regulation 15(13))	Rev.2 Jul 2008	TB
UI LL41	Trunks (Regulations 29, 36 and 38))	Rev.1 Jul 2008	TB
UI LL42	Access openings on barges (Regulation 27(11))	Rev.1 Jul 2008	TB
UI LL43	Minimum bow height (Regulation 39)	Rev.1 Jul 2008	TB
UI LL44	Freeing ports (Regulation 24(3))	Rev.1 Jul 2008	TB
UI LL45	Presentation of stability data	Rev.2 Aug 2008	TB
UI LL46	Protection of openings in raised quarter decks (Regulations 18(2) and Interpretation LL8)	Rev.3 Jul 2008	TB
UI LL47	Guard Rails	Rev.3 Jul 2008	TB
UI LL48	Moulded Depth (Regulation 3(5)(c) and 3(9) and Freeboard Calculation (Regulation 40(1))	Rev.2 Jul 2008	TB
UI LL49	Air pipe closing devices (Regulation 20)	Rev.1 Jul 2008	TB
UI LL50	Protection of crew (1966 Load Line Convention Regulation 25(4), 26(2) and 27(7), 1988 Protocol Regulation 25(4), 26(2) and 27(8) and SOLAS II-1/3-3)	Rev.6 June 2021	HF
UI LL51	Freeboard greater than minimum (Regulation 2(5))	Rev.2 Jul 2008	TB
UI LL52	Weathertight closing appliances for ventilators (Regulation 19(4))	Rev.1 Jul 2008	TB
UI LL53	Treatment of moonpools	Rev.1 Jul 2008	TB
UI LL54	Effective length of superstructures (Regulation 35(3))	Rev.1 Jul 2008	TB
UI LL55	Least Moulded Depth for a Ship with a Rake of Keel (Regulation 3(1))	Corr.1 Dec 2021	HF
UI LL56	Block coefficient of a Pontoon (Regulation 3 (7))	Rev.1 Jul 2008	TB
UI LL57	Block Coefficient of a Multi-hull Craft (Regulation 3 (7))	Rev.1 Jul 2008	TB

Res. No.	Title	Current Rev.	HF/TB?
UI LL58	Machinery Space and Emergency generator room ventilator coaming heights (Regulations 17(2), 19(3) and 19(4))	Rev.1 Jul 2008	TB
UI LL59	Cargo manifold gutter bars – freeing arrangements and intact stability (ICLL Regulation 24 (1)(g) and Regulation 26)	Corr.1 Feb 2022	HF
UI LL60	Freeing ports in way of wells in combination with open superstructures (Regulation 24(1) and 24(4))	Rev.1 Jul 2008	TB
UI LL61	Method of correction for the effect of free surface of liquid in tanks	Del Nov 2022	TB
UI LL62	Side Scuttles, Windows and Skylights	Rev.1 Corr.2 Jun 2024	HF
UI LL63	Treatment of steps and recesses in transverse subdivision bulkheads: IMO Res. A.320 (IX), paragraphs 12(d) and 12(e)), and Regulation 27(12)(d) and (e) Revised 1988 ICLL (MSC.143(77)	Rev.2 Jul 2008	TB
UI LL64	Non-weathertight hatch covers above superstructure deck (Load Line Convention 1966 Regulations 2(5) and 14(2))	Rev.5 Jul 2008	TB
UI LL65	Ships with assigned or reassigned reduced freeboards and intended to carry deck cargo	Rev.3 Feb 2021	HF
UI LL66	Hatch Cover Stress/Deflection Calculation (Res. MSC.143(77), 2005 LL Protocol Regulation 16(5) (a) & (b))	Oct 2003	No
UI LL67	Endorsement of Certificates with the Date of Completion of the Survey on which they are Based (Resolutions MSC.170(79), MSC.171(79), MSC.172(79), MSC.174(79) through MSC.179(79) and MSC.181(79) through MSC.187(79))	Rev.1 Nov 2005	TB
UI LL68	Position of Freeboard Deck on Float On/Float Off Barge Carriers (Regulation 3(9))	Rev.1 Jul 2008	TB
UI LL69	Interpretation to 1996 ICLL Reg. 27 (Reg.27 of ICLL 1966: IMO Res. A.320 paragraph 12)	Rev.1 Jul 2008	TB
UI LL70	Corrosion Margin for Hatch Cover Design (Reg. 16 (5)(d), amendments to the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (Res. MSC. 143(77)))	Jan 2005	TB
UI LL71	Similar stage of construction (1966 ILLC, Article 2 (6)) (amended LL Protocol 1988, regulation 2, paragraphs (7) and (8))	Rev.1 Jul 2008	TB
UI LL72	Interpretation to ICLL Regulation 27 (Regulation 27(3))	Sept 2005	TB

Res. No.	Title	Current Rev.	HF/TB?
UI LL73	*Under Development*		-
UI LL74	Measurement of Distances	Aug 2008	TB
UI LL75	Permeability of Store Space in the Damage Stability Calculation (Regulation 27(3) & (8.d))	Sept 2008	TB
UI LL76	Initial Statutory Surveys at New Construction	Deleted Jun 2016	HF
UI LL77	Application of Load Line Requirements to Conversions of Single-hull Oil Tankers to Double-hull Oil Tankers or Bulk Carriers	Corr.1 Dec 2021	HF
UI LL78	Keel laying date for fibre-reinforced plastic (FRP) craft	Corr.1 Jan 2014	HF
UI LL79	Continuous hatchways (Regulation 36(6))	July 2014	HF
UI LL80	Unprotected openings	Rev.1 June 2022	HF
UI LL81	Deduction for superstructures and trunks	May 2022	HF

LL8 "Miscellaneous openings in freeboard and superstructure decks (Regulation 18(2) & 18(3))"

Summary

UI LL8 provides interpretation of requirements to the requirements of miscellaneous openings in freeboard and superstructure decks. Rev.2 updates the application statements to clarify the relevance to the amended 1988 Protocol.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Apr 2021)	27 April 2021	1 July 2022
Rev.1 (July 2008)	July 2008	-
New (1968)	1968	-

- **Rev.2 (Apr 2021)**

1 Origin of Change:

☑ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The application of the interpretation previously only referred to the 1988 Protocol, it did not explicitly state that it was applicable to the 1966 ILLC or that it was the 1988 Protocol as amended by Resolution MSC.143(77).

3 List of non-IACS Member classification societies participating in IACS Working Group:

None

4 History of Decisions Made:

As a part of the maintenance of IACS Resolutions which have not been updated for the last ten years, Safety Panel discussed the need to revise or delete UI LL8. It was considered that the interpretation for previous Reg.18(3) were reflected in the amended Reg.18 (5), (6) and (7) adopted by resolution MSC.143(77) in 2003.

After some discussion it was agreed to revise UI LL8 to update the application Notes as the text was still applicable to ships constructed to the 1966 ILLC which some flag administrations still use.

Minor changes to the text were also introduced to improve clarity.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable.

7 Dates:

Original Proposal: December 2020 (Made by: Safety Panel)
Panel Approval: 26 March 2021 (Ref: PS19002mISf)
GPG Approval: 27 April 2021 (Ref: 19001kIGf)

- **Rev.1 (July 2008)**

No records available

- **New (1968)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents for New (1968) and Rev.2 (Apr 2021).

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Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

LL 10 “Air pipes (Regulation 20)”

Summary

The Original UI provides interpretation of requirements to regulation 20 of International Convention on Load Lines (ILLC) prepared by Statutory Panel. Revision 2 updates the footnote to clarify the interpretation is applicable for both versions of the ILLC i.e. 1966 and 1988 protocol.

Part A. Revision History

Version no.9	Approval date	Implementation date when applicable
Rev.2 (Nov 2020)	20 November 2020	-
Rev.1 (July 2008)	July 2008	-
New (1968)	1968	-

- **Rev.2 (Nov 2020)**

The resolution in its present form (Rev.1) is proposed for editorial change.

1 Origin of Change:

Select a relevant option and delete the rest.

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The interpretation of this UI is not only applicable for requirements of Regulation 20 of International Convention on Load Lines 1988 protocol but also applicable for requirements of Regulation 20 of 1966 protocol.

3 List of non-IACS Member classification societies contributing 9or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on Periodic review of IACS Resolution by Safety Panel, noting that the interpretation of this UI is application for requirements of Regulation 20 of both International Convention on Load Lines 1966 and 1988 protocol, the footnote corrected to include cross reference of International Convention on Load Lines 1966 , the Safety Panel agreed to update the reference in the UI

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	29 August 2020	Made by: Safety Panel
Panel Approval:	23 October (Ref: 1900919bPSa)	
GPG Approval:	20 November 2020 (Ref: 19001bIGc)	

Rev.1 (July 2008)

No HF document available.

New (1968)

No HF/TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Nov 2020)**

See separate TB document in Annex 2.

Note:

There is no separate Technical Background (TB) for UI LL10 New (1968)

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LL 11 "Scuppers, inlets and discharges"

Summary

The Original Resolution provides interpretation of requirements to regulation 22(1) of 1966 & 1988 protocol to International Convention on Load Lines prepared by Statutory Panel. Revision 4 updated footnote to clarify sections of the UI applicable for 1966 protocol and sections applicable for 1988 protocol.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.4 (July 2022)	22 July 2022	-
Rev.3 (July 2008)	July 2008	-
Rev.2 (1994)	1994	-
Rev.1 (1990)	1990	-
New (1968)	1968	-

- **Rev.4 (July 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The whole interpretation is applicable to Regulation 22(1) of International Convention on Load Lines 1966 and to Regulation 22(1) of 1988 Protocol to International Convention on Load Lines 1966. Part only is applicable to the 1988 Protocol as amended by MSC.143(77) as the remaining requirements are already incorporated into the Convention that resolution.

Resolution MSC.491(104) deleted the word "inlets" from regulation 22(1)(g).

3 List of non-IACS Member classification societies participating in IACS Working Group:

None

4 History of Decisions Made:

Based on the periodic review of IACS Resolution by Safety Panel, noting that the interpretation of this UI is application for requirements of Regulation 22(1) of International Convention on Load Lines 1966 and part of the interpretation is applicable for Regulation 22(1) of 1988 protocol as amended, the footnote was corrected to include the clarity on the same.

Following discussion at SDC 7, the word "inlets" was deleted from the 7th paragraph of interpretation AA.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: July 2019	(Made by: Safety Panel member)
Panel Approval	: 05 July 2022	(Ref: PS19002i)
GPG Approval	: 22 July 2022	(Ref: 19001uIGb)

- **Rev.3 (July 2008)**

Refer to Part B Annex 1 for TB file

- **Rev.2 (1994)**

No records are available

- **Rev.1 (1990)**

No records are available

- **New (1968)**

No records are available

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Part B. Technical Background

List of Technical Background (TB) documents for UI LL11:

Annex 1. **TB for Rev.3 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.4 (July 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI LL11 Rev.3 (July 2008)

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that "longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320". The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

None

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008
43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008

51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for LL 11 Rev.4 (July 2022)

1. Scope and objectives

Review of the Unified interpretation LL 11 Rev.3 (July 2008) at 10th anniversary

2. Engineering background for technical basis and rationale

This UI was developed to provide interpretation on provision of Internal Convention on Load Lines regarding Scuppers, inlets & discharges and Garbage chutes.

The footnote was not clear regarding which sections of the UI provide interpretation to the requirements in 1966 Convention and which provide interpretation to requirements in the 1988 protocol as amended by resolution MSC.143(77). The footnote was revised to bring clarity.

3. Source/derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

The paragraphs of the interpretation have been separated into those which are applicable to the 1966 ILLC and the 1988 Protocol and those which are applicable to the 1988 Protocol as amended by resolution MSC.143(77). The footnote has been updated.

The word "inlets" was deleted from the seventh paragraph of interpretation AA following IMO's decision as included in resolution MSC.491(104).

5. Points of discussions or possible discussions

Safety panel unanimously agreed to the corrections of UI LL11 Rev.4

6. Attachments if any

None.

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for LL 10 Rev.2 (Nov 2020)

1. Scope and objectives

Review of the Unified interpretation LL 10 Rev.1 (July 2008)

2. Engineering background for technical basis and rationale

This UI was developed to provide clarification on provision of automatic closing appliances for air pipes for ships assigned with timber freeboards.

The interpretation of this UI is not only applicable for requirements of Regulation 20 of International Convention on Load Lines 1966 but also applicable for requirements of Regulation 20 of 1988 protocol.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

Safety panel unanimously agreed to the editorial corrections of the footnote to include cross reference of International Convention on Load Lines 1966 also.

6. Attachments if any

None

UI LL14 "Protection of the crew (Regulation 25(2))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Oct 2015)	29 October 2015	–
Rev.1 (July 2008)	14 July 2008	–
New (1968)	*No record*	–

- **Corr.1 (Oct 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To eliminate inconsistency between UI and 1988 LL Protocol as amended by resolution MSC.143(77).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

A member seeking clarification of application of UI to revised 1988 LL Protocol raised the issue within Safety Panel. After several rounds of intra-Panel correspondence it was agreed to draft a corrigendum to IACS UI LL 14 to eliminate the ambiguity in UI application.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: August 2015 by Safety Panel
Panel Approval: 17 September 2015 (Ref: PS15004b)
GPG Approval: 29 October 2015 (Ref: 15155_IGb)

- **Rev.1 (July 2008)**

.1 Origin for Change:

☑ Other (this item was triggered by Statutory Panel at its 6th meeting)

.2 Main Reason for Change:

To clearly indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: August 2015 by Safety Panel
Panel Approval: 23 June 2008 (Ref: SP7005_)
GPG Approval: 14 July 2008 (Ref: 7675_IGh)

- **New (1968)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI LL14:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Corr.1 (Oct.2015)**

See separate TB document in Annex 2.

◄▼►

Note: *There is no Technical Background (TB) document available for New (1968).*

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
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15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for UI LL14 (Corr.1 Oct 2015)

1. Scope and objectives

To eliminate the ambiguity in application of UI to 1988 LL Protocol as amended by resolution MSC.143(77).

2. Engineering background for technical basis and rationale

1). In accordance with reg. 25 (2) of the 1966 LL Convention: “Efficient guard rails or bulwarks shall be fitted to all exposed parts of the freeboard and superstructure deck”.

2). In accordance with reg. 25 (2) of the 1966 LL Convention as modified by the 1988 LL Protocol, as amended by resolution MSC.143 (77): “Guard rails or bulwarks shall be fitted around all exposed decks”.

3). In accordance with IACS interpretation LL14 (Rev.1 July 2008): “A guard rail should also be required for first tier deckhouses and for superstructures ends”

Based on the reading of the texts referred to in three items above one member raise the issue that for the vessels, for whom revised 1988 LL Protocol applies guard rails or bulwarks shall be fitted around exposed parts of freeboard and superstructure decks and also around first tier of deckhouses and for superstructure ends but not required to be fitted around the second, third or any other tier of deckhouses except the first one.

In addition, that member expressed the concern that the term “exposed decks” is not properly addressed revision 1 of IACS UI LL14 and asks Members opinion if there is a need for revision of the latter.

3. Source / derivation of the proposed IACS Resolution

1966 LL Convention Regulation 25(2)
1988 LL Protocol Regulation 25(2)

4. Summary of Changes intended for the revised Resolution:

In the Footnote to UI the reference to revised 1988 LL Protocol is deleted.

5. Points of discussions or possible discussions

Members were not in agreement with understanding that for ships to which revised 1988 LL Protocol applies guard rails or bulwarks are not required to be fitted around the second, third or any other tier of deckhouses except the first one as Regulation 25, paragraph (2) of ICLL is quite explicit in requiring guard rails in all exposed decks, which means any location where there is a horizontal structure on which a person can reasonably be expected to stand and is not limited to structure extending from side to side. Moreover paragraph (3) stipulates three courses of guard rail on superstructure and freeboard decks, and two in “other locations”. This implies that guard rails are required in all locations where the deck is exposed i.e. regardless of which tire they are.

In respect of the issue if there is a need for revision of the IACS UI LL14 due to one member opinion that the term “exposed decks” is a vague expression and is not properly addressed in the current revision of IACS UI LL14; majority of the members were of the view that since 1988 LL Convention as amended by res. MSC.143 (77) clearly requires that “Guard rails or bulwarks shall be fitted around all exposed decks.” the Footnote of UI LL14(rev.1) should be revised with a view to eliminate inconsistency in the following manner: “Footnote: This UI is also applicable to Regulation 25(2) of the 1988 Protocol ~~and the revised 1988 Protocol~~.”

The proposed corrigendum need not be communicated to IMO.

6. Attachments if any

None

UI LL15: "Length of superstructure (Regulation 34(1) and 34(2))

Summary

The Rev.4 of the UI is revised to distinguish applicability of parts of the UI to different ICLL amendments.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.4 (Nov 2021)	10 November 2021	1 January 2022
Rev.3 (July 2008)	July 2008	
Rev.2 (July 2003)	July 2003	1 January 2004
Rev.1 (1993)	1993	
New (1968)	1968	

Rev.4 (Nov 2021)

1 Origin of Change:

☒ Other *Reviewed as more than 10 years since updated*

2 Main Reason for Change:

Revised to distinguish applicability of parts of the UI to different ICLL amendments

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Panel discussed and agreed the proposed revisions by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 01 October 2021	(Made by: Safety Panel member)
Panel Approval	: 20 October 2021	(Ref: PS19002tISb)
GPG Approval	: 10 November 2021	(Ref: 19001rIGb)

Rev.3 (July 2008)

No records available

Rev.2 (July 2003)

No records available

Rev.1 (1993)

No records available

New (1968)

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.3 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.4 (Nov 2021)**

See separate TB document in Annex 2.

Note: There are no technical background documents available for Rev.2 (July 2003), Rev.1 (1993) and New (1968)

Technical Background (TB) document for UI LL15 (Rev.4 Nov 2021)

1. Scope and objectives

Clarify which part of the UI is applicable to which ILLC version.

2. Engineering background for technical basis and rationale

Revision is needed to distinguish the specific contents for the applicability to different ICLL amendments.
The first 3 sentences of the interpretation on Reg.34(1) and the whole interpretation on Reg.34(2) are the same as Reg.34(1) and 34(2) of revised 1988 protocal(MSC.143(77)).
The whole UI is applicable to 1966 ICLL.
The 4th and 5th sentence are applicable to 1966 ICLL and all of its amendments up to now (i.e., 1988 Protocol and the revised 1988 Protocol (MSC.143(77)). Therefore, it suggested to revise the UI to the effect that distinguish the specific contents for the applicability to different ICLL amendments.

3. Source/derivation of the proposed IACS Resolution

-

4. Summary of Changes intended for the revised Resolution:

Give numbers on the paragraphs and indicate application in the footnotes.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI LL16 "Sheer"

Summary

Footnote was updated to indicate that UI is applicable only for ships built in accordance with 1966 ICLL or the original 1988 Protocol. It is not applicable to the 1988 Protocol as amended by resolution MSC.143(77).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Jan 2023)	11 January 2023	-
Rev.1 (July 2008)	July 2008	-
New (1968)	1968	-

- **Rev.2 (Jan 2023)**

1 Origin for Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reasons for Change:

The content of the UI is incorporated (as paragraph (13)(b) of the Regulation 38) into the revised 1988 ICLL Protocol (amended by Resolution MSC.143(77)) leaving the UI applicable only to Regulation 38 of International Convention on Load Lines, 1966 and the 1988 Protocol. Footnote of UI was updated accordingly.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

During review of resolutions under correspondence subject PS19002_ Safety Panel agreed on need to update this UI.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 23 October 2019	(Made by Safety Panel)
Panel Approval	: 08 December 2022	(Ref: PS19002xISe)
GPG Approval	: 11 January 2023	(Ref: 22183aIGb)

- **Rev.1 (July 2008)**

Refer to Part B Annex 1 for TB file.

- **New (1968)**

No records are available.

Part B. Technical Background

List of Technical Background (TB) documents for UI LL16:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Jan 2023)**

See separate TB document in Annex 2.

Note: There is no separate Technical Background (TB) document for the New (1968).

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
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16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
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21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for UI LL16 (Rev.2 Jan 2023)

1. Scope and objectives

To indicate that UI is applicable only for ships built in accordance with 1966 ICLL and 1988 Protocol, as adopted by the International Conference on the Harmonized System of Survey and Certification.

2. Engineering background for technical basis and rationale

The content of the UI is included (as paragraph (13)(b) of the Regulation 38) into the amended 1988 ICLL Protocol (amended by Resolution MSC.143(77)), thus there is no need to apply this UI to ships built in accordance with the amended 1988 Protocol.

3. Source/derivation of the proposed IACS Resolution

International Convention on Load Lines, 1966, and the 1988 Protocol, as adopted by the International Conference on the Harmonized System of Survey and Certification.

4. Summary of Changes intended for the revised Resolution:

Footnote was updated.
The interpretation was revised so that it addresses the definition of "y" which is different in both of the instruments interpreted.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background
UI LL17 (Corr.2) – October 2007

After the review of existing UI and the subsequent discussions by the Statutory Panel, it is confirmed that:

(1) "Existing ships" in the last paragraph means those built before 21 July 1968 (the date when the 1966 ICLL entered into force);
(2) In general, this interpretation should be applied to the existing ships for the assignment/reassignment of the freeboards under the provisions of the 1966 ICLL;
(3) However, when accepted by the Administration to suit exceptional operational requirements, this interpretation can be applied to ships built on or after that date.

For the clarification of the above, it was agreed that the first paragraph has been revised as follows:

> "*When a ship built on or after 21 July 1968 is arranged to suit exceptional operational requirements such that the forecastle and/or sheer forward do not meet the provisions of paragraphs (1) and (2) of ~~this Regulation~~ the 1966 ICLL, the increase of calculated summer freeboard ~~shall~~ may, with the concurrence of the Administration, be determined in the following ways.*"

The following editorial correction was also agreed.

(a) For the nomenclature, the description relating to "S_{min}" has been corrected so as to provide the definition of the summer freeboard "fbd_s" separately from the formula for "S_{min}".
(b) In sub-paragraph (b), the denominator of "0.17L" in the formula has been replaced with "0.07L"
(c) In sub-paragraph (c)(ii), the denominator of "S_1" in the formula has been replaced with "S_2"

Submitted by Statutory Panel Chairman
25 September 2007

Permanent Secretariat note, October 2007:

During GPG discussion, RS proposed that "Regulation 39" should be inserted before the words "the 1966 ICLL" in the first paragraph of the UI. This was agreed together with some minor editorial corrections proposed by members.

The corrected UI was approved by GPG on 24 October 2007 (ref. 7666_IGb).

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background of Revision
UI LL47 (Rev.2, June 2006)

1. Scope and objective

Presently IMO intends to incorporate the present UI LL47 into the convention text, which will make it difficult to accept alternative design solutions based on equivalence, unless UI LL47 is revised to include optional design solutions. Currently UI LL47 only covers standard designs with stay or bracket at every third stanchion. However alternative solutions are frequently applied without having criteria for such designs.

Objective is to revise UI LL47 to give criteria for acceptable solutions in accordance with current industry practice.

2. Points of discussions or possible discussions

General

The arrangement and the strength of Guardrails on Freeboard and Superstructure decks is regulated by the International Load Line Convention, by the IACS Unified Interpretation 47 related to the same, while the structural details are covered by the National Industrial Standards.

Attached below the IACS UI LL47 and some key figures from the Japanese Industrial Standard JIS F2607-1994 have been included for reference. Note that the JIS standard guard rails type H1 (and H2) is intended for the freeboard deck, while the types H3 and H4 are intended for superstructure decks. It may be added that Guardrail stanchions intended for freeboard deck are according to Norwegian Standard NS 2648 to be flat steel of 60x15 mm cross-section attached to deck by welding with 5mm throat thickness (equal to 7mm leg length). The JIS standard specifies flat steel of cross-section 65x16 mm attached to deck by welding with 6mm leg length.

It is understood that in addition there exist yard standards specifying alternatives to the LL47 (b) “at least every third stanchion supported by bracket or stay”. In the alternatives the stanchion supported by stays are replaced by stanchion(s) of increased dimensions combined with aligned supporting below deck structures. There is a concrete need for the alternative stanchion designs in way of narrow deck spaces, as generally found in container carriers.

Presently IMO intends to incorporate the present LL47 into the convention text, which will make it difficult to accept alternative design solutions based on equivalence, unless the LL47 is revised to include optional alternative design solutions.

For the development of alternative equivalent design solutions for guard rails the Type H1 according to JIS has been used for determining the lateral load capacity of a standard guard rail arrangement intended for the freeboard deck. The lateral load capacity of the guard rail has been related to the capacity of the standard stanchion, of the stanchion supported by stay, and of the assembly composed of two standard stanchions and stanchion supported by stay subjected to a sideway force acting at the level of the top rail.

Strength Assessment of Stanchion

The lateral load capacity of the standard stanchion, F_L is related to the moment capacity of the fillet weld attachment of the stanchion to the deck. The capacity is governed by the base material of the stanchion failing in shear in way of the fillet weld attachment to the deck, giving rise to the following expression for the lateral load capacity:

$$F_L = \frac{\left(b_s t_s \left(l_w - t_g \right) + \frac{b_s^2 \left(l_w . - t_g \right)}{3} \right) \frac{\sigma_f}{\sqrt{3}}}{h_s}$$

(= 1329 N for JIS H1 stanchions)

(= 1425 N for NS2648 stanchions),

where:

b_s = breadth of stanchion (65/60mm)
t_s = thickness of stanchion (= 16/15mm)
t_g = assumed gap between stanchion and deck plate (2,0mm)
l_w = leg length weld connecting stanchion to deck (= 6,0/7,0mm)
h_s = height of stanchion (=1000mm)
σ_f = upper minimum yield stress for mild steel (= 235MPa)

The lateral load capacity of the stanchion supported by stay, F_{Ls} is related to the plastic bending capacity of the stanchion at the top of the stay, and is expressed as:

$$F_{Ls} = \frac{b_s^2 t_s \sigma_f}{2 h_s}$$

(= 7940 N for JIS H1 stanchions with stay)

(= 6350 N for NS2648 stanchions with stay).

Thus the lateral load capacity of the standard assembly is given as **10600 N** for JIS F2607-1994 H1 and **9200 N** for NS2648 (and ISO5480-1979).

If the stanchion supported by stay is replaced by a stanchion of a 2,9 factor increased breadth, the load capacity according to the expression for F_L = **10720 N / 11470 N** is obtained for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives. For ensuring the deck to be sufficient to support the end moment of the stanchion a below supporting member is fitted in line, see Figure 1 in UI LL47 (Rev.2).

If every stanchion is replaced by a stanchion of 1,9 factor increased breadth, F_L = 3830 N / 4100 N, a load capacity of **11500 N / 12300 N** would be obtained for the three stanchion assemblies for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives.

If every second stanchion is replaced by a stanchion of 2,4 factor increased breadth, F_L = 5757 N / 6154 N, the load capacity of the equivalent three stanchion assembly would be **10630 N** and **11370 N** for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives.

The reinforcement to be extended to the middle of the stanchion or higher, see Figure 1 in UI LL47 (Rev.2).

b_s and t_s denote the breadth and thickness of the flat steel and l_w the weld leg dimension to be used according to the design standard applied for the guardrail. If the design standard does not specify the weld leg length, l_w, the value 7 mm is assumed.

Standard stanchion alternatives (no aligned member below deck required):		
Standard	b_s x t_s	l_w
JIS F2607(H1)-1994	65x16mm	6mm
NS2648-1984	60x15mm	7mm
ISO5480-1979	60x15mm	-

Strength of Deck Support

For the increased breadth stanchions an aligned stiffener is generally required fitted unless the deck plate is of a thickness that is ensured to support the bending moment by the stay and has a stiffness that is equivalent to the stanchion with stay. These conditions are assumed to be complied with provided the bending stress in the deck plate caused by the bending moment in the stanchion is shown to be well below the yield stress.

According to the 1954 edition of the Formulas for Stress and Strain by R. J. Roark, Professor of Mechanics, The University of Wisconsin, the bending stress at the edge of the trunnion, σ in a unstiffened plate of infinite dimension with simply supported edges and subjected to a central couple (trunnion loading), M, is given as:

$$\sigma = \frac{3M}{4\pi t^2 r}\left(1+\frac{\frac{1}{\nu}+1}{\frac{1}{\nu}}\ln(2)\right),$$

where
r = radius of trunnion
t = thickness of plate
υ = Poisson's ratio

When applied for the stanchion welded to deck the flat bar is assumed equivalent to a trunnion of radius equal to 0,35 b_s, where b_s denotes the breadth of the flat bar, see Fig. A. In the actual case the unstiffened plate has a finite dimension and some edge fixity. Both these aspects tend to reduce the bending stress in the plate at the trunnion edge.

When reformulated to give required plate thickness assuming that the flat bar stanchion is subjected to its design load F_L as determined for the alternative stanchion dimensions while the bending stress in the plate is equal to the yield stress of mild steel (235 MPa), the above expression takes the form:

$$t = \sqrt{\frac{3000\,F_L}{4\pi\,0{,}35\,b_s\,\sigma_f}\left(1+\frac{\frac{1}{\nu}+1}{\frac{1}{\nu}}\ln(2)\right)}$$

This gives the following values for the minimum plate thickness for which fitting an under deck support member for the stanchion should not be warranted

b_s (mm)	Stanchion force = F_L (N)	Plate thickness (mm)
60	1430	11.5
1,9 x 60	4100	14
2.4 x 60	6150	15.5
2.9 x 60	8620	16.5

The derivation above disregards amongst others the stiffness of the guard rail structure, which could be of importance with respect to the negative effects of vibrations. In the proposal for revised LL47 a minimum plate thickness of 1.25x16.5 = 20.5 mm has therefore been given, below which the under deck support member is to be fitted.

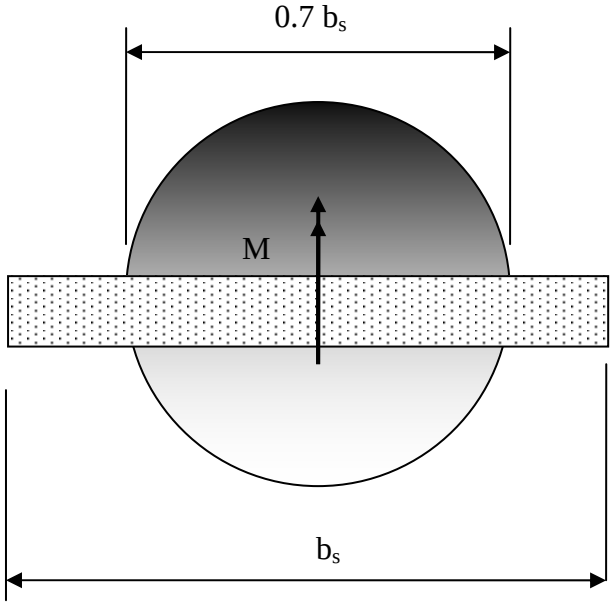


Fig. A A trunnion of radius 0.35 b_s is assumed equivalent to the flat bar stanchion

LL47 Guard rails (Regulation 25(2) and (3))

(1979)
(Rev. 1
1980)

(a) Fixed, removable or hinged stanchions shall be fitted about 1,5 m apart.
(b) At least every third stanchion shall be supported by a bracket or stay.
(c) Wire ropes may only be accepted in lieu of guard rails in special circumstances and then only in limited lengths.
(d) Lengths of chain may only be accepted in lieu of guard rails if they are fitted between two fixed stanchions and/or bulwarks.
(e) The openings between courses should be in accordance with Regulation 25(3) of the Convention.
(f) Wires shall be made taut by means of turnbuckles.
(g) Removable or hinged stanchions shall be capable of being locked in the upright position.

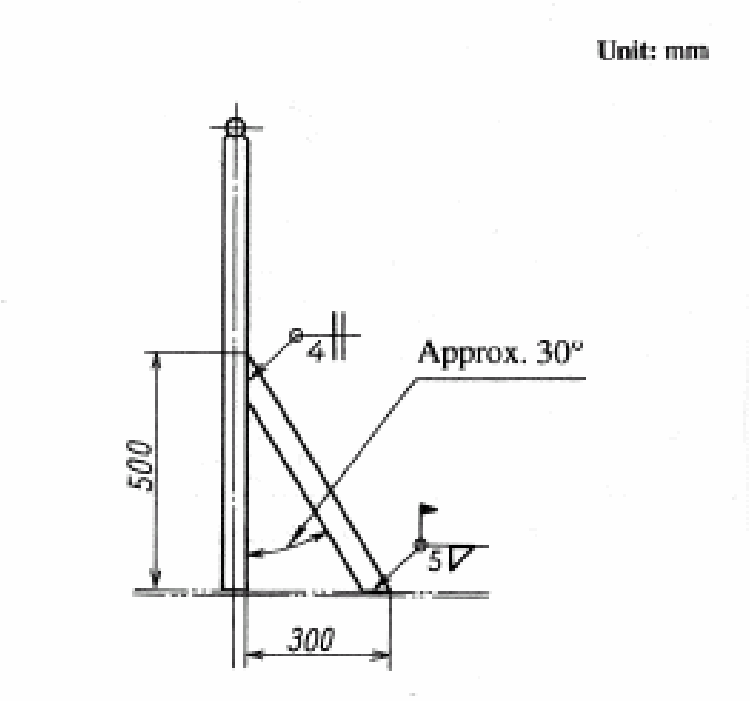


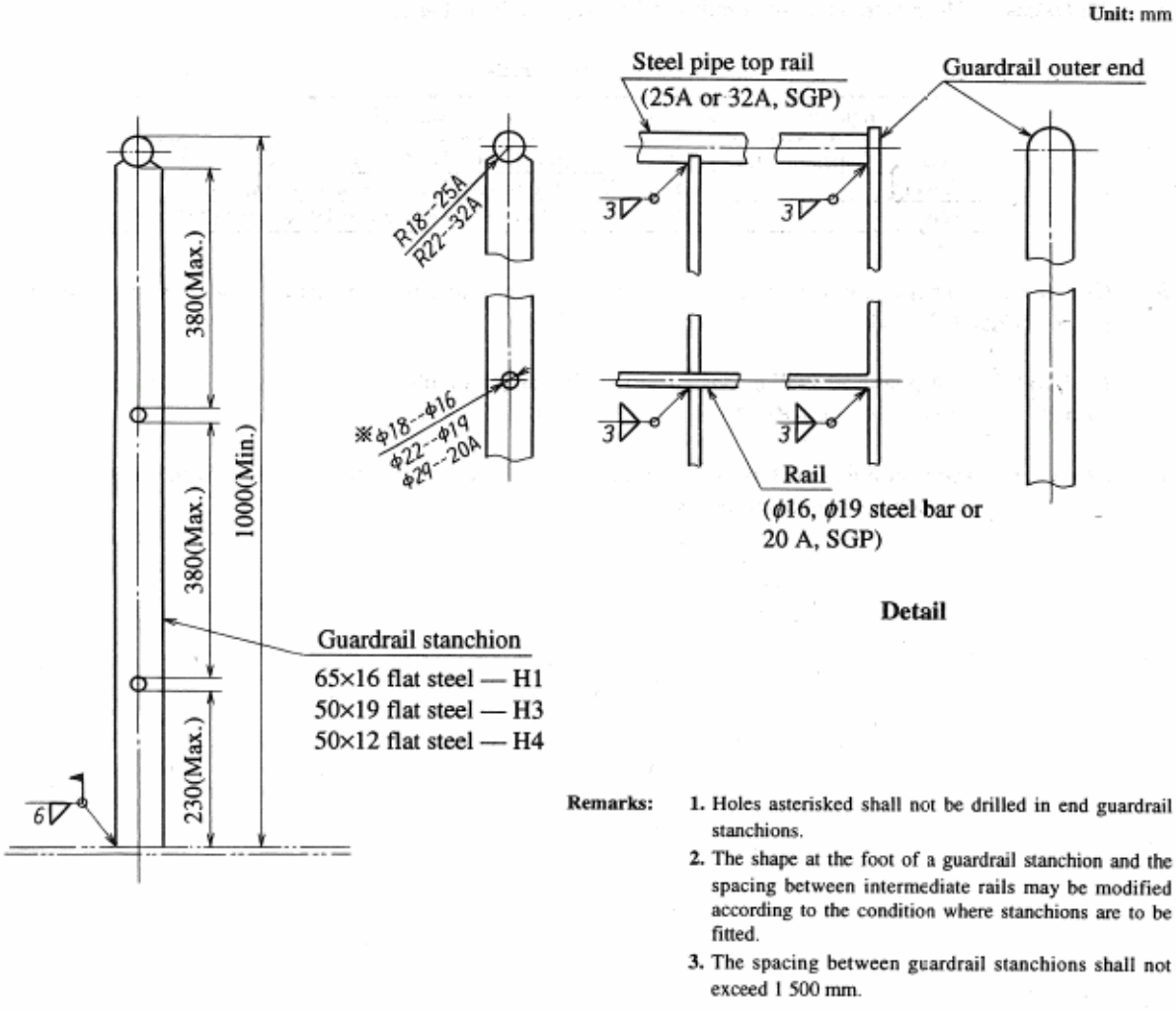
Fig. B JIS Guardrail stanchion stay (minimum every third stanchion)

Guardrail arrangements according to the JIS Standard F2607-1994

Table 1 Classification

Type	Guardrail stanchion	Top rail	Rail	Stay	Reference Calculated mass (kg)
H1	65 × 16 flat steel	25A, SGP	ϕ19 steel bar	65 × 16 flat steel	18.7
			20A, SGP		15.1
		32A, SGP	ϕ19 steel bar		18.6
			20A, SGP		15.0
H2		32A, SGP	ϕ19 steel bar		18.6
			20A, SGP		15.0
H3	50 × 19 flat steel	25A, SGP	ϕ16 steel bar	50 × 19 flat steel	15.9
			20A, SGP		14.2
H4	50 × 12 flat steel		ϕ16 steel bar	50 × 12 flat steel	12.5
			20A, SGP		10.9

Note:
Guardrails H1 and H2 are for freeboard deck
Guardrails H3 and H4 are for superstructure deck



Remarks:
1. Holes asterisked shall not be drilled in end guardrail stanchions.
2. The shape at the foot of a guardrail stanchion and the spacing between intermediate rails may be modified according to the condition where stanchions are to be fitted.
3. The spacing between guardrail stanchions shall not exceed 1 500 mm.

Fig. C JIS Guardrail (H1, H3 and H4)

3. Extent of Approval by Working Group

The draft UI is accepted unanimously.

4. Source / derivation of proposed interpretation

JIS (Japanese Industrial Standard) F2607-1994
NS (Norwegian Standard) 2648
ISO5480-1979

5. Decision by voting

N.A.

Submitted by Hull Panel Chairman
1 May 2006

Annex.

Permsec Note (Submission of UI LL47(Rev.2) to IMO):

GPG/Council agreed that the Statutory Panel be tasked to develop an appropriate submission to IMO forwarding the UI LL 47, Rev.2 and seeking IMO's view on how to accommodate the UI within the 1988 Protocol to the ICLL 1966 as amended by IMO Res MSC.143(77).

Statutory Panel was so tasked by 6093_IGc of 12 June 2006.

Background explanations from the GPG Chairman (6093_IGb, 26 May 06).

Quote

.....

3.2 The UI is applicable to ships constructed to the Technical Regulations of the ICLL 1966 and the 1988 Protocol to the ICLL 1966, but may not be directly applicable to the 1988 Protocol to the ICLL 1966, as amended by IMO Resolution MSC.143(77), which entered into force for ships constructed from 1 Jan 05 for flags signatory to the 1988 Protocol.

3.2.1 The problem is that Rev.1 of UI LL 47 has, contrary to the draft TB, already been included in revised regulation 25(3), quoted below, of the 1988 Load Line Protocol as per MSC.143(77). This regulation does not appear to allow for the alternative arrangement for guard rails now allowed in (b) of UI LL 47, Rev.2. Also, Reg. 25(3)(d), only allows the use of chains between stanchions and/or bulwarks "where necessary for the normal operation of the ship".

1988 Protocol to the ICLL 1966 as amended by IMO Res MSC.143(77)

Regulation 25
Protection of the crew

(1) The deckhouses used for the accommodation of the crew shall be constructed to an acceptable level of strength.

(2) Guard rails or bulwarks shall be fitted around all exposed decks. The height of the bulwarks or guard rails shall be at least 1 m from the deck, provided that where this height would interfere with the normal operation of the ship, a lesser height may be approved, if the Administration is satisfied that adequate protection is provided.

(3) Guard rails fitted on superstructure and freeboard decks shall have at least three courses. The opening below the lowest course of the guard rails shall not exceed 230 mm. The other courses shall be not more than 380 mm apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck. In other locations, guardrails with at least two courses shall be fitted. Guard rails shall comply with the following provisions:

(a) fixed, removable or hinged stanchions shall be fitted about 1.5 m apart. Removable or hinged stanchions shall be capable of being locked in the upright position;

(b) at least every third stanchion shall be supported by a bracket or stay;

(c) where necessary for the normal operation of the ship, steel wire ropes may be accepted in lieu of guard rails. Wires shall be made taut by means of turnbuckles; and

(d) where necessary for the normal operation of the ship, chains fitted between two fixed stanchions and/or bulwarks are acceptable in lieu of guard rails.

1966 ICLL and 1988 Protocol to the ICLL 1966

Regulation 25

Protection of the Crew

(1) The strength of the deckhouses used for the accommodation of the crew shall be to the satisfaction of the Administration.

(2) Efficient guard rails or bulwarks shall be fitted on all exposed parts of the freeboard and superstructure decks. The height of the bulwarks or guard rails shall be at least 1 metre (39½ inches) from the deck, provided that where this height would interfere with the normal operation of the ship, a lesser height may be approved if the Administration is satisfied that adequate protection is provided.

(3) The opening below the lowest course of the guard rails shall not exceed 230 millimetres (9 inches). The other courses shall be not more than 380 millimetres (15 inches) apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck.

(4) Satisfactory means (in the form of guard rails, life lines, gangways or underdeck passages etc.) shall be provided for the protection of the crew in getting to and from their quarters, the machinery space and all other parts used in the necessary work of the ship.

(5) Deck cargo carried on any ship shall be so stowed that any opening which is in way of the cargo and which gives access to and from the crew's quarters, the machinery space and all other parts used in the necessary work of the ship, can be properly closed and secured against the admission of water. Effective protection for the crew in the form of guard rails or life lines shall be provided above the deck cargo if there is no convenient passage on or below the deck of the ship.

3.2.2 So, while the UI "interprets" what an "efficient guard rail" is under Reg.25 of the 1966 ICLL and the original technical regulations of the 1988 Protocol, it appears to "amend" Reg.25 of the 1988 Protocol to the ICLL 1966 as amended by IMO Res MSC.143(77) which no longer refers to "efficient guard rail", but presribes the arrangement in detail.

3.2.3 Based on the above, I propose that the Statutory Panel be tasked to develop an appropriate submission to IMO forwarding the UI LL 47, Rev.2 and seeking IMO's view on how to accommodate the UI within the 1988 Protocol to the ICLL 1966 as amended by IMO Res MSC.143(77).

.....

Unquote

END

TECHNICAL BACKGROUND
UI LL47 (REV.2.1, OCTOBER 2006)

1. Scope and objective
To revise UI LL 47 (rev.2) so that it can apply to Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77).

2. Background
UI LL 47 (rev.2) was approved so that it can apply to Reg. 25(2) and (3) of 1966 ICLL but it can not apply to Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77).

A few months later, it was discussed again within GPG and finally it was recognized that it was necessary to develop the same kind of Unified Interpretation to cover Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77).

Therefore, GPG tasked Hull Panel to revise UI LL 47 (rev.2) or develop a new UI so that it can apply to Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77).

3. Points of discussions
Firstly, the Hull Panel unanimously agreed that it would be better to revise UI LL47 (rev.2) than to develop a new UI in order to cover Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77).

Accordingly, the Hull Panel endeavoured to revise draft UI LL 47 (rev.2). The first portion of the sentence in the proposed interpretation in B), "At least every third stanchion may be supported by a flat steel stanchion as equivalent to a bracket or stay subject to the compliance with the following design criteria." is replaced with "As alternative arrangements (required by Regulation 25(3)(b))" and the entire interpretation is to read, "As alternative arrangements (required by Regulation 25(3)(b)), flat steel stanchions shall be of increased breadth as given in Figure 1, and aligned with member below deck unless the deck plating thickness exceeds 20 mm."

Finally, the unified implementation date which is specified in the footnote was updated.

4. Source/derivation of proposed requirements
- ✓ GPG
- ✓ Reg. 25 (3)(b) of the 1988 Protocol as amended by IMO Res. MSC.143(77)

5. Appendix
The Technical Background for UI LL47 (rev.2) submitted by the Hull Panel Chairman on 1 May 2006 is attached as Annex 1.

Submitted by Hull Panel Chairman
3 October 2006

Permanent Secretariat note, December 2006:

- Subject no. 6093 – UI LL47 (rev. 2.1) was adopted by GPG and Council 24 October 2006 (6093_IGj)

- GPG discussion also raised the issue of UI LL47 (rev. 2) referring to 1988 Protocol pf 1966 ICLL which is no longer effective to new ships as it has been amended by MSC.143(77). Therefore it was proposed to withdraw Rev. 2 prior to it taking effect in light of Rev 2.1, from which the incorrect reference has been deleted, becoming effective 3 months later. This proposal was agreed by Council on 27 November 2006 (6093_ICb).

- For clarity technical changes introduced in the withdrawn Rev. 2 have been included in the underlined version of Rev. 2.1.

ANNEX 1 TECHNICAL BACKGROUND OF UI LL47 (REV.2)

1. Scope and objective

Presently IMO intends to incorporate the present UI LL47 into the convention text, which will make it difficult to accept alternative design solutions based on equivalence, unless UI LL47 is revised to include optional design solutions. Currently UI LL47 only covers standard designs with stay or bracket at every third stanchion. However alternative solutions are frequently applied without having criteria for such designs.

Objective is to revise UI LL47 to give criteria for acceptable solutions in accordance with current industry practice.

2. Points of discussions or possible discussions

General

The arrangement and the strength of Guardrails on Freeboard and Superstructure decks is regulated by the International Load Line Convention, by the IACS Unified Interpretation 47 related to the same, while the structural details are covered by the National Industrial Standards.

Attached below the IACS UI LL47 and some key figures from the Japanese Industrial Standard JIS F2607-1994 have been included for reference. Note that the JIS standard guard rails type H1 (and H2) is intended for the freeboard deck, while the types H3 and H4 are intended for superstructure decks. It may be added that Guardrail stanchions intended for freeboard deck are according to Norwegian Standard NS 2648 to be flat steel of 60x15 mm cross-section attached to deck by welding with 5mm throat thickness (equal to 7mm leg length). The JIS standard specifies flat steel of cross-section 65x16 mm attached to deck by welding with 6mm leg length.

It is understood that in addition there exist yard standards specifying alternatives to the LL47 (b) “at least every third stanchion supported by bracket or stay”. In the alternatives the stanchion supported by stays are replaced by stanchion(s) of increased dimensions combined with aligned supporting below deck structures. There is a concrete need for the alternative stanchion designs in way of narrow deck spaces, as generally found in container carriers.

Presently IMO intends to incorporate the present LL47 into the convention text, which will make it difficult to accept alternative design solutions based on equivalence, unless the LL47 is revised to include optional alternative design solutions.

For the development of alternative equivalent design solutions for guard rails the Type H1 according to JIS has been used for determining the lateral load capacity of a standard guard rail arrangement intended for the freeboard deck. The lateral load capacity of the guard rail has been related to the capacity of the standard stanchion, of the stanchion supported by stay, and of the assembly composed of two standard stanchions and stanchion supported by stay subjected to a sideway force acting at the level of the top rail.

Strength Assessment of Stanchion

The lateral load capacity of the standard stanchion, F_L is related to the moment capacity of the fillet weld attachment of the stanchion to the deck. The capacity is governed by the base material of the stanchion failing in shear in way of the fillet weld attachment to the deck, giving rise to the following expression for the lateral load capacity:

$$F_L = \frac{\left(b_s t_s \left(l_w - t_g \right) + \frac{b_s^2 \left(l_w . - t_g \right)}{3} \right) \frac{\sigma_f}{\sqrt{3}}}{h_s}$$

(= 1329 N for JIS H1 stanchions)

(= 1425 N for NS2648 stanchions),

where:

b_s = breadth of stanchion (65/60mm)
t_s = thickness of stanchion (= 16/15mm)
t_g = assumed gap between stanchion and deck plate (2,0mm)
l_w = leg length weld connecting stanchion to deck (= 6,0/7,0mm)
h_s = height of stanchion (=1000mm)
σ_f = upper minimum yield stress for mild steel (= 235MPa)

The lateral load capacity of the stanchion supported by stay, F_{Ls} is related to the plastic bending capacity of the stanchion at the top of the stay, and is expressed as:

$$F_{Ls} = \frac{b_s^2 t_s \sigma_f}{2 h_s}$$

(= 7940 N for JIS H1 stanchions with stay)

(= 6350 N for NS2648 stanchions with stay).

Thus the lateral load capacity of the standard assembly is given as **10600 N** for JIS F2607-1994 H1 and **9200 N** for NS2648 (and ISO5480-1979).

If the stanchion supported by stay is replaced by a stanchion of a 2,9 factor increased breadth, the load capacity according to the expression for F_L = **10720 N / 11470 N** is obtained for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives. For ensuring the deck to be sufficient to support the end moment of the stanchion a below supporting member is fitted in line, see Figure 1 in UI LL47 (Rev.2).

If every stanchion is replaced by a stanchion of 1,9 factor increased breadth, F_L = 3830 N / 4100 N, a load capacity of **11500 N / 12300 N** would be obtained for the three stanchion assemblies for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives.

If every second stanchion is replaced by a stanchion of 2,4 factor increased breadth, F_L = 5757 N / 6154 N, the load capacity of the equivalent three stanchion assembly would be **10630 N** and **11370 N** for the JIS F2607-1994 H1 and the NS2648 stanchion alternatives.

The reinforcement to be extended to the middle of the stanchion or higher, see Figure 1 in UI LL47 (Rev.2).

b_s and t_s denote the breadth and thickness of the flat steel and l_w the weld leg dimension to be used according to the design standard applied for the guardrail. If the design standard does not specify the weld leg length, l_w, the value 7 mm is assumed.

Standard stanchion alternatives (no aligned member below deck required):		
Standard	b_s x t_s	l_w
JIS F2607(H1)-1994	65x16mm	6mm
NS2648-1984	60x15mm	7mm
ISO5480-1979	60x15mm	-

Strength of Deck Support

For the increased breadth stanchions an aligned stiffener is generally required fitted unless the deck plate is of a thickness that is ensured to support the bending moment by the stay and has a stiffness that is equivalent to the stanchion with stay. These conditions are assumed to be complied with provided the bending stress in the deck plate caused by the bending moment in the stanchion is shown to be well below the yield stress.

According to the 1954 edition of the Formulas for Stress and Strain by R. J. Roark, Professor of Mechanics, The University of Wisconsin, the bending stress at the edge of the trunnion, σ in a unstiffened plate of infinite dimension with simply supported edges and subjected to a central couple (trunnion loading), M, is given as:

$$\sigma = \frac{3M}{4\pi t^2 r}\left(1+\frac{\frac{1}{\nu}+1}{\frac{1}{\nu}}\ln(2)\right),$$

where
r = radius of trunnion
t = thickness of plate
υ = Poisson's ratio

When applied for the stanchion welded to deck the flat bar is assumed equivalent to a trunnion of radius equal to 0,35 b_s, where b_s denotes the breadth of the flat bar, see Fig. A. In the actual case the unstiffened plate has a finite dimension and some edge fixity. Both these aspects tend to reduce the bending stress in the plate at the trunnion edge.

When reformulated to give required plate thickness assuming that the flat bar stanchion is subjected to its design load F_L as determined for the alternative stanchion dimensions while the bending stress in the plate is equal to the yield stress of mild steel (235 MPa), the above expression takes the form:

$$t = \sqrt{\frac{3000\,F_L}{4\pi\,0{,}35\,b_s\,\sigma_f}\left(1+\frac{\frac{1}{\nu}+1}{\frac{1}{\nu}}\ln(2)\right)}$$

This gives the following values for the minimum plate thickness for which fitting an under deck support member for the stanchion should not be warranted

b_s (mm)	Stanchion force = F_L (N)	Plate thickness (mm)
60	1430	11.5
1,9 x 60	4100	14
2.4 x 60	6150	15.5
2.9 x 60	8620	16.5

The derivation above disregards amongst others the stiffness of the guard rail structure, which could be of importance with respect to the negative effects of vibrations. In the proposal for revised LL47 a minimum plate thickness of 1.25x16.5 = 20.5 mm has therefore been given, below which the under deck support member is to be fitted.

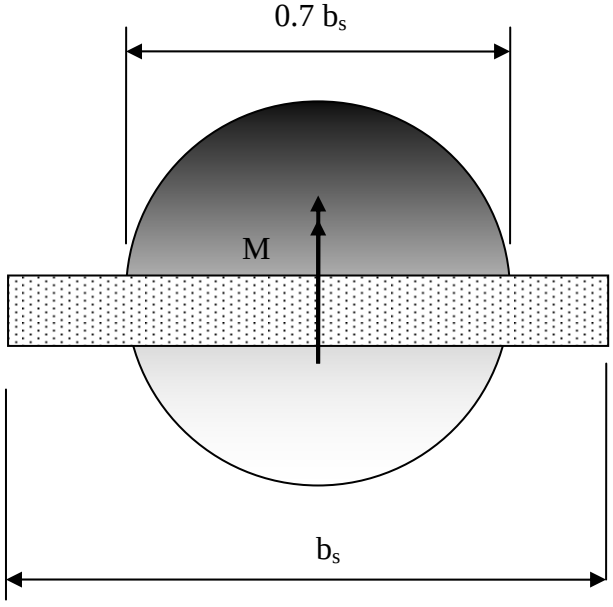


Fig. A A trunnion of radius 0.35 b_s is assumed equivalent to the flat bar stanchion

LL47 Guard rails (Regulation 25(2) and (3))

(1979)
(Rev. 1
1980)

(a) Fixed, removable or hinged stanchions shall be fitted about 1,5 m apart.
(b) At least every third stanchion shall be supported by a bracket or stay.
(c) Wire ropes may only be accepted in lieu of guard rails in special circumstances and then only in limited lengths.
(d) Lengths of chain may only be accepted in lieu of guard rails if they are fitted between two fixed stanchions and/or bulwarks.
(e) The openings between courses should be in accordance with Regulation 25(3) of the Convention.
(f) Wires shall be made taut by means of turnbuckles.
(g) Removable or hinged stanchions shall be capable of being locked in the upright position.

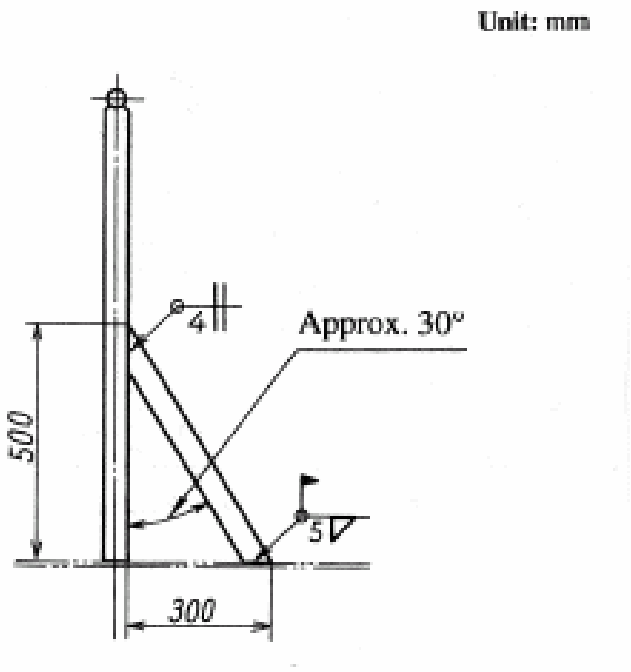


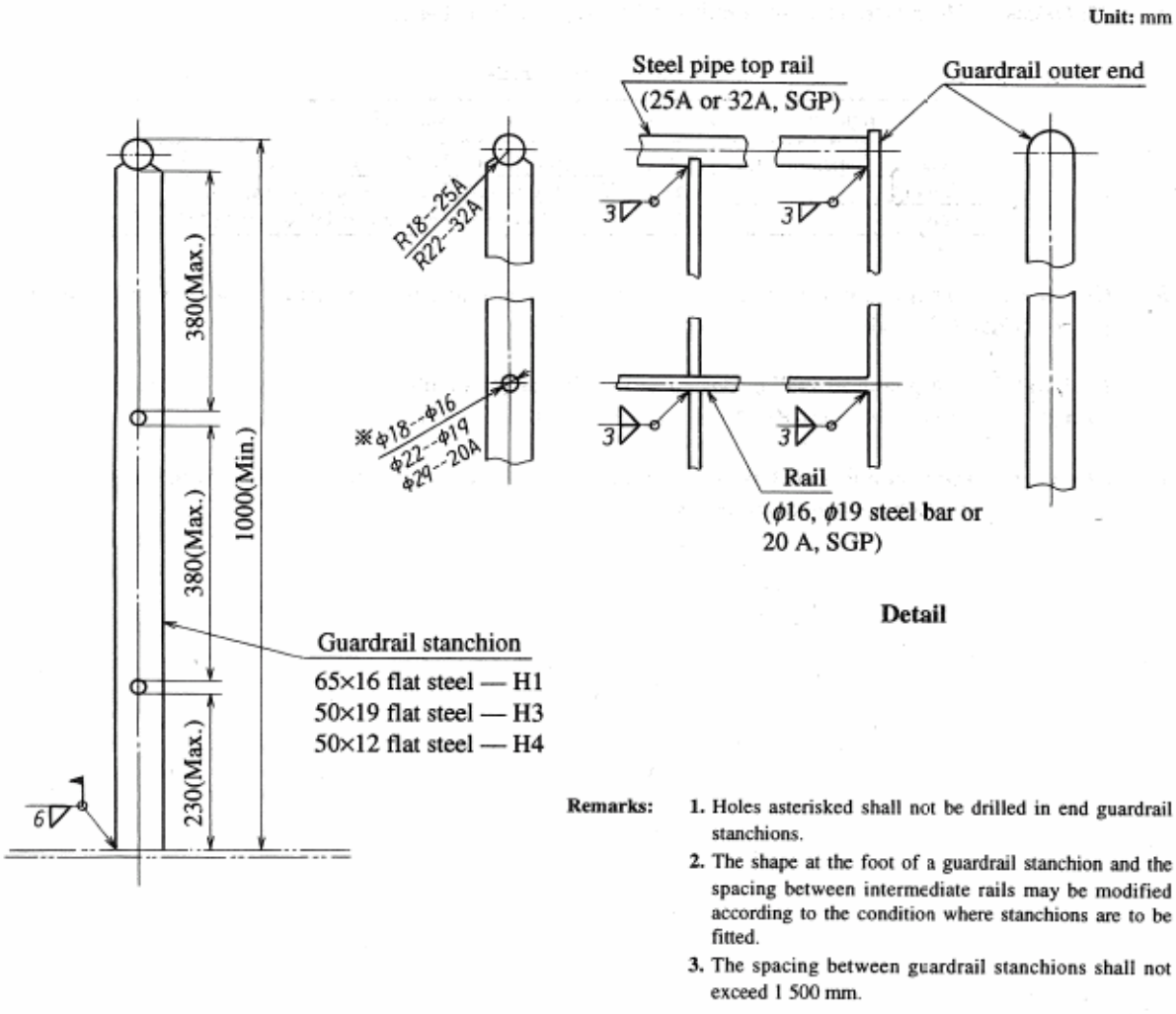
Fig. B JIS Guardrail stanchion stay (minimum every third stanchion)

Guardrail arrangements according to the JIS Standard F2607-1994

Table 1 Classification

Type	Guardrail stanchion	Top rail	Rail	Stay	Reference Calculated mass (kg)
H1	65 × 16 flat steel	25A, SGP	ϕ19 steel bar	65 × 16 flat steel	18.7
			20A, SGP		15.1
		32A, SGP	ϕ19 steel bar		18.6
			20A, SGP		15.0
H2		32A, SGP	ϕ19 steel bar		18.6
			20A, SGP		15.0
H3	50 × 19 flat steel	25A, SGP	ϕ16 steel bar	50 × 19 flat steel	15.9
			20A, SGP		14.2
H4	50 × 12 flat steel		ϕ16 steel bar	50 × 12 flat steel	12.5
			20A, SGP		10.9

Note:
Guardrails H1 and H2 are for freeboard deck
Guardrails H3 and H4 are for superstructure deck



Remarks:
1. Holes asterisked shall not be drilled in end guardrail stanchions.
2. The shape at the foot of a guardrail stanchion and the spacing between intermediate rails may be modified according to the condition where stanchions are to be fitted.
3. The spacing between guardrail stanchions shall not exceed 1 500 mm.

Fig. C JIS Guardrail (H1, H3 and H4)

3. Extent of Approval by Working Group

The draft UI is accepted unanimously.

4. Source / derivation of proposed interpretation

JIS (Japanese Industrial Standard) F2607-1994
NS (Norwegian Standard) 2648
ISO5480-1979

5. Decision by voting

N.A.

Submitted by Hull Panel Chairman
1 May 2006

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
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22	Rev.1	July 2008
23	Rev.1	July 2008
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26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

UI LL 35 "Stowage of timber deck cargo on ships having timber freeboards assigned (ICLL Reg.44 and 45)"

Summary

This Original Resolution provides interpretation of requirements to regulation 44 and 45 of International Convention on Load Lines (ILLC) prepared by Statutory Panel. After review it was concluded that the UI should be converted to a Recommendation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (June 2021)	08 June 2021	Not applicable
Corr.1 (July 2008)	July 2008	Not applicable
New (1972)	1972	Not applicable

- **Del (June 2021)**

The resolution in its present form (Rev.1) is proposed for deletion.

1 Origin for Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

The UI is only applicable to ICLL 1966 and the basic 1988 Protocol and not the 1988 Protocol as amended by resolutions MSC.329(90), MSC.356(92) and MSC.375(93). It uses recommendatory language which is more suited to a recommendation.

3 List of non-IACS Member Classification Societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on Periodic review of IACS Resolution by Safety Panel, the Panel originally considered that the footnotes should be updated. Review by GPG commented on the recommendatory language. After further review the Safety Panel agreed that it should be converted to a recommendation.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	31 December 2020 (Made by: Safety Panel)
Panel Approval:	21 May 2021 (Ref: PS19002pISh)
GPG Approval:	08 June 2021 (Ref: 19001iIGj)

- **Corr.1 (July 2008)**

No records available

- **New (1972)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Corr.1 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Del (June 2021)**

See separate TB document in Annex 2.

◄▼►

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

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27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for LL 35 (Del June 2021)

1. Scope and objectives

Review of the Unified interpretation LL 35 Corr.1 (July 2008)

2. Engineering background for technical basis and rationale

This UI was developed to provide recommendation on stowage of timber deck cargo on ships having timber freeboards assigned.

The interpretation of this UI is not only applicable for requirements of Regulation 44 and 45 of International Convention on Load Lines 1966 but also applicable for requirements of Regulation 44 and 45 of 1988 protocol. It is not applicable to the 1988 Protocol as amended by resolutions MSC.329(90), MSC.356(92) and MSC.375(93).

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

Safety panel discussed regulations 44 and 45 of ICLL in the 1966, 1988 Protocol and amended 1988 Protocol versions.

The text shown underlined in the excerpt from the amended 1988 Protocol has the same meaning as the UI.

Regulation 44 - Stowage
General
…

(2) Timber deck cargoes shall extend over at least the entire available length which is the total length of the well or wells between superstructures.

Where there is no limiting superstructure at the after end, the timber shall extend at least to the after end of the aftermost hatchway.

The timber deck cargo shall extend athwartships as close as possible to the ship's side, due allowance being made for obstructions such as guard rails, bulwark stays, uprights, pilot access, etc., provided that any gap thus created at the side of the ship shall not exceed a mean of 4% of the breadth. The timber shall be stowed as solidly as possible to at least the standard height of the superstructure other than any raised quarterdeck.

…

As the text in the UI is recommendatory, and similar text appears in the amended 1988 Protocol it was agreed by a majority that the UI should be made into a recommendation.

6. Attachments if any

None

UI LL50 "Protection of Crew (Load Line Convention Regulation 25(4), 26(2) and 27(7) and SOLAS II-1/3-3)"

Summary

This Unified Interpretation is updated to clarify the application of the Resolution to each of existing versions of the ICLL.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.6 (June 2021)	08 June 2021	08 June 2021
Rev.5 (July 2008)	04 July 2008	04 July 2008
Rev.4.1 (Oct 1998)	06 October 1998	19 November 1998
Rev.3 (May 1998)	28 May 1998	28 May 1998
Rev.2 (Nov 1997)	28 November 1997	28 November 1997
Rev.1 (1986)	1986	1986
New (1982)	1982	1982

- **Rev.6 (June 2021)**

1 Origin for Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

During the periodic review some of the IACS members expressed the view that it is unclear which paragraphs of the UI are applicable to each version of the ICLL.

3 List of non-IACS Member Classification Societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on periodic review of IACS Resolution by Safety Panel it was noted that application statement of the UI could be possibly improved if appropriate statement on application of each paragraph of the UI to each version of the ICLL is included.

Respective review outcome shows that slight revision of UI application statement is required but there is no need to state the application of each paragraph in relation to different existing versions of ICLL.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: February 2021 (Made by: Safety Panel)
Panel Approval: 24 May 2021 (Ref: PS19002qISg)
GPG Approval: 08 June 2021 (Ref: 19001jIGh)

- **Rev.5 (July 2008)**

No records available

- **Rev.4.1 (October 1998)**

No records available

- **Rev.3 (1998)**

No records available

- **Rev.2 (1997)**

No records available

- **Rev.1 (1986)**

No records available

- **New (1982)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.5 (July 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.6 (June 2021)**

See separate TB document in Annex 2.

Note: There is no separate Technical Background (TB) document for New (1982), Rev.1 (1986), Rev.2 (1997), Rev.3 (1998), and Rev.4.1 (Oct 1998).

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
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22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
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47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
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56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background (TB) document for LL50 (Rev.6 June 2021)

1. Scope and objectives

Periodic review of the Unified interpretation LL50. Checking if the an appropriate application statement in "Note 2" is needed to clarify which paragraphs of the UI are applicable to each of the three existing versions of the ICLL: 1966 Load Line Convention, 1988 Protocol and the revised 1988 Protocol.

2. Engineering background for technical basis and rationale

Based on Periodic review of IACS Resolution by Safety Panel, no need to state the application of each paragraph of the UI LL 50 in the footnotes was found.

It is understood that all the text of the UI, respective table and table legend included, applies to ICLL 1966 and Protocol 1988, both. The same understanding was also reflected in the first paragraph and footnote 2 of UI Rev.5.
Respective clauses of revised 1988 Protocol need not be interpreted as the text of the UI LL 50 Rev. 5 is already included in Regulation 25-1.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Title, first paragraph and footnote 2 were revised in order to clarify the applicability of the UI.

5. Points of discussions or possible discussions

Not applicable

6. Attachments if any

None

UI LL55 "Least Moulded Depth for a Ship with a Rake of Keel (Regulation 3(1))"

Summary

The diagram associated with the UI had been lost and needed to be reinstated.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2021)	08 December 2021	
Rev.1 (July 2008)	July 2008	
New (1993)	1993	

- **Corr.1 (Dec 2021)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Missing diagram recreated and included.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

This UI was agreed as needing to be updated as part of the Safety Panel review of resolutions under correspondence subject PS19002_.

It was agreed that as the text of the UI and the associated diagram had been included in the 1988 Protocol the footnote was not needed.

The changes made are editorial only and were agreed by the Panel.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None, the UI concerns the calculation of freeboards when the vessel has a rake of keel and is applicable regardless of the degree of automation.

7 Dates:

Original Proposal	: March 2019	(made by IACS member)
Panel Approval	: 01 October 2021	(Ref: PS19002bISe)
GPG Approval	: 08 December 2021	(Ref: 19001pIGe)

- **Rev.1 (July 2008)**

See Technical Background.

- **New (1993)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

Note: There are no technical background documents available for New (1993) and Corr.1 (Dec 2021).

UI LL59 "Cargo manifold gutter bars - freeing arrangements and intact stability"

Summary

As part of the 10th anniversary review amendments were made to reorder the text of paragraph 3 for clarity.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Feb 2022)	14 February 2022	-
Rev.1 (Dec 2007)	Dec 2007	1 July 2008
New (1997)	1997	-

- **Corr.1 (Jan 2022)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

During the 10th anniversary review it was noted that the wording of paragraph 3 could be reordered to improve clarity and non-mandatory language ("should") changed to mandatory language ("shall").

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel discussed the proposed amendments by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 06 June 2019	(Made by: IACS member)
Panel Approval	: 28 January 2022	(Ref: PS19002cISi)
GPG Approval	: 14 February 2022	(Ref: 19001qIGd)

- **Rev.1 (Dec 2007)**

No records are available

- **New (1997)**

No records are available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Corr.1 (Feb 2022)**

See separate TB document in Annex 1.

Note: There are no Technical Background (TB) documents available for the New (1997) and Rev.1 (Dec 2007).

Technical Background (TB) document for UI LL59 Corr.1 (Feb 2022)

1. Scope and objectives

The UI was reviewed as part of the 10th anniversary review of IACS resolutions.

2. Engineering background for technical basis and rationale

When gutter bars are fitted in tankers to prevent oil spills the impact on stability needs to be considered.

3. Source/derivation of the proposed IACS Resolution

Minor modifications only were made.

4. Summary of Changes intended for the revised Resolution:

The word order of paragraph 3 was changed to make the intent of the interpretation clearer.

The non-mandatory word "should" included in paragraph 3 was changed to the mandatory "shall".

5. Points of discussions or possible discussions

The Panel discussed the interpretation in the first paragraph. It was noted that gutter bars of more than 300 mm in height were required to be considered as bulwarks and provided with freeing ports, as per paragraph 2.

Gutter bars less than 300 mm in height would have difficulties fitting freeing ports which is why paragraph 2 is limited to those over 300 mm high.

Paragraph 1 is concerned with ensuring adequate stability is present when there is fluid in the area circumscribed by the gutter bars. Some members considered that paragraph 1 was also only applicable to gutter bars more than 300 mm high and some thought that it was applicable to those less than 300 mm high and some thought that it was applicable to all heights of gutter bars.

Noting that the UI as currently written has been in use for many years without issue, it was agreed to retain the text as currently written.

6. Attachments if any

None

UI LL61 "Method of correction for the effect of free surface of liquids in tanks"

Summary

UI LL61 is deleted as the contents of the UI are now taken into the consideration in the 2008 IS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2022)	08 November 2022	-
Rev.1 (July 2008)	July 2008	-
New (1997)	1997	-

- **Del (Nov 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The UI is deleted recognizing that all of LL61, with the exception of para 8, has been incorporated into the 2008 IS Code.

Para 7.2 of the UI provided three methods to calculate free surface moments: shifting of weight method, the moment of inertia method and the method using k-factor. Para 8 of LL 61 provided a formula for calculating the maximum free surface of each tank (for the method using k-factor), which contains a dimensionless coefficient "k" and a table for "k" based on the ratio of the tank's b/h. Para 8 was contained in a previous version of the IS Code (A.749(18) as amended by MSC.75(69)), but was deleted in 2008 IS Code (MSC.267(85), as amended), since this method was considered valid only for tanks with rectangular cross section and noting that the other two methods will be sufficient to evaluate the free surface moments (Refer Para 9 of SLF 47/7/9).

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Agreed by correspondence.

5 Other Resolutions Changes:

Rec.60 footnote 2 updated.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 22 September 2022	(By Safety Panel member)
Panel Approval	: 21 October 2022	(Ref: PS19002wISe)
GPG Approval	: 08 November 2022	(Ref: 19001xIGb)

- **Rev.1 (July 2008)**

Refer to Part B Annex 1 for TB.

- **New (1997)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents are available for New (1997) and Del (Nov 2022)

UI LL 62 "Side Scuttles, Windows and Skylights"

Summary

This UI provides unified interpretations of Regulation 23 of Annex I of Chapter II of the Load Lines Convention, 1966, pertaining to side scuttles, windows and skylights. Correction 2 removes a previous footnote to interpretation (7) and editorially amends the UI to an updated template.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (June 2024)	03 June 2024	-
Corr.1 (Aug 2010)	05 Aug 2010	-
Rev.1 (July 2008)	14 July 2008	-
New (Oct 1997)	29 Oct 1997	-

- **Corr.2 (June 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The following footnote 2 to paragraph 7 was deleted, following review by the two Members:

"2 Two members reserved their position for those cases where this first tier is not considered buoyant, provided efficient deadlights are fitted".

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

5 History of Decisions Made:

A Panel Member questioned the footnote reservation to paragraph 7, noting that a footnote to this effect does not exist for other IACS UIs.

The Safety Panel, including the two concerned Members, confirmed that the reservation on paragraph 7 could be deleted.

6 Other Resolutions Changes:

None.

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original Proposal:	19 October 2022	(Made by: ABS)
Panel Approval:	17 May 2024	(Ref: PS22018m)
GPG Approval:	03 June 2024	(Ref: 24065_IGb)

- **Corr.1 (Aug 2010)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

When discussing maintenance of UI LL 62, one member proposed to add a sentence "Paragraph 11 of this UI is applicable to Reg. 23(11) of the revised 1988 Protocol" to the footnote of Rev.1 of UI LL 62.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

After discussion, the Panel agreed to the proposal on addition of the sentence to the footnote of Rev.1 of UI LL 62.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *14 January 2010 Made by the Statutory Panel*
Panel Approval: *19 July 2010*
GPG Approval: *05 August 2010 (Ref: 10038aIGb)*

- **Rev. 1 (July 2008)**

This is an editorial revision to indicate exact regulations to which this UI is applicable (ref. SP7005_).

See TB in Part B.

- **New (Oct 1997)**

UI LL62 was developed by WP/SSLL and adopted by IACS on 19 Nov 97. This UI was submitted to IMO SLF 41 as contained in document SLF 41/6/6. It is deemed to have been adopted on 29 Oct 1997 by tacit agreement.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1 **TB for Rev.1 (July 2008)**

See separate TB document in Annex 1.

◄▼►

Annex 2 **TB for Corr.1 (Aug 20010)**

See separate TB document in Annex 2.

◄▼►

Annex 3 **TB for Corr.2 (June 2024)**

See separate TB document in Annex 3.

◄▼►

Note: There is no separate Technical Background (TB) document for the original resolution (Oct 1997).

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.
To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that "longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320". The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

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* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008
43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008

UI LL	Version	Date
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background for UI LL62 Corr.1, August 2010

1. Scope and objectives

To make UI LL 62 (Rev.1) apply to the revised 1988 Protocol to cover the situation of "Deckhouses situated on the deck of a deckhouse of less than standard height".

2. Engineering background for technical basis and rationale

In 2008, UI LL 62 Rev.1 was adopted (7675IAa) with added footnotes indicating 1) this UI is also applicable to Regulation 23 of the 1988 Protocol; 2) paragraph 7 of this UI is applicable to Reg. 23(7)(c) of the revised 1988 Protocol.

Having further reviewed this UI, a Member suggested that paragraph 11 of this UI be applicable to Reg. 23(11) of the revised 1988 Protocol as well since the situation of " Deckhouses situated on the deck of a deckhouse of less than standard height" addressed by the above-mentioned paragraph had not been covered by the revised 1988 Protocol.

After discussion, Statutory Panel agreed that for consistency in the application of this UI to the 1966 ICLL, the 1988 Protocol and the revised 1988 Protocol, the following footnote was to be added to make the UI cover the above situation and a corrigendum to Rev.1 was to be issued:

"Paragraph 11 of this UI is applicable to Reg. 23(11) of the revised 1988 Protocol".

3. Source/derivation of the proposed IACS Resolution

See 2 above.

4. Summary of Changes intended for the revised Resolution

The notes in UI LL 62 (Rev.1) were expanded to three, with addition of note 3) as follows:

"Paragraph 11 of this UI is applicable to Reg. 23(11) of the revised 1988 Protocol".

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI LL62 Corr.2 (June 2024)

1. Scope and objectives

Editorial deletion of a footnote reservation to paragraph 7 of UI LL62.

2. Engineering background for technical basis and rationale

The IACS Procedures Vol 1, paragraph C5.2.3.5 states that "There is no possibility of "reservation" against a UI".

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

N/A.

3. Source/derivation of the proposed IACS Resolution

ILLC regulation 23(4)(c).

4. Summary of Changes intended for the revised Resolution:

See paragraph 1 above.

5. Points of discussions or possible discussions

N/A.

6. Attachments if any

None.

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background Document

UI LL64 (Rev.4, June 2005)
(and RecommendationNo.14(Rv.2, June 2005))

Scope and objectives

Amend UI LL64 to incorporate more specific requirements of securing arrangement of non-weathertight hatch covers from strength aspects. Modify IACS Recommendation 14 based on the above.

Points of discussions or possible discussions

・UI LL64

The securing arrangement details are referred to Recommendation 14.

・Recommendation No.14

The existing text of IACS Recommendation No.14 is replaced. Main changes are as follows:

Clause 4.1.2. & 4.2.3(partially revised)

The definition of the securing devices spacing "a" is revised, taking into consideration their actual arrangement and the effective breadth of attached plating.

Clause 5.6 (new addition)

Requirements in case of omitting securing devices of non-weathertight hatch cover are defined as follows:

1) Prove that an equilibrium condition is achieved using compression-only boundary elements for the vertical hatch cover supports by means of grillage and/or finite element analyses.
2) Check the height of transverse cover guide by formula which is newly adopted and confirm that dimensions of the guides are determined considering the load acting at the maximum height of the cover guide.

Source/ derivation of proposed interpretation

WP/S/Task No.65

Decision by voting

N.A.

Appendix

N.A.

Submitted by Hull Panel Chairman
28 April 2005

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

UI LL	Version	Date
1	Rev.1	July 2008
2	Rev.1	July 2008
3	Rev.1	July 2008
4	Rev.1	July 2008
5	Rev.1	July 2008
6	Rev.3	July 2008
7	Rev.2	July 2008
8	Rev.1	July 2008
10	Rev.1	July 2008
11	Rev.3	July 2008
12	Delete	July 2008
13	Rev.1	July 2008
14	Rev.1	July 2008
15	Rev.3	July 2008
16	Rev.1	July 2008
17	Rev.1	July 2008
18	Rev.1	July 2008
19	Rev.1	July 2008
20	Rev.1	July 2008
21	Rev.1	July 2008
22	Rev.1	July 2008
23	Rev.1	July 2008
24	Rev.1	July 2008
25	Rev.1	July 2008
26	Rev.2	July 2008
27	Rev.1	July 2008
28	Rev.1	July 2008
29	Rev.2	July 2008
30	Rev.1	July 2008
31	Rev.1	July 2008
33	Rev.1	July 2008
34	Corr.1	July 2008
35	Corr.1	July 2008
36	Rev.1	July 2008
37	Rev.2	July 2008
38	Rev.2	July 2008
39	Rev.1	July 2008
40	Rev.2	July 2008
41	Rev.1	July 2008
42	Rev.1	July 2008

43	Rev.1	July 2008
44	Rev.1	July 2008
45	Rev.2	August 2008
46	Rev.3	July 2008
47	Rev.3	July 2008
48	Rev.2	July 2008
49	Rev.1	July 2008
50	Rev.5	July 2008
51	Rev.2	July 2008
52	Rev.1	July 2008
53	Rev.1	July 2008
54	Rev.1	July 2008
55	Rev.1	July 2008
56	Rev.1	July 2008
57	Rev.1	July 2008
58	Rev.1	July 2008
60	Rev.1	July 2008
61	Rev.1	July 2008
62	Rev.1	July 2008
63	Rev.2	July 2008
64	Rev.5	July 2008
65	Rev.2	July 2008
68	Rev.1	July 2008
69	Rev.1	July 2008
71	Rev.1	July 2008

[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

UI LL65 “Ships with assigned or reassigned reduced freeboards and intended to carry deck cargo”

Summary

This UI provides a unified interpretation of the requirements of SOLAS II-1/4.2.1.2.4 & 4.2.1.2.5. for ships with assigned or reassigned reduced freeboards and intended to carry deck cargo.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Feb 2021)	25 February 2021	1 July 2021
Rev.2 (July 2008)	July 2008	-
Rev.1 (June 2007)	27 June 2007	1 January 2009
New (June 2000)	June 2000	1 July 2001

- **Rev.3 (Feb 2021)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

The text of SOLAS Chapter II-1 Regulation 4 has been amended by IMO Resolution MSC.421(98) and footnotes.6 and .7 in SOLAS II-1/4 have been included directly in the text of regulation 4.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

As a part of the maintenance of IACS Resolutions which have not been updated for the last ten years, Safety Panel agreed to revise UI LL65 in order to modify the references of SOLAS which have been amended.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	23 December 2020 (Made by: Safety Panel)
Panel Approval:	27 January 2021 (Ref: PS20002oISb)
GPG Approval:	25 February 2021 (Ref: 19001hIGc)

- **Rev.2 (July 2008)**

No records available

- **Rev.1 (June 2007)**

No records available

- **New (June 2000)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.1 (June 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (July 2008)**

See separate TB document in Annex 2.

◄▼►

Note: There are no separate Technical Background (TB) documents for New (2000) and Rev.3 (2021).

Technical Background

UI LL65 (Rev.1, June 2007)

Ships with assigned or reassigned reduced freeboards and intended to carry deck cargo

Work item 3 given to Project Team on SDS, established by the Statutory Panel, was to consider the need for revising the UI LL65 based on the new SOLAS Chapter II-1 and in the light of the development of Explanatory Notes to such a new Chapter.

In undertaking this task, the PT noted that the following decision was made at the MSC 82: (Ref. MSC82/24):

"12.10 Having noted that the SLF Sub-Committee, in considering IMO instruments in which damage stability provisions should be based on probabilistic principle, with regard to the 1988 LL Protocol, had agreed to the additional words "except ships intended for the carriage of deck cargo" at the end of .6 and .7 of the footnote relating to the revised SOLAS regulation II-1/4.1, the Committee approved the Sub-Committee's decision and requested the Secretariat to include the wording into the next relevant IMO publications."

Although it may be concluded that the intentions of the UI LL65 would be covered (for ships built on or after 1st January 2009) by the above amendments, and thus UI LL65 could be deleted from that date, it was concurred that this Unified Interpretation may still be relevant after the mentioned date for ships being assigned or re-assigned a reduced B-minus freeboard and intended to carry deck-load. The text of the existing UI has been therefore revised accordingly.

The UI was approved by all Statutory Panel Members with the exception of DNV who raised the following reservation:

"a) Formal matters:

We are in doubt whether the draft UI LL65 with the wording as proposed in item 4) can be regarded as an interpretation. It would appear as an amendment to Reg.27 of the Load Line convention and would therefore be more suitable categorised as a Unified Requirement.

b) Technical matters:

1) As already stated we are not able to see the rationale behind the expression in item 4 of the draft UI and an explanation is given as follows.

2) At SLF 49 the discussion initially concerned whether those ships with reduced B-freeboard could be exempted from the probabilistic rules of revised SOLAS Ch.II-1. The conclusion was to amend the footnotes .6 and .7 to exclude the ships intended to

carry deck load. This was later approved by MSC82 (ref the technical background document) and is a sensible solution as it ensures that the ship with a reduced B-freeboard and carrying deckload has the same capability of surviving damage as any other cargo ship. The draft UI is taking this much further as it is required that the KG for the deepest subdivision draft used in the calculation for compliance with Reg.27 is further used in the calculations of the limiting KG in accordance in the revised SOLAS Ch.II-1. Our main objection is that these calculations are based on completely different assumptions and methods and can not be directly compared.

3) *The revised SOLAS Ch.II-1 is a significant improvement compared with current SOLAS as requirements to partial indices at each calculated draught have been introduced. I.e. according to current SOLAS a ship may have a very low survivability at the deepest subdivision draught and a corresponding high survivability at the partial draught . There are no restrictions as the attained index is the average of the two indices."*

Submitted by Statutory Panel Chairman
7 June 2007

Permanent Secretariat note:
GPG discussion:

- 9 members accepted the draft UI LL65, while DNV reserved its position.
- UI LL65 Rev.1 was adopted on 27 June 2007 (ref. 6191bIGb).
- Members agreed to send the revised UI to SLF51.

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

APPENDIX 1 – List of UI LLs amended

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[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background Document
UI SC 183(Rev.1, November 2005)
UI LL 67(Rev.1, November 2005)
UI MPC 10(Rev.1, November 2005)

1. Background

Survey Panel reported on 31 October 2005 that the ex-WP/SRC had agreed to amend UI SC 183, LL 67 and MPC 10 by adding the word “periodical” in front of the sentence “survey visit on which all statutory and class items…” .

2. GPG discussion

2.1 ABS proposed that this revision refer to the resolutions adopted at MSC 79, which revised the content of the certificates required by various Conventions and Codes, rather than MSC/Circ.1012 and MEPC/Circ.384 and the quoted text contained in paragraphs 1 and 2 of the current UI.

2.2 Concerning MSC.176(79), GPG noted that it specifically included a model form of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, and this form contained the text regarding completion date of the survey on which it is based, (see page 161 of Annex 10 of MSC 79/23/Add.1), GPG agreed that this Resolution should also be included in the opening text.

2.3 In light of the 1 July 2006 entry into force date of the resolutions, the uniform implementation date was set at 1 July 2006 (Note: MSC.181(79) enters into force on 1 January 2007).

2.4 GPG, noting that MSC 80 and MEPC 53 had approved a Circular from FSI 13 incorporating the original IACS UIs SC183, LL67 and MEPC10, agreed that the revised UIs be submitted to FSI 14 in order for IMO to amend the IMO Circular.

Permanent Secretariat
17 Nov 2005

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

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[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

Technical Background
UI LL 70 (New, Jan 2005) Corrosion margin for hatch cover design

1. Objective

To achieve uniform application of the IACS decision that the corrosion additions of UR S21.6 are to be applied to all hatch covers subject to Reg.16 of the revised LL Protocol.

2. Background

1. On 26 Aug 2004, in answer to an enquiry from MacGREGOR, GPG, with the advice from WP/S, replied that :
   - A new version of UR S21 was under development (WP/S Task 73) to cover all types of ships;
   - The corrosion additions in UR S21 to be used also for other types of ships will be the same as the ones currently adopted for bulk carriers.

   The IACS reply is annexed hereto (Annex 1).

2. GPG decided that in view of the implementation date of the revised LL Protocol, IACS should codify the decisions already taken (as summarized above) in an IACS UI.

   LL70 was so prepared, the contents of which were taken from UR S21.6 (s/n 4071a). Submitted to Council for approval on 04/10/2004.

3. However, concerning the second bullet point in para.2.1 above, Council noted a concern expressed by GL:

   > **Quote**(4071aGLb, 04/10/2004):
   > I see no technical justification to apply the same corrosion additions to all kinds of ships. Obviously, the exposure to corrosion is quite different for hatch covers of e. g. bulk carriers and containerships, as the latter have larger freeboard and permanently dry cargo holds. Furthermore, hatch covers of container ships are not exposed to aggressive cargoes, other than in other ship types. I feel that such considerations need still to be discussed.
   > **Unquote**

   GL further advised that “for container ships, according to GL’s thickness measurements records, the corrosion additions for hatch covers as used up to now are sufficient”.

4. Council/GPG tasked WP/S on 29/10/2004 as follows:
   *“to determine the corrosion additions to be applied for **different types** of hatch covers, their positions on various types of ships when applying Reg 16 of the amended regulations of the 1968 protocol to the ICLL to ships with keels laid from 1 January 05 in association with the net scantling approach requirements of UR S21”*

3. WP/S discussion

3.1 WP/S Chairman, based on the technical information provided by GL, drafted requirements for appropriate corrosion margins for vessels other than

bulk/ore/combination carriers. GL's technical information focused on the coating performance/corrosion experience for container carriers.

The GL's technical information is annexed (Annex 2).

3.2 WP/S discussed the term "appropriate corrosion margin" and agreed to define it as a corrosion addition to be added on the net scantlings based on specified assumptions regarding corrosion protection and steel renewals.

3.3 WP/S discussed the corrosion addition of plating and stiffeners of **single** skin hatch covers (other vessels) and decided generally to keep same additions as applied for bulk carriers in S21 (LL 70, para.2, 1st bullet).

3.4 WP/S also discussed the corrosion addition of top and bottom plating and internal stiffeners of **double** skin hatch covers (other vessels) and decided in general a reduction of 0.5 mm compared to bulk carriers as given in S21 (LL 70, para.2, 2nd bullet).

These margins were considered to result in a good margin for single skin hatch covers whilst giving designers suitable credit for the superior double skin design.

3.5 For **single** and **double** skin hatch covers in way of cellular container holds the corrosion addition (all members) was reduced to 1.0 mm as proposed by GL.

3.6 Further, WP/S agreed that UI LL70 should also address steel renewal and coating, the corrosion addition and steel renewal being interrelated.

See the second half of LL 70 interpretation.

4 GPG discussion

Approved by GPG by 4071aIGk of 13/12/04 but reopened following further discussion within WP/S, raised with GPG by LR and DNV, adding clarifying reference to UR S21.6.1 being complied with for 'all ship types'. Amended and resubmitted to GPG and Council by IAi, 11/01/05.

5 Adoption

IACS Council approved LL 70 on 20 January 2005.
The implementation of UI LL70 is synchronized with that of the revised LL Protocol, 1 Jan 2005.

Annex 1: IACS reply to MacGREGOR
Annex 2: GL's technical information on container ships
Annex 3: Summary of Repair Criteria in IACS UI LL70
(Note: GPG added Annex 3 to TB on 16 August 2005 (concluded on 9 May 2005), a summary of table containing the common understanding of renewal criteria and annual hatch cover gauging. This table will be used until the Hull Panel completes the development of a new UR for hatch covers of ships other than bulk carriers including steel renewal criteria)

Prepared by the Permanent Secretariat & WP/S Chairman
29 November 2004.
Amended Permanent Secretariat 11/01/05, 20/01/2005 and 15/08/2005

IACS

INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.

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26th August 2004
Our Ref: GYH04-0089

Mr. Marko Aalto
Senior Strength Analyst
Strength Analysis Co-ordinator
General Cargo Ships
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MacGREGOR (FIN) Oy
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Subject : Resolution MSC.143 (77) Annex 3 (Adopted on 5 june 2003) - Regulation 16 ; Hatch cover design of Bulk Carriers, Container Carriers and General Cargo Ships

Ref : Your Fax message dated 6 November 2003.

Dear sirs,

We apologize for the long delay to answer to your fax message in reference.

Please note our comments to your questions :

1. Question 1

It is confirmed that when bulk carrier hatch covers are designed according to IACS UR S21 Rev.3 (April 2003), they also fulfil the MSC.143 (77) Annex 3 - Regulation 16 requirements.

2. Question 2

The current version of S21, applicable to bulk carriers, ore carriers and combination carriers, considers only the sea pressures but a new version is presently under development for application to all types of ships and at this purpose also loads other than sea loads will be taken into account.
The unified requirements that will be developed by IACS for the design of hatch covers will be based on a net scantling approach.

The corrosion additions in UR S21 to be used also for other types of ships will be the same as the ones presently adopted for bulk carriers.

Until the new version of UR S21 is adopted by IACS, hatch covers for ships different from bulk carriers, ore carriers and combination carriers are to be designed in accordance with:

the requirements of ILLC, as far as sea loads are concerned ;
the current Classification Societies Rules.

3. Question 3

The design loads can be reduced from 2,6 t/m2 to 2,1 t/m2, as proposed by you, for locations other than positions 1 and 2, as defined in ILLC.

4. Question 4

It is confirmed that LL 64 is to be used to determine the hatch cover location.

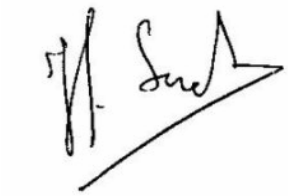
Please note that the following considerations have been done for accepting a load reduction for positions above position 2, as per point 3 above :

- Position 2 is defined in the Amendments to the Protocol of 1988 with respect to the exposed superstructure decks.

- The meaning of "located at least one (or two, when forward of 0,25L from forward perpendicular) standard height of superstructure above the freeboard deck", relevant to the "position 2" definition, should be interpreted as: decks of superstructures having height less than one (two) standard height(s) of superstructure are to be considered as being in "position 1".

In conclusion, locations more than two (or three, when forward of 0,25L from forward perpendicular) standard height of superstructure above the freeboard deck are not position 2 and the design loads in these locations may be reduced with respect to those specified in ILLC.

Best Regards,



Jean-François Segretain
IACS GPG Chairman

Annex 2, Technical arguments supporting the proposed corrosion margin for hatch covers of container vessels

Prepared by GL for IACS WP/S for UI LL70

Nov. 2004

The corrosion protection of hatch covers is in general of high quality. The corrosion protection for the top side is generally applied under workshop condition as described below:

- A surface preparation by shot-blasting acc. to Swedish Standard SA 2,5
- The steel will be covered by a zinc silicate paint, which is known as extremely robust against wear
- As further layers of painting a sealer and a final coating will be applied.

The lower side of the covers will pre-treated in the same way (SA 2,5) as the upper side covered by a thick coating of abt. 200µm in thickness.

As to the corrosion protection of double skin hatch covers it is a common standard that the inner space of the cover structure is protected by corrosion inhibitors. This will be achieved by the injection of VCI-powder which inerts the atmosphere of the inner space.

Further there are remarkable differences between the properties of the cargo of a bulk carrier and a container vessel.

- The cargo of a bulk carriers is in general of high humidity, the chemical composition of the cargo leads in some cases to a generation of aggressive gases which support an increased corrosion of the structure. Condensing water on the surface of the lower side is generally present at hatch covers of bulk carriers.
- During cargo handling cargo may fall out of the grabs onto the hatch cover top plate, which leads to increased wear of the coating surface.
- Contrary to this cargo holds of container vessels are dry spaces as per the definition of GL-Rules.
- The assumption to apply the corrosion addition of dry spaces for container holds and for the hatch covers is justifiable with respect to the cargo hold ventilation which is installed in the holds. Further the recent designs of container vessels carry a major portion of refer containers which leads to an increase of the in hold temperature and to a decrease of humidity in the cargo hold atmosphere.

For the maintenance of the covers they can easily be removed from aboard on shore for inspection and for repairs of damages.

Container vessels in general have a higher freeboard height than other ship types like bulk carriers. In the consequence the hatch covers are less exposed to green sea. Further they are protected against direct seawater impact by the containers stowed on top of them.

According to GL's general requirements for the survey of ships thickness measurements have to be carried out for hatch covers on vessels of 10 years of age and above. Thus a representative basis for the corrosive diminution of hatch cover platings is available. From GL's survey records we don't find a significant diminution of plate thickness caused by corrosion.

Further GL don’t have any negative experience with damages of coating and excessive corrosion on container hatch covers. The only damages which may occur are damages caused by dropping heavy outfitting components or containers on the top plate.

The reservation that the proposed corrosion margin is intended for hatch covers of dry cargo holds only was done to avoid the application of the proposed corrosion margin for so called open hatch bulk carriers which are also designed to carry containers on top of the hatch covers.

Annex 3 to TB, LL70

Summary of Repair criteria in IACS UI LL70

2005.04.13(R1)

<table>
<tr><th rowspan="2">Ship Type</th><th colspan="2" rowspan="2">Hatch Cover Type</th><th rowspan="2">Corrosion Additions (t_s)</th><th colspan="2">Repair Criteria</th></tr>
<tr><th>Steel renewal is required</th><th>Coating* or annual gauging is required as possible alternative to steel renewal</th></tr>
<tr><td rowspan="3">- Bulk carriers
- Ore carriers
- Combination carriers</td><td rowspan="2">Single Skin</td><td>Plating</td><td rowspan="2">2.0mm</td><td rowspan="2">$t_g < (t_{net} + 0,5)$</td><td rowspan="2">$(t_{net} + 0,5) \leq t_g \leq (t_{net} + 1,0)$</td></tr>
<tr><td>Stiffeners</td></tr>
<tr><td rowspan="2">Double Skin</td><td>Plating</td><td>2.0mm</td></tr>
<tr><td></td><td>Internals</td><td>1.5mm</td><td>$t_g < t_{net}$</td><td>-</td></tr>
<tr><td rowspan="5">- Other ships</td><td rowspan="2">Single Skin</td><td>Plating</td><td rowspan="2">2.0mm</td><td rowspan="2">$t_g < (t_{net} + 0,5)$</td><td rowspan="2">$(t_{net} + 0,5) \leq t_g \leq (t_{net} + 1,0)$</td></tr>
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<tr><td>Hatch covers in way of Cellular cargo holds intended for containers</td><td>Plating
Stiffeners
Internals</td><td>1.0mm</td><td>$t_{net} < t_g \leq (t_{net} + 0,5)$</td></tr>
</table>

Notes:

1) t_g: Gauged thickness
2) *: Coating is to be applied in accordance with the coating manufacturers requirements

Technical Background Document
UI LL71 (New, April 2005)

Similar stage of construction
(1966 ILLC, Article 2(6))
(amended LL Protocol 1988 regulation 2 – para (7) and (8))

1. Scope and objectives

The UI proposes the definition of the term “similar stage of construction” supposed to be used for the purpose of the amended 1988 LL Protocol’s application.

2. Source of proposed interpretation

There are some problems to interpret the term “similar stage of construction” for the purposes of the amended 1988 LL Protocol. At WP/SSLL 41 it was unanimously agreed to use the definition of “a similar stage of construction” given in SOLAS Reg.II-1/1.1.2. RS volunteered to draft a respective UI LL on this issue and circulate it through WP/SSLL Members for consideration. The draft has been agreed by WP/SSLL for submission to GPG.

Submitted by WP/SSLL Chair
January 2005

Harmonized Technical Background for revised UIs LL*, July/August 2008

1. Scope and Objectives

This item was triggered by Statutory Panel at its 6th meeting due to the fact that all UIs LL shall be editorially revised, taking into account the outcome provided by the former WP/SSLL, to indicate the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable. It was decided that there is no need to submit the outcome to SLF but it is better to have a footnote to the relevant UI in the Blue Book with the application.

2. Points of Discussion

All UIs LL have been editorially revised by including a footnote in each UI indicating "This UI is also applicable to XXX" where "XXX" will contain the exact regulations (of the 1966 Convention or 1988 Protocol or revised 1988 Protocol) to which the UI in question is also applicable.

Keeping in mind that existing UI LL12 was incorporated in UI LL62 and included in the revised 1988 Protocol, the Panel agreed to delete this UI from the Blue Book.

To put existing UI LL45 in line with MSC circular 920 an absolutely new draft UI has been developed and unanimously agreed by the Panel.

UI LL46 has been editorially amended keeping in mind the content of UI LL62. The new draft UI has been unanimously agreed by the Panel.

UI LL63 has been editorially amended for the application to Reg. 27(12)(d) and Reg. 27(12)(e) of the 1988 Protocol by adding the texts of both a/m regulations and the note that “longitudinal distance of 3.0(m) referred in sub-item (a) and figures 1 to 4 should be replaced with 3.05(m), when this interpretation applies to Res.A.320”. The new draft UI has been unanimously agreed by the Panel.

3. Decision by Voting (if any)

N.A.

Submitted by Statutory Panel
23 June 2008

* Full list of UI LLs amended is attached as Appendix 1.

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[Note: no changes have been made to the following UI LLs: 9 (already deleted), 32 (already withdrawn), 59, 66, 67, 70 and 72.]

UI LL72(New, Sept. 2005)

Interpretation to ICLL Regulation 27

Technical Background

The development of this UI was initiated on the basis of a submission indicating that there was a not homogenous behavior by the Societies in applying regulation 27(3) of ICLL 1966. In particular, it was pointed out that

Under the 1988 Protocol of the ICLL (or in the application of A.320(IX) with the 1966 ICLL), regardless of how the tank is actually loaded in reality at the SLWL, the flooding of that tank is to be assumed based on a 95% permeability (i.e., the tank is empty).

Up until 12 Nov 75, the 1966 ICLL regulations were clear that only compartments designed to be empty at the summer load water line (SLWL) needed to be flooded but on 12 Nov 75, IMO adopted resolution A.320(IX) which recommends administrations to apply a more onerous flooding requirements such that any compartment which becomes breached under the assumed damaged penetrations of the 1966 ICLL should be flooded, regardless of the condition of the tank (empty or full) at the SLWL. Based on the discussion held, it appears that quite frequently the decision on the applicability of the criteria set out in resolution A.320(IX) is left by the Administrations to single societies. It was then considered that there was the need for settling a common understanding on this matter.

It should also be noted that Res. A.320(IX) gained more and more support as time went on (by flag States requiring compliance) and eventually was incorporated into the 1988 ICLL Protocol.

The establishment of the above UI would render the change of flag between Protocol 1988 non signatory/signatory flags smoother.

Submitted by Statutory Panel Chairman
Aug 2005

TECHNICAL BACKGROUND

UIS SC224, LL74 AND MPC95 (NEW, AUGUST 2008)
"Measurement Of Distances"

1. Scope and objective

Several requirements in IMO instruments require a minimum distance between the inner and outer skins for protecting the spaces inside the inner skins (e.g. SOLAS regulation II-1/9, MARPOL Annex I regulation 12A and 19, IBC Code para.2.6.1 and IGC Code para.2.6.1.) However, it is not clear from which surface of the inner skins the minimum distance should be measured.

Objective is to clarify the measurement of distances between the inner and outer skins for protecting the spaces inside the inner skins by developing new UIs.

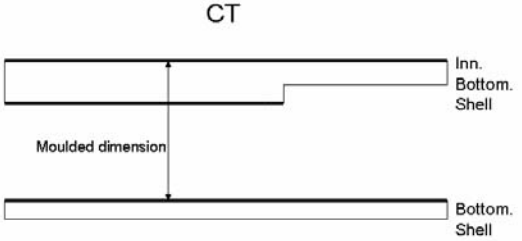
2. Points of discussions

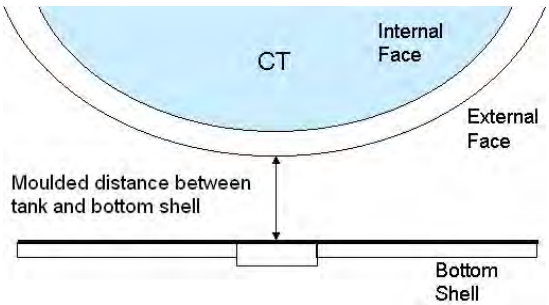
To obtain a unified interpretation for the measurement of such a distance above para.1, it was agreed to develop new UIs by Statutory Panel without any objection. In addition, NK proposed that the minimum distance should be determined by measurements between the moulded lines of inner and outer skins for the following reasons, and no Member objected to them.

1. The majority of principal particulars of ships are defined on the basis of moulded shapes;
2. In damage stability calculations, all distances may be measured between moulded lines;
3. At the basic design stage, it is practical to determine distances by measurements between moulded lines because thickness of some plating is not finalized and therefore distances may be variable; and
4. As there are structural members already inside double skin spaces, the decline in safety protection by having the plate thickness within the double skin space would be negligible.

Based on the above consensus and recognition Members also supported CCS proposal to expand the application of the UI to ship (or subdivision or waterline) length as there is no clear explanation in ICLL, SOLAS or IS Code on such length with regard to whether they should be moulded length or if plate thickness should be considered.
However, the length as defined in ICLL regulation 3(1) is not moulded length

Furthermore, members confirmed that
1: this UI can apply only to tanks for negligible thickness difference such as integral tank type whose boundaries are hull structure
2: For independent cargo tank type, dimensions to the external face of the tanks should be measured as moulded dimensions.





(Independent cargo tank type)

3. Extent of Approval by Working Group

The draft UIs are accepted [unanimously].

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
22 July 2008

Permanent Secretariat note (August 2008):
GPG approved new UIs SC224, LL74 and MPC95 on 12 August 2008 (ref. 8630_IGb) with an implementation date of 1 April 2009.

Technical Background

UI LL75 (NEW), September 2008

Permeability of Store Space in the Damage Stability Calculation (Regulation 27(3) & (8.d) of 1988 Protocol of the 1966 ICLL)

As the permeability of store spaces specified in other IMO statutory damage stability requirements is not quite the same with that in the ICLL and its 1988 Protocol, which may cause confusion in the industry, particularly for calculating the damage stability of ships under Regulation 27 of 1988 Protocol of 1966 ICLL, IACS Members, having had comprehensive discussion, reached the unified interpretation that the permeability assumed in the damage stability calculation for the flooding of any store space shall be 0.95 under 1988 Protocol of 1966 ICLL.

Submitted by Statutory Panel Chairman
25 August 2008

Permanent Secretariat note:
Approved by GPG 23 September 2008 (8643_IGc), to be implemented for any ship for which damage stability calculations are carried out on or after 1 April 2009.

TECHNICAL BACKGROUND

UI LL75 (Rev.1) – March 2009

"Permeability of Store Space in the Damage Stability Calculation (Regulation 27(3) & (8.d) of 1988 Protocol of the 1966 ICLL)"

After review and assessment of an enquiry raised by the industry on some confusion concerning application and implementation date for the IACS UI LL75, the Panel concluded to clarify and revise the application note as follows:

"This Unified Interpretation is to be uniformly implemented by IACS Members and Associates to ships contracted for construction on or after 1 July 2009."

The implementation date was postponed from 1 April to 1 July 2009 in order to provide ship designers with sufficient time to adjust damage stability calculations and compartmentation, as necessary.

Submitted by Statutory Panel Chairman
16 February 2009

Permanent Secretariat note (March 2009):
UI LL75 (Rev.1) was approved by GPG on 10 March 2009 (ref. 8643aIGb).

UI SC234 / LL76 / MPC96 "Initial Statutory Surveys at New Construction"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Dec 2014)	12 December 2014	1 July 2015
Rev.1 (Feb 2014)	18 February 2014	1 July 2014
Corr.1 (Jul 2010)	-	-
NEW (Apr 2009)	14 April 2010	1 July 2010

- **Rev.2 (Dec 2014)**

.1 Origin of Change:

☑ Based on the amendments of IMO Regulation (Res. A.1053 (27)) as set by Res. A1076(28)

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement contained in the IMO Resolution A.1076(28) which amends the IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007.
These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27) as amended by IMO Res. A.1076(28).

Survey Panel amended the text of IACS document to make it consistent with the requirements of the amendments of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision under PSU14010.

Survey Panel during the 20th Meeting agreed small changes of the Annex to UI.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 19 April 2014 by Survey Panel Chairman
Survey Panel Approval: 04 September 2014 (20th Survey Panel Meeting)
GPG Approval: 12 December 2014 (Ref: 13245aIGc)

- **Rev.1 (Feb 2014)**

.1 Origin of Change:

☑ Based on IMO Regulation (Res. A.1053 (27))

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement of IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007. These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27).

Survey Panel amended the text of IACS document to make it consistent with the requirements of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision by group works where all Panel members actively took part to review the requirements of current UIs SC234/ LL76/ MPC 96 with the provisions of A.1053 (27).

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 30 May 2013 by Survey Panel Chairman
Survey Panel Approval: 15 November 2013
GPG Approval: 18 February 2014 (Ref: 13245_IGc)

- **Corr.1 (Jul 2010)**

.1 Origin of Change:

☑ Other *(IMO Secretariat)*

.2 Main Reason for Change:

UI SC234/LL76/MPC96 was submitted to IMO as an Annex to FSI 18/13. During IMO's processing of the submission they noticed that in para 5 the stated order of the tables in Appendix 1 of the UI was different from the actual order.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

-

.4 History of Decisions Made:

Noting the feedback from IMO, Permsec decided to prepare a corrected version of UI SC234/LL76/MPC96 in order to revise the list of tables in para 5 of the UI.

.5 Other Resolutions Changes:

N/A

.6 Dates:

Corrected file circulated to members: *21 July 2010 (Ref. 9529_IAf)*

- **NEW (Apr 2009)**

See TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC234/LL76/MPC96:

Annex 1. **TB for Original Resolution (Apr 2009)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) documents for Corr.1 (Jul 2010), Rev.1 (Feb 2014) and Rev.2 (Dec 2014).*

TECHNICAL BACKGROUND

UI SC234, LL76 and MPC96 (New, April 2009)
"Initial Statutory Surveys at New Construction"

1. Introduction

The IACS EG/NCSR was guided by the objectives in the Form A which had been approved by the GPG.

Following on from the introduction of UR Z23 it was noted that the UR concentrated on hull surveys of new construction and only dealt with the statutory aspects where they coincided.

The EG was tasked to develop an IACS UI for initial statutory surveys at new construction addressing all other aspects of statutory certification during new construction which are not addressed in the UR Z23 on the basis of A.948(23) and to suggest any modifications to A.948(23) for the following:

- International Load Line Certificate (1966)
- Cargo Ship Safety Equipment Certificate
- International Oil Pollution Prevention Certificate

During the development of this UI, A.948(23) was superseded by A.997(25) and the requirements have been amended to comply with A.997(25)

This UI applies to surveys held at new construction and is not applicable to conversions and other initial surveys.

This UI does not cover the requirements for type approval or certification at vendor's works and for which evidence of acceptance is to be provided as indicated in the survey tables.

The purpose of this UI for Initial Statutory surveys during new construction:

a) is to verify that ships are constructed in accordance with the relevant Statutory requirements as part of the new building process;

b) aims to ensure unified application of the applicable requirements of A.997(25);

c) gives guidance on the specific requirements involved in the initial statutory surveys as detailed in A.997(25).

In developing this UI it is assumed that:-

a) delegation of authority from the flag state for the initial statutory surveys is a prerequisite for the verification of Statutory Regulations by the classification society;

b) compliance with the UI does not remove the responsibility from the shipbuilder to demonstrate that a satisfactory level of quality has been achieved;

c) the shipbuilder should bring to the attention of the classification society any deviations from the statutory regulations found during construction.

2. Background

Following the approval of the Form A the EG met several times and has progressed the task by consensus.

It was not the task of the EG to provide interpretations of the technical requirements of the statutory regulations which are covered by the Plan Approval process and other IACS Working Groups, but to provide clear and unified interpretations for the survey procedures required to ensure compliance with the regulations

Initial discussion centred on the scope of the Task and how to approach the work. It was agreed that the survey requirements in A.997(25) gave a comprehensive list of requirements for initial surveys however it was agreed that there was a need to demonstrate the survey procedures and actions required to be taken to comply these requirements. Detailed discussions were held around the current working practices for testing the statutory items to confirm that they met the intent of the requirements of A.997(25).

The members of the group reviewed the requirements of A.997(25) and prepared a unified interpretation of the requirements using the format of the table for *Shipboard and Shipyard Inspections* from the RINA *Rules for Testing and Certification of Marine Materials and Equipment.*

The EG considered the requirements for the Ship Construction File in the Draft Goal Based Standards and did not feel that there was any reference to the surveys items in Appendix 1 as these are predominately related to Hull Integrity and are covered in UR Z23.

Submitted by EG/NCSR Chairman
27 February 2009

Permanent Secretariat note (April 2009):

The new UI was approved by GPG, with an implementation date of 1st July 2010, on 14 April 2009 (ref. 9529_IGd) together with Rev.2 of UR Z23.

UI LL77 "Application of Load Line Requirements to Conversions of Single-hull Oil Tankers to Double-hull Oil Tankers or Bulk Carriers"

Summary

UI LL 77 has been updated to correct the reference to circular 1247 from MSC-MEPC.1/Circ.1247 to MSC.1/Circ.1247

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2021)	14 December 2021	-
New (Dec 2011)	02 December 2011	1 January 2013

- **Corr.1 (Dec 2021)**

1 Origin of Change:

☑ Other *(Review after 10th anniversary)*

2 Main Reason for Change:

Correction to the referenced IMO circular. MSC-MEPC.1/Circ.1247 should be to MSC.1/Circ.1247

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The UI was reviewed as it was 10 years old. One IACS member identified that the reference to MSC-MEPC.1/Circ.1247 should be to MSC.1/Circ.1247.

Safety Panel agreed the change by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 9 November 2021	(Made by IACS member)
Panel Approval	: 24 November 2021	(Ref: PS21015bISc)
GPG Approval	: 14 December 2021	(Ref: 21197_IGb)

- **New (Dec 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

New UI to clarify the application of load line regulations to conversions following discussions held in IACS and at IMO.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Contents on Application of ICLL for conversion of SH OT to DH OT or BC/OC has been ruled out from IACS UI SC 226. It was triggered by Statutory Panel to develop an UI LL on Application of ICLL for conversion of SHT to DHT or BC/OC individually. After the MSC-MEPC CIRCULAR had been developed and approved finally by MSC 89, MEPC 62 and NAV 57 as well, the PT was advised to develop an IACS UI on Application of ICLL for conversion of SHT to DHT or BC/OC in line with it.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal	: 25 March 2009	made by: Statutory Panel Chairman
Panel Approval	: November 2011	by: Statutory panel
GPG Approval	: 02 December 2011	(Ref. 9575_IGp)

Part B. Technical Background

List of Technical Background (TB) documents for UI LL77:

Annex 1. **TB for New (December 2011)**

See separate TB document in Annex 1.

Note: There are no technical background documents available for Corr.1 (Dec 2021)

Technical Background for UI LL77 New, Dec 2011

1. Scope and objectives

It is a common concern among ship owners, shipyards and classification societies how to apply the ICLL when a Single Hull Tanker is converted into a Double Hull Tanker or Bulk Carrier/Ore Carrier. This UI is developed to address the standards/regulations in effect prior to or at "the date of conversion" that shall apply to such a conversion.

2. Engineering background for technical basis and rationale

DE 54 agreed in principle to the initial draft version of this UI submitted by IACS in DE 54/5/1. The interpretation was subsequently revised by DE 54 and approved at MSC 89 and MEPC 62. The initial draft UI as per DE 54/5/1 was revised to reflect the MSC-MEPC CIRCULAR approved by MSC and MEPC with the addition of the following 3 issues:

2.1 The words "which result in a change of the minimum freeboard" in paragraph 1.1 should be understood to mean "which are used in determining the minimum freeboard even though the minimum freeboard has no change in fact" to avoid possible misunderstanding.

2.2 The requirements of an Administration for some ships in special circumstances should be removed from the UI in order that the UI is not considered to go beyond an interpretation.

2.3 The UI is to be uniformly implemented by IACS Societies to conversions which occur (as defined in paragraph 3 of the UI) on or after 1 January 2013.

3. Source/derivation of the proposed IACS Resolution

Discussions held in IACS & IMO on the application of load line regulations to conversions.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

Refer to 2 above.

6. Attachments if any

None

UI LL 78 "Keel Laying Date for Fibre-Reinforced Plastic (FRP) Craft"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2014)	10 January 2014	-
NEW (Mar 2013)	19 March 2013	1 January 2014

- **Corr. 1 (Jan 2014)**

.1 Origin of Change:

☒ Suggestion by an IACS member

.2 Main Reason for Change:

To insert an important missing word into the text of the UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Suggestion from a Statutory Panel member was agreed by correspondence.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 09 Dec 2013 Made by a Statutory Panel member
GPG Approval: 10 January 2014 (Ref: 13047_IGg)

- **New (Mar 2013)**

.1 Origin for Change:

☒ Suggestion by IACS members

.2 Main Reason for Change:

With the introduction of the NOx Tier I/II/III requirements and other emerging statutory legislation, it is necessary to agree a consistent interpretation for the term

“the keels of which are laid or which are at a similar stage of construction” for Fibre-Reinforced Plastic (FRP) Craft.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: November 2012 made by Statutory Panel
Panel Approval: 10 February 2013 by Statutory Panel
GPG Approval: 19 March 2013 (Ref: 13047_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (March 2013)**

See separate TB document in Annex 1.

****

Note: No Technical Background (TB) document has been prepared for Corr.1 (Jan 2014).

Technical Background for UI LL 78 New, March 2013

1. Scope and objectives

This UI is intended to define a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" when applied to Fibre-Reinforced Plastic (FRP) Craft.

2. Engineering background for technical basis and rationale

The Keel Laying date can be difficult to define accurately when FRP Craft are considered. This has not caused a great problem in the past as FRP vessels are rare.

However MARPOL Annex VI uses the term "ship constructed," particularly in relation to NOx Tier I/II/III requirements (noting that Tier III applies to a marine diesel engine that is installed on a ship constructed on or after 1 January 2016).

For most composite vessels it would require the application of the latter, i.e. that the mass of 1% of the structural material is estimated from the laminate schedule and agreed between the Builder and the Surveyor. However, this is not a practical approach.

It was considered necessary therefore to agree a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" for Fibre-Reinforced Plastic (FRP) Craft.

3. Source / derivation of the proposed IACS Resolution

IMO Conventions and Codes (Performance Standards, Technical Standards, Resolutions and Circulars)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The initial suggestion was for the commencement of keel laying to be when the gel coat and back up reinforcements are laid and at the point of commencement of the main structural laminate.

Therefore where there is no gel coat then the structural laminate is the first item laid in the mould so that is the start of the Keel Layup.

To simplify this it was agreed that the start of Keel Layup is when the main structural laminate commences which in most cases will be after the gel coat is applied. Therefore the definition could bypass the gel coat stage because that is "equivalent" to a paint system on the outside of a steel hull.

A definition using the words "hull resin application" was rejected as it did not suit vessels that use a resin infusion technique - several weeks of loading the hull mould

with dry reinforcements may take place and the proposal would be the date when the hull is actually infused.

To satisfy all scenarios it was concluded that the start of Keel Layup is the “commencement of laying the main structural reinforcements of the hull". This definition suits moulding in a female mould or on a male plug. This definition excludes any gel coat and the associated gel coat back up reinforcements (i.e. typically light weight powder bound CSM back up layer(s)).

6. Attachments if any

None

UI LL79 Continuous hatchways (Regulation 36 (6))

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2014)	07 July 2014	01 July 2015

- **New (July 2014)**

.1 Origin for Change:

☑ Request for clarification of term “continuous hatchway treated as a trunk” by IACS members.

.2 Main Reason for Change:

It was found that there was no common understanding within the panel as to the exact meaning of the term ´continuous hatchway treated as a trunk`.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

On May 22, 2012 one Member launched a query as to how trunks may be considered in the computation of load lines. This initiative was based on a real TOCA gaining the Society had to deal with at that time.

Following this, the Panel Chair asked the members for their comments which clearly resulted in the members´ vote to define the term ´continuous hatchway` more precisely. An interpretation of the term ´continuous hatchway` was drafted for consideration at SLF 55. SLF 55 invited IACS to develop a unified interpretation of the term ´continuous hatchway`.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 22 May 2012 Made by an IACS Member
Panel Approval: 23 May 2014 by Safety Panel
GPG Approval: 07 July 2014 (Ref: 12202gIGd)

Part B. Technical Background

Annex 1. **TB for New (July 2014)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for IACS UI LL79 (New, July 2014)

1. Scope and objectives

Regulation 36(6) of the Protocol of 1988 relating to the International Convention on Load Lines, 1966 as amended by Resolution MSC.143(77) states:

"Continuous hatchways may be treated as a trunk in the freeboard computation, provided the provisions of this paragraph are complied with in all respects."

After a thorough discussion on the matter, IACS Members came to the conclusion that, for the cases discussed hereinafter, a uniform approach should be settled by the Sub-Committee. In all cases discussed below, the "trunks" formed by "continuous hatchways" fulfill all applicable requirements relevant to their strength, weathertightness and crew safety aspects as set out by the International Convention on Load Lines, 1966 as amended.

2. Engineering background for technical basis and rationale

There might be two different scenarios where regulation 36(6) is applied: a single hatchway or a certain number of hatchways (more than one) fitted on the ship being considered. In both scenarios, regulation 36(1)(h) needs to be met in as far as the length of the hatchway is concerned.

In case of a single hatchway, the common understanding is that this falls under the application of regulation 36(6).

Where, as indicated at Annex, more than one hatchway is fitted, there might be different approaches in applying regulation 36(6) such as:

a. In Fig.1, each hatchway is considered as a "*separated detached trunk*", thus each hatchway could be "*treated separately as a trunk in the freeboard computation*"; or
b. the hatchways are connected only by longitudinal coamings (see Fig.2). In this case, the hatchways should not be considered as a "continuous hatchway" complying with regulation 36(6), and each hatchway must still be "treated separately as a trunk respectively in the freeboard computation" in the same manner as 5 i; or
c. the hatchways are fully connected by weathertight enclosed steel structures between them (see Fig.3). In this case, an equivalent "continuous hatchway" consisting of the entire enclosed volume of each hatchway and the weathertight spaces between them could be treated as a trunk in the freeboard computation as specified in regulation 36(6).

Annex

Fig. 1

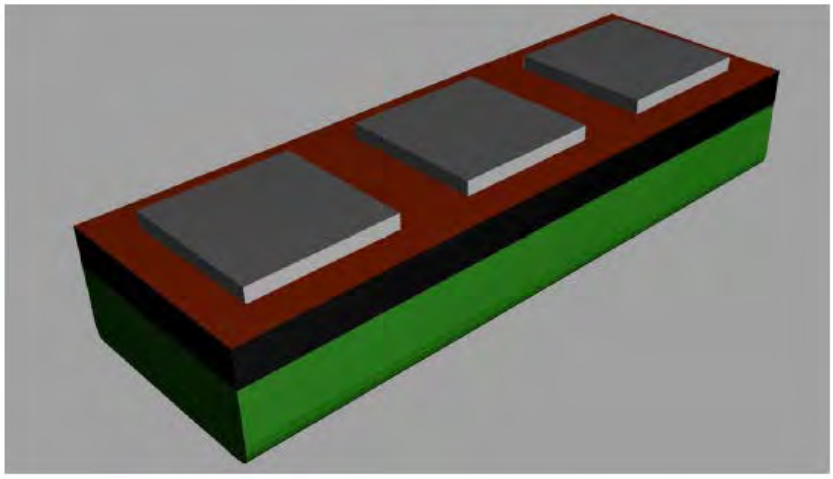


Fig. 2

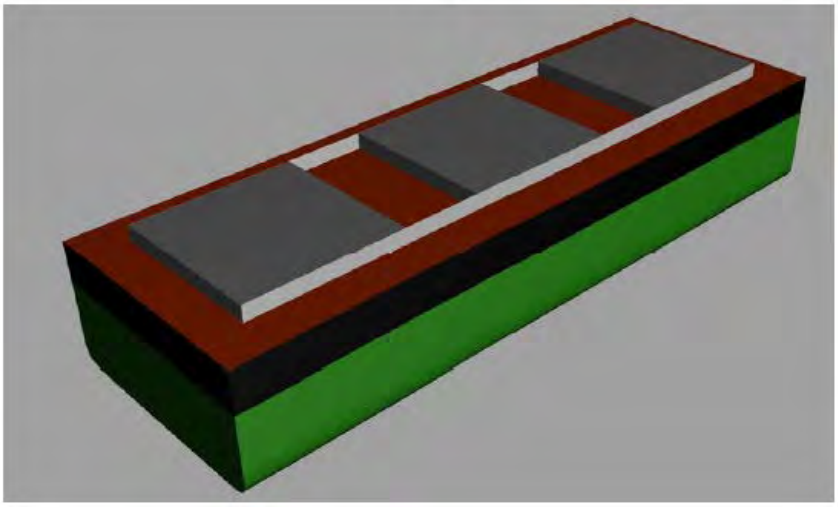
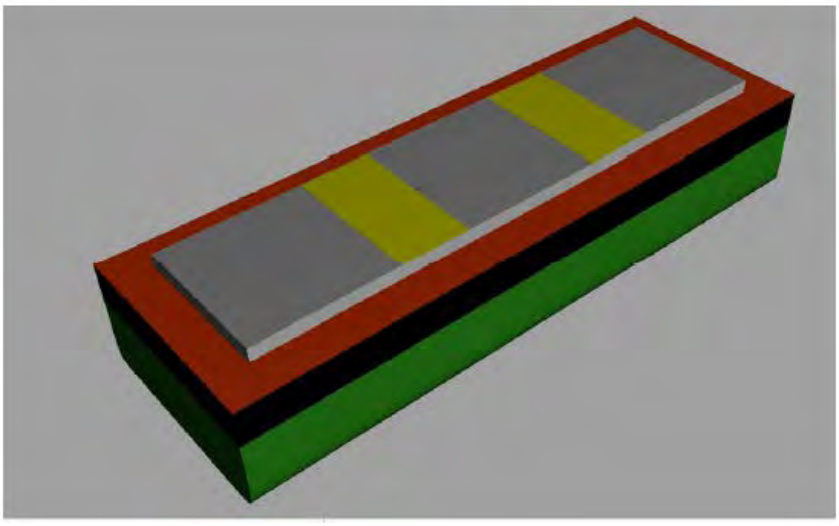


Fig. 3



3. Source/derivation of the proposed IACS Resolution

See 1 & 2 above.

4. Summary of Changes intended for the revised Resolution

This is the original draft resolution. No changes are intended at this point.

5. Points of discussions or possible discussions

See 1 & 2 above.

6. Attachments if any

None

UI LL80 "Unprotected Openings"

Summary

UI LL80 was updated to align with MSC.1/Circ.1535/Rev.1

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2022)	20 June 2022	1 July 2023
New (June 2016)	03 June 2016	1 January 2017

- **Rev.1 (June 2022)**

1 Origin of Change:

☑ Other *(To align with MSC.1/Circ.1535/Rev.1 and Rev.2)*

2 Main Reason for Change:

UI LL80 was adopted by the IMO as MSC.1/Circ.1535. MSC.1/Circ.1535 was later modified to include closed ro-ro and vehicle spaces and delete the word "Unprotected". UI LL80 needed to be aligned with the revised IMO circular.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel reviewed UI LL80 with MSC.1/Circ.1535/Rev.1 and agreed that they should be aligned. All discussion was carried out by correspondence.

The words "or closed ro-ro and vehicle spaces" were added to the UI. After discussion by correspondence a majority agreed to rephrase the interpretation while maintaining technical agreement with MSC.1/Circ.1535/Rev.1 and Rev.2.

Changes to the UI are not needed for MSC.1/Circ.1535/Rev.2.

5 Other Resolutions Changes:

UI SC280 required similar changes.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 11 February 2022	(Made by: Safety Panel)
Panel Approval	: 19 May 2022	(Ref: PS21015eISk)
GPG Approval	: 20 June 2022	(Ref: 21197bIGb)

- **New (June 2016)**

.1 Origin for Change:

- ☑ Request by non-IACS entity *(Dutch Safety Board)*
- ☑ Other *(Based on Vessel Incident - Collision and capsizing of the tug Fairplay 22)*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24, that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed for the treatment of unprotected openings for damage stability calculation under ICLL reg 27.

.5 Other Resolutions Changes

Similar UIs were developed for IBC Code Ch.2 Section 2.9, IGC Code Ch.2 Section 2.9 MARPOL Reg.27 & 28 and SOLAS/Ch.II-1-Reg.7-2.

.6 Dates:

Original Proposal	: June 2014	(Made by Safety Panel)
Panel Approval	: April 2016	(Ref: SP12006r)
GPG Approval	: 03 June 2016	(Ref: 15145bIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI LL80:

Annex 1. **TB for New (June 2016)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document for Rev.1 (June 2022)

Technical Background (TB) document for UI LL80 (New June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points / unprotected openings in the intact & damage stability calculation when they have to be left open for operational purposes. This should confirm that intact & damage stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis, where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in the intact stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed a unified interpretation for damage stability criteria included in the ICLL based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as unprotected openings for the application of ICLL Regulation 27(13)(e).

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

N.A

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4) have to be considered as unprotected points, but only those which are left open during normal operation.

6. Attachments if any

None

UI LL81 "Deduction for superstructures and trunks"

Summary

This UI provides clarification with respect to the application of ICLL Reg 37(3).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2022)	16 May 2022	1 January 2023

- **New (May 2022)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

To clarify the application of ICLL Reg 37(3) with respect to deduction for superstructures and trunks.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issue was raised within the Safety Panel by a member. Based on discussions at the 13th Safety Panel meeting, it was agreed to develop an IACS UI on this matter. It was agreed that the UI should be submitted to SDC 8.

Safety Panel discussed the two possible alternate interpretation on Regulation 37 (3), as follows:

1 For ships of type B -If the effective length of a forecastle is less than 0.07 L, superstructure correction cannot be applied to the vessel.

   For e.g., *if the vessel has no forecastle or effective length of a forecastle is less than 0.07 L and has other superstructure, no superstructure correction is to be applied.*

2 For ships of type B -If the effective length of a forecastle is less than 0.07 L, superstructure correction cannot be applied for forecastle but can be applied to other superstructure.

For e.g., if *the vessel has no forecastle or effective length of a forecastle is less than 0.07 L and has other superstructure, credit should be given to other superstructure only and no credit should be given to forecastle.*

Based on discussions within the Safety Panel, majority of the members aligned with the interpretation provided by Option 1, and agreed to develop a UI to ensure its consistent implementation.

The draft UI was submitted to SDC 8, paper SDC 8/10/2. The IACS interpretation (using option 1) was agreed with minor amendments. Concerns were raised about the increase in use of swept back bows, which do not fit the definition of a forecastle, which use of this interpretation would mean that no superstructure correction would be permitted. This aspect will be further discussed under a separate subject.

The IACS UI was aligned with the IMO circular, MSC.1/Circ.1535/Rev.2.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 12 May 2020	(Made by Safety Panel)
Panel Approval	: 29 April 2022	(Ref: PS18030cISk)
GPG Approval	: 16 May 2022	(Ref: 20140aIGe)

Part B. Technical Background

List of Technical Background (TB) documents for UI LL81:

***Note**: There is no separate Technical Background (TB) document available for New (May 2022).*

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Dec 2019

History Files (HF) and Technical Background (TB) documents for UIs concerning Mobile Offshore Drilling Units (UI MODU)

Res. No.	Title	Current Rev.	HF/TB?
UI MODU1	IACS Unified Interpretations for the application of MODU Code Chapter 2 paragraphs 2.1, 2.2, 2.3, 2.4 and revised technical provisions for means of access for inspections (resolution MSC.158(78))	Corr.1 Jun 2016	HF
UI MODU2	Inclusion of mediums of the fire-fighting systems in lightweight (2009 MODU Code Chapter 1, paragraph 1.3.30)	Aug 2016	HF
UI MODU3	Selective disconnection or shutdown and equipment operable after an emergency shutdown	Withdrawn Dec 2019	HF

UI MODU1 "IACS Unified Interpretations for the application of MODU Code Chapter 2 paragraphs 2.1, 2.2, 2.3, 2.4 and revised Technical provisions for means of access for inspections (Resolution MSC.158(78))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (June 2016)	13 June 2016	-
Rev.1 (Oct 2015)	13 October 2015	01 January 2017
NEW (May 2015)	13 May 2015	01 July 2016

- **Corr.1 (June 2016)**

.1 Origin of Change:

☑ Suggestion by IACS Member

.2 Main Reasons for Change:

To correct the provisions relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the re-examination of the new UI MODU1, a Member noted that the provisions given for the height of the handrail of the resting platform was incorrectly referred to the stanchions supporting the handrail and not to the handrail itself.

Members discussed the issue and agreed to modify the note to the tables of Figures A and B relevant to the interpretation of the paragraph 3.13".

See also TB document in Part B Annex 2.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 05 January 2016 made by an IACS Member

Panel Approval: April 2016 (Ref: PSU16001)
GPG Approval: 13 June 2016 (Ref: 16089_IGe)

- **Rev.1 (Oct 2015)**

.1 Origin of Change:

☑ Suggestion by IACS Member

.2 Main Reasons for Change:

To clarify that spud cans and openings in jack-cases can also be excluded from the PMA requirements in section 2.2.2 of 2009 MODU CODE.

Spud cans are highly loaded structures with significant amount of internal structure in a limited area that makes it impracticable to provide an access hatch of the size to comply with PMA requirements for normal hull tanks on ships. Additionally, because of the limited area to be surveyed within the spud can and the ability to completely gas free the space, a surveyor or inspector will not carry full breathing apparatus when entering a spud can.

The jackcase is very similar to the spud can as regular access is not required and large openings will affect the structural integrity of the jackcase. In addition, the jackcase is above main deck and a surveyor or inspector will not carry full breathing apparatus when entering the jackcase for inspection, thus allowing for smaller access holes.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the issuance of the new UI, it was determined that spud cans and openings in jack-cases could also be excluded from the PMA provisions. The new UI was revised accordingly.

No TB is expected for the present revision.

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval: September 2015 (Ref: PSU15040)
GPG Approval: 13 October 2015 (Ref: 12139_IGr)

- **New (May 2015)**

.1 Origin of Change:

☑ Suggestion by IACS Member

.2 Main Reasons for Change:

To clarify the criteria to be adopted in order to ensure the compliance to paragraphs 2.1, 2.2, 2.3 and 2.4 of the Chapter 2 of MODU Code 2009 (IMO Res. A.1023(26)), relevant to the permanent means of access.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following of a Member request the Survey Panel evaluated the possibility to treat the matter of Permanent Means of Access, of the MODU, in consistency to the provisions of UI SC191 for ships. The Panel considered also that a PT of experts of MODU matters was set in order to prepare the revision 1 of UR Z15. Members concurred that the PT should be tasked to deal with also the matter of PMA of MODU. Upon GPG agreement the PT no. 22(2013) was set and tasked to:

- develop the revision 1 of UR Z15 (under Survey Panel item PSU12033)
- develop a draft Unified interpretation relevant to the permanent means of access for MODU (initially under Survey Panel item PSU 12035 and subsequently merged under PSU 12033)

Panel discussed the drafted UI MODU1, as prepared by PT, under item PSU12033 and following minor grammatical adjustments agreed the new document.

.5 Other Resolutions Changes

Nil

.6 Dates:

Panel Approval: November 2014 (By Survey Panel)
GPG Approval: 13 May 2015 (Ref: 12139_IGo)

Part B. Technical Background

List of Technical Background (TB) documents for UI MODU1:

Annex 1. **TB for New (May 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.1 (June 2016)**

See separate TB document in Annex 2.

Note: *There is no Technical Background (TB) document available for Rev.1 (Oct 2015).*

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Technical Background for UI MODU1 (New, May 2015)

1. Scope and objectives

The Survey Panel tasked the Project Team:

-To examine the possibility to extend the scope of the Unified interpretation on permanent means of access for Bulk Carriers and Oil Tankers (UI SC 191) also to MODU unit or evaluate the development of a new UI which, likewise the Unified Requirement, clarify the criteria to be adopted in order to ensure the compliance to paragraphs 2.1, 2.2, 2.3 and 2.4 of the Chapter 2 of MODU Code 2009 (IMO Res. A.1023(26)).

The new UI recalls all applicable requirements of the

IMO Res. MSC.158(78) by considering that the structural configuration of the units.

2. Engineering background for technical basis and rationale

The project team evaluated the opportunity to extend the requirements of the UI SC191 also to MODU units by keeping in consideration:

1) the several and different structural configurations that the MODU units may have (e.g., Surface Units,Self-Elevating Units, Colum Stabilized Unit) which implies different access arrangements (e.g. Jackup preload tanks and the spud cans, semi submersibles have unique access requirements, particularly in way of the pontoon tanks)
2) the different methodology of construction adopted among the various type of MODU, which may led to consider each as a unique designed unit
3) the similarities between the MODU units and the Ships

Following the examination of the UI, the PT recognized that:

- mostly of the interpretations could be also applied to the MODU units but some of these had to have modified so that they may include also the particular arrangement of the MODU.
- the introduction of the references to the MODU Code 2009 into the UI SC will led to mix them with the existing SOLAS References by making difficult the reading of the UI

Considering the above the PT deemed more appropriate to envisage a separate Unified Interpretation which deals with exclusively with MODU Units. The PT also deemed necessary that the consistency among the two UIs (new and SC191) shall be kept, as it is possible, in order to grant the uniformity of the interpretations and their applications.

On the grounds of the above, PT proposed draft of the new UI based on the same scheme of the UI SC191, where the technical terms relevant to the MODU units have been adopted in substitution of the technical used for ships. All rule references have been modified with those of the pertaining regulation of MODU Code 2009

3. Source / derivation of the proposed IACS Resolution

Compliance to paragraphs 2.1, 2.2, 2.3 and 2.4 of the Chapter 2 of MODU Code 2009 (IMO Res. A.1023(26)), relevant to the permanent means of access.

4. Summary of Changes intended for the revised Resolution

Not applicable (New resolution)

5. Points of discussions or possible discussions

NIL

6. Attachments if any

NIL

Technical Background (TB) document for UI MODU1 (Corr.1 June 2016)

1. Scope and objectives

To consider a revision of UI MODU1 to correct the provisions relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder as proposed by an IACS Member.

2. Engineering background for technical basis and rationale

Survey Panel, examined the topics and the technical background provided in order to support the possible modification. The proposed topics and technical backgrounds are:

Measurement of Handrail Height

Following the review of the IACS UI MODU1(new), there has been found a part that might be to be vague and somewhat inconsistent.

The note to the table of the figures A and B in paragraph 3.13 specifies that the 1000 mm is measured to the “handrail stanchion” from platform, while the similar paragraph 3.3 of Technical Provision of resolution MSC.158(78) (TP), to which this note refers, provides this height of 1000 mm as that of the handrails, not the stanchions.

Therefore the note should be revised to read:

**Note: the minimum height of the handrail ~~stanchions~~ of resting platform is of 1000 mm (Technical Provision, resolution MSC.158(78), paragraph 3.3)*

3. Source / derivation of the proposed IACS Resolution

According to the technical background provided, Survey Panel concurred that the modification is supported by a consistent technical background and agreed to correct the UI MODU1 as proposed.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI MODU2 "Inclusion of the weight of mediums of the fire-fighting systems in lightweight (2009 MODU Code Chapter 1, paragraph 1.3.30)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Aug 2016)	4 August 2016	1 January 2017

- **New (Aug 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Extension of the scope of the unified interpretation UI SC 273, clarifying if the weight of mediums of the fire-fighting systems are included in the lightweight, to MODU Code, in light of approval of MSC.1/Circ.1540.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The interpretation UI SC 273 "Inclusion of the weight of mediums of the fire-fighting systems in lightweight" was submitted by IACS to SDC 3. The Subcommittee agreed with the paper submitted by IACS and included the proposed text with minor modifications in the list of the draft unified interpretations for submission to MSC 96.

A similar UI relating to the definition of the term "lightship" as included in the 2009 MODU Code, was approved at MSC 96, through MSC.1/Circ.1540.

It was subsequently agreed that IACS should develop an IACS MODU UI, in line with MSC.1/Circ.1540

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: July 2016 made by the Safety Panel
Panel Approval: 18 July 2016 (Ref: PS15003d)
GPG Approval: 4 August 2016 (Ref: 15145dIGi)

Part B. Technical Background

List of Technical Background (TB) documents for UI MODU2:

Annex 1. **TB for New (Aug 2016)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI MODU2 (New Aug 2016)

1. Scope and objectives

To develop an interpretation in order to establish if the weight of mediums of the fire-fighting systems are included in the lightweight as defined in the 2009 MODU Code Chapter 1, paragraph 1.3.30 in the light of UI SC 273 submitted to SDC 3 and agreed by the Subcommittee, and further MSC.1/Circ.1540 approved by MSC 96.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

The definition of lightweight in the 2009 MODU Code Chapter 1, paragraph 1.3.30 is:

" Lightweight is the displacement of a unit in tonnes without variable deck load, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, and personnel and their effects."

The above definition is similar to those contained in SOLAS regulations II-1/2.21 and II-2/3.28, 2008 IS Code, para. 2.23 where CO2 is not explicitly mentioned.

For what in the above, a qualifying majority in the Safety Panel decided to extend the text of the interpretation UI SC 273 "Inclusion of the weight of mediums of the fire-fighting systems in lightweight" to the 2009 MODU Code by means of a dedicated MODU UI.

The text of the interpretation takes into consideration the slight modifications to UI SC 273 agreed by SDC 3 when drafting the draft unified interpretations of SOLAS chapter II-1 for submission the MSC 96 session for approval.

Following the IMO's decision to include fresh water used for the fixed fire-fighting systems in the ship's light weight, there was further discussion in the Panel concerning the source of fresh water that should be included: that in dedicated tanks, that in the piping system and/or that in shared use tanks. After discussion the Panel agreed that:

"1. The weight of water used as the medium for the fixed fire-fighting systems means the weight of water (including any surplus margin of water as may be so specified) for the operation of all fixed fire-fighting systems installed onboard that is carried in dedicated tanks (i.e. system + quantity of water in dedicated tanks for fire-fighting); and

2. The water for the fixed fire-fighting systems in shared use tank should not be included into lightweight due to the problems associated with free surface effects of that tank."

*Underlined text added on 17 July 2017 (Ref: 15145dIGk).

After a short round of discussions, the new unified interpretation has been agreed.

6. Attachments if any

None.

UI MODU3 "Selective disconnection or shutdown and equipment operable after an emergency shutdown"

Summary

The UI MODU3 (New, Dec 2018) has been withdrawn prior to coming into force on 1 January 2020 as the UI was not endorsed by SSE6.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawn (Dec 2019)	17 December 2019	-
New (Dec 2018)	14 December 2018	1 January 2020

- **Withdrawn (Dec 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The UI MODU3 (New, Dec 2018) was submitted to SSE6 by paper SSE6/12/11, however SSE6 did not endorsed the proposed UI for the reason that the International Association of Drilling Contractors (IADC), supported by a Member State, opposed the UI on the basis that industry partners were concerned by the implication of this proposal.

The UI MODU3 (New, Dec 2018) was therefore withdrawn.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The UI MODU3 (New, Dec 2018) was withdrawn on 17 December 2019 prior to coming into force on 1 January 2020.

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original proposal: 4 June 2019 (Ref. PM19915_IMc)
Panel approval: 13 June 2019 (Ref: PM19915_IMd)
GPG approval: 17 December 2019 (Ref: 18183kIGr)

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

First distribution by Chair's message PM18401_IMa dated 18 January 2018
Panel approval by PM18401_IMe dated 13 November 2018 and 18183cPMa dated 23 November 2018

.5 Other Resolutions Changes

IACS UR D10, Rev.2 (1990) (deletion)

.6 Dates:

Original proposal: 20 December 2017 Made by Machinery Panel member
Panel approval: 23 November 2018 (Ref: PM18401)
GPG approval: 14 December 2018 (Ref: 18183cIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI MODU3:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

Note: *There is no Technical Background (TB) document available for Withdrawn (Dec 2019).*

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Technical Background (TB) document for UI MODU3 (New Dec 2018)

1. Scope and objectives

Task PM18401 was initiated to develop an interpretation for IMO MODU Code 2009, paragraphs 6.5.1 and 6.5.5 in consideration with UR D10.5.2 for emergency shutdown systems arranged with multiple levels of ESD.

2. Engineering background for technical basis and rationale

a. MODU Code (2009) 6.5.1 and 6.5.5 read (the previous MODU Code has same wording in 6.5.1 and 6.5.4):

6.5.1 In view of exceptional conditions in which the explosion hazard may extend outside the above-mentioned zones, special arrangements should be provided to facilitate the selective disconnection or shutdown of:
.1 ventilation systems, except fans necessary for supplying combustion air to prime movers for the production of electrical power;
.2 main generator prime movers, including the ventilation systems for these;
.3 emergency generator prime movers. "

6.5.5 Equipment which is located in spaces other than enclosed spaces and which is capable of operation after shutdown as given in paragraph 6.5.1 should be suitable for installation in zone 2 locations. Such equipment which is located in enclosed spaces should be suitable for its intended application to the satisfaction of the Administration. At least the following……

b. Where emergency shutdown (ESD) systems are arranged with multiple levels of ESD, the question is the applicability of the requirement for equipment in exterior locations, i.e. whether the requirement of the MODU Code 6.5.5 (that equipment should be suitable for installation in Zone 2 locations):

i) is applicable for any single ESD level activated in relation to gas release, with possible few exceptions, or,

ii) is applicable for the total shutdown ESD level of the facility, i.e. the term "shutdown" refers to the point where all electrical equipment + the emergency generator is shutdown.

According to some views, by supporting interpretation i), the need for equipment suitable for a gas release/leak by applying this requirement at the very 1st tier of ESD (i.e. detection at the ventilation system) seems to be very conservative and not practical. This interpretation will require all the operable electrical components to be ex-proof in the event of any gas detection (seems to be impractical).

However, the concern is that by requiring this level of protection only for equipment located outside which is operational after total ESD, may create a certain risk when intermediate level of ESD associated with gas leakage occurs. A typical first level ESD is shutdown of ventilation systems in the accommodation spaces. This is to restrict any possible gas from entering the building. The owner/operator would only activate an ESD if gas was detected. In this case, any unprotected equipment in exterior locations could potentially become a source of ignition.

3. Source / derivation of the proposed IACS Resolution

The text of the UI is derived from the background given in 2 above.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

a. The UI clarifies that where emergency shutdown (ESD) systems are arranged with multiple levels of ESD, the requirement that equipment located in spaces other than enclosed spaces and which is capable of operation after shutdown should be suitable for installation in zone 2 locations, shall apply for any ESD level related to gas release.

b. Exceptions may be accepted for equipment that could reasonably be considered to be out of operation during drilling operations (such as shore power panel, towing winches, windlass, jacking motors etc.). A suggestion was made by a member society to replace "could reasonably be considered" with "are expected". The suggestion was supported and the text has been modified accordingly.

c. During the Panel work on the preparation of the UI:

- It was noted that while the MODU Code uses in 6.5.5 the term “after shutdown”, the corresponding wording in UR D10.5.2 reads “after *complete* shutdown”.

- A gap analysis was carried out between UR D10 and MODU Code 2009, as amended, which concluded that many of the sections of UR D10, Rev.2 are addressed directly in the MODU Code.

Therefore, the Panel agreed to delete UR D10 and proceed with the preparation of the UI.

6. Attachments if any

None

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July 2024

History Files (HF) and Technical Background (TB) documents for UIs concerning MARPOL Convention (UI MPC)

Res. No.	Title	Current Rev.	HF/TB?
UI MPC1	Periodical surveys of oil content meters	Deleted Aug 2015	No
UI MPC2	Operational manuals for oil discharge monitoring and control systems	Rev.1 Aug 2015	HF
UI MPC3	Machinery space oil discharge monitoring and control systems	Deleted Aug 2015	No
UI MPC4	Discharge of segregated ballast	Deleted Aug 2015	No
UI MPC5	Minimum vertical depth of each double bottom tank or space	Rev.1 Aug 2015	HF
UI MPC6	Calculation of the aggregate capacity of SBT	Rev.1 Aug 2015	HF
UI MPC7	Hydrostatic Balance Loading	Deleted	No
UI MPC8	Interpretation of “installed on board”	Deleted (Oct 2005)	No
UI MPC9	Interpretation of Width of Wing Tanks and Height of Double Bottom Tanks at Turn of the Bilge Area (MARPOL, Annex I Regulation 19.3.3)	Rev.1 Aug 2015	HF
UI MPC10	Endorsement of Certificates with the Date of Completion of the Survey on which they are Based	Rev.1 Nov 2005	TB
UI MPC11	Interpretation to MARPOL I/27	Corr.1 June 2021	HF
UI MPC12	Annex VI of Marpol 73/78 Regulation 1	Corr.2 Dec 2023	HF
UI MPC13	Annex VI of Marpol 73/78 Regulation 2 (4)	Deleted Nov 2013	TB
UI MPC14	Annex VI of Marpol 73/78 Regulation 1 / Regulation 5.2	Rev.3 Dec 2022	HF

Res. No.	Title	Current Rev.	HF/TB?
UI MPC15	Annex VI of Marpol 73/78 Regulation 9 (4) (b)	Deleted Nov 2013	No
UI MPC16	Annex VI of Marpol 73/78 Regulation 13 (1) (a) (i)	Deleted Nov 2015	TB
UI MPC17	Annex VI of Marpol 73/78 Regulation 13 (1) (a) (ii)	Deleted Nov 2013	No
UI MPC18	Annex VI of Marpol 73/78 Regulation 13 (1) (b) (i)	Deleted Nov 2013	TB
UI MPC19	Annex VI of Marpol 73/78 Regulation 13 (1) I	Deleted Nov 2013	No
UI MPC20	Annex VI of Marpol 73/78 Regulation 13.2.1.1 and 13.2.2	Corr.2 Feb 2022	HF
UI MPC21	Annex VI of Marpol 73/78 Regulation 13 (2) (a) (iii)	Deleted Nov 2013	TB
UI MPC22	Annex VI of Marpol 73/78 Regulation 13 (3) (a)	Deleted Nov 2013	No
UI MPC23	Annex VI of Marpol 73/78 Regulation 13 (3) (b)	Deleted Nov 2013	No
UI MPC24	Annex VI of Marpol 73/78 Regulation 14 (6)	Deleted Nov 2013	No
UI MPC25	Annex VI of Marpol 73/78 Regulation 16 (2) (a)	Deleted Nov 2013	No
UI MPC26	Annex VI of Marpol 73/78 Regulation 16 (6)	Deleted Nov 2013	No
UI MPC27	Annex VI of Marpol 73/78 Regulation 16 (7)	Deleted Nov 2013	No
UI MPC28	Annex VI of MARPOL 73/78	Deleted (Dec 2005)	No
UI MPC29	Annex VI of Marpol 73/78 Regulation 18.5 and 18.6	Rev.2 Dec 2023	HF
UI MPC30	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Table 3 – Symbols and subscripts for terms and variables) Table 3 – Symbols and subscripts for terms and variables (refer to chapter 5, chapter 6, appendix 4 and appendix 6 of this Code)	Rev.1 Nov 2019	HF
UI MPC31	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 1.2.1	Deleted Nov 2019	No
UI MPC32	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 1, Paragraph 1.3.2.2)	Rev.1 Jan 2020	HF
UI MPC33	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.2.4.1)	Rev.2 Nov 2019	HF
UI MPC34	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.2.5	Deleted Nov 2019	No

Res. No.	Title	Current Rev.	HF/TB?
UI MPC35	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.2.8	Deleted Nov 2019	TB
UI MPC36	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.2.9	Deleted Nov 2019	No
UI MPC37	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.3.4	Deleted Nov 2019	No
UI MPC38	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.3.5	Deleted Nov 2019	No
UI MPC39	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.3.6	Deleted Nov 2019	TB
UI MPC40	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.3.9)	Rev.1 Nov 2019	HF
UI MPC41	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.3.12	Deleted Nov 2019	No
UI MPC42	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.3.13	Deleted Nov 2019	TB
UI MPC43	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.4.11	Deleted Nov 2019	TB
UI MPC44	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.4.1.5	Deleted Nov 2019	No
UI MPC45	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.4.1.7)	Rev.1 Nov 2019	HF
UI MPC46	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.4.2	Deleted Nov 2019	No
UI MPC47	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.4.4.3	Deleted Nov 2019	No
UI MPC48	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 2.4.5	Deleted Nov 2019	No

Res. No.	Title	Current Rev.	HF/TB?
UI MPC49	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 3.1.1	Deleted Nov 2019	No
UI MPC50	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 3.1.3	Deleted Nov 2019	No
UI MPC51	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 3, Paragraph 3.2.1)	Rev.2 Nov 2019 Withdrawn	HF
UI MPC52	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 3.2.3	Deleted Nov 2019	No
UI MPC53	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.1.1 to 4.1.4)	Rev.1 Nov 2019	HF
UI MPC54	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.3.1 and 4.4.1)	Rev.1 Nov 2019	HF
UI MPC55	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapters 4.3.7, 4.3.10.6, 4.4.8	Deleted Nov 2019	No
UI MPC56	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapters 4.3.9.1, 4.4.7	Deleted Nov 2019	No
UI MPC57	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 4.3.9.2	Deleted Nov 2019	No
UI MPC58	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.3.10.2 and 4.3.10.3)	Rev.1 Nov 2019	HF
UI MPC59	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.4.6.2 and 4.4.6.3)	Rev.1 Nov 2019	HF
UI MPC60	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.2.2.2	Deleted Nov 2019	No
UI MPC61	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.2.5	Deleted Nov 2019	No
UI MPC62	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.4.2	Deleted Nov 2019	TB

Res. No.	Title	Current Rev.	HF/TB?
UI MPC63	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.5.3	Deleted Nov 2019	No
UI MPC64	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.6	Deleted Nov 2019	No
UI MPC65	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.1.2	Deleted Nov 2019	No
UI MPC66	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.2	Deleted Nov 2019	TB
UI MPC67	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.2.3	Deleted Nov 2019	No
UI MPC68	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.3.1	Deleted Nov 2019	No
UI MPC69	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.3.2	Deleted Nov 2019	No
UI MPC70	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.6.1	Deleted Nov 2019	No
UI MPC71	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.6.2	Deleted Nov 2019	No
UI MPC72	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.7	Deleted Nov 2019	TB
UI MPC73	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.9.9	Deleted Nov 2019	No
UI MPC74	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 5, Paragraph 5.10.1)	Rev.1 Nov 2019	HF
UI MPC75	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.11	Deleted Nov 2019	No
UI MPC76	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 5.12.4.1	Deleted Nov 2019	No

Res. No.	Title	Current Rev.	HF/TB?
UI MPC77	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 6, Paragraph 6.2.1.2)	Rev.1 Nov 2019	HF
UI MPC78	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 6.2.3.4.2	Deleted Nov 2019	TB
UI MPC79	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Chapter 6.2.3.5	Deleted Nov 2019	TB
UI MPC80	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Appendix 4	Deleted Nov 2019	TB
UI MPC81	Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines Appendix 4	Deleted Nov 2019	No
UI MPC82	Regulation 14, Annex VI of MARPOL 73/78	Deleted Nov 2013	TB
UI MPC83	Regulation 18, Annex VI of MARPOL 73/78	Deleted Nov 2013	TB
UI MPC84	Annex VI of MARPOL 73/78 Regulation 16(9)	Deleted Nov 2013	TB
UI MPC85	Regulation 22(5), Annex I of MARPOL 73/78 as amended by resolution MEPC.117(52)	Rev.4 Sept 2008	TB
UI MPC86	Annex IV of MARPOL 73/78 Regulation 10.1 as amended by Resolution MEPC.115(51)	Corr.1 Oct 2007	TB
UI MPC87	Annex I of MARPOL 73/78 Regulation 12A as amended by Resolution MEPC.141(54)	Jan 2007	TB
UI MPC88	Annex IV of MARPOL 73/78 Regulation 9.1.1	Deleted Aug 2018	HF
UI MPC89	*No record*		TB
UI MPC90	Annex I of MARPOL 73/78 Regulation 1 as amended by Resolution MEPC.117(52)	Sep 2007	TB
UI MPC91	Annex IV of MARPOL 73/78	Sep 2007	TB
UI MPC92	Tonnage to be used when applying MARPOL Annex VI	Deleted Aug 2018	TB
UI MPC93	Annex I of MARPOL 73/78 Regulation 23 Accidental oil outflow performance, as amended by Resolution MEPC.117 (52)	Rev.1 Apr 2016	HF
UI MPC94	Annex I of MARPOL 73/78 Regulation 12A.6-8 and 11.8 Oil Fuel Tank Protection, as amended by Resolution MEPC.141(54)	Jul 2008	TB

Res. No.	Title	Current Rev.	HF/TB?
UI MPC95	Measurement of Distances	Aug 2008	TB
UI MPC96	Initial Statutory Surveys at New Construction	Deleted Jun 2016	HF
UI MPC97	Volatile Organic Compounds (VOCs) Management Plan	July 2010	HF
UI MPC98	“Time of the replacement or Addition” for the applicable tier standard for the supplement to the IAPP Certificate	Rev.1 Aug 2018	HF
UI MPC99	Oil residue (sludge) tank discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators (MARPOL 73/78 Annex I Regulation 12.2)	Deleted July 2020	HF
UI MPC100	Date of delivery under SOLAS and MARPOL Conventions	June 2012	HF
UI MPC101	Supplement to the International Air Pollution Prevention (IAPP) Certificate –Section 2.3	Corr.1 Sep 2020	HF
UI MPC102	Surveys and certification relating to the Ship Energy Efficiency Management Plan (SEEMP) (MARPOL Annex VI Regulation 5.4.4)	Deleted Aug 2018	HF
UI MPC103	Identical Replacement Engines (MARPOL Annex VI Regulation 13)	Jan 2013	HF
UI MPC104	Keel laying date for fibre-reinforced plastic (FRP) Craft	Corr.1 Jan 2014	HF
UI MPC105	Gaseous emissions calculation of marine diesel engines fitted with selective catalytic reduction (SCR) systems	Deleted Nov 2019	HF
UI MPC106	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008)	July 2015	HF
UI MPC107	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.1.1)	Withdrawn May 2016	HF
UI MPC108	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.3)	Deleted Nov 2019	HF
UI MPC109	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.4)	Deleted Nov 2019	HF

Res. No.	Title	Current Rev.	HF/TB?
UI MPC110	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.6)	Deleted Nov 2019	HF
UI MPC111	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.7)	Deleted Nov 2019	HF
UI MPC112	2017 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard of Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC. 291(71), Paragraph 3.2.8)	Rev.1 Nov 2019	HF
UI MPC113	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.9)	Deleted Nov 2019	HF
UI MPC114	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.10)	Deleted Nov 2019	HF
UI MPC115	2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC. 291(71), Paragraph 3.2.11)	Corr.1 May 2020	HF
UI MPC116	2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC. 291(71), Paragraph 3.2.12)	Rev.1 Nov 2019	HF
UI MPC117	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.5.2)	Deleted Nov 2019	HF

Res. No.	Title	Current Rev.	HF/TB?
UI MPC118	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 4.1)	Deleted Nov 2019	HF
UI MPC119	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 5.1.1)	Withdrawn May 2016	HF
UI MPC120	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 5.2.2)	Deleted Nov 2019	HF
UI MPC121	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.1.1)	Withdrawn May 2016	HF
UI MPC122	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.2.1.2)	Deleted Nov 2019	HF
UI MPC123	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.2.1.5)	Deleted Nov 2019	HF
UI MPC124	2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 7.5)	Withdrawn May 2016	HF
UI MPC125	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (Nox Technical Code 2008, Chapter 4, Paragraph 4.4.6.1)	May 2023	HF
UI MPC126	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (Nox Technical Code 2008, Chapter 4, Paragraph 4.4.6.2)	Deleted Nov 2019	HF

Res. No.	Title	Current Rev.	HF/TB?
UI MPC127	Annex I of MARPOL 73/78 Regulation 14.7	Deleted Aug 2018	No
UI MPC128	Inclusion of mediums of the fire-fighting systems in lightweight (MARPOL Annex I/Regulation 1.24)	May 2016	HF
UI MPC129	Unprotected openings	June 2016	HF
UI MPC130	Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.2.5.1)	Withdrawn May 2020	HF
UI MPC131	Unified Interpretation on the application of the amendments to Appendix IX of MARPOL Annex VI adopted by MEPC.385(81)	July 2024	HF

UI MPC2 "Operational manuals for oil discharge monitoring and control systems"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2015)	7 August 2015	1 July 2016
New (1988)	*No record*	-

- **Rev.1 (Aug 2015)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Updates of references to IMO instruments.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 18 November 2014 made by a member
Panel Approval: 7 July 2015
GPG Approval: 7 August 2015 (Ref: 15026_IGd)

- **New (1988)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC2:

Note: *There are no Technical Background (TB) documents available for New (1988) and Rev.1 (Aug 2015).*

UI MPC5 "Minimum vertical depth of each double bottom tank or space"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2015)	6 August 2015	1 July 2016
New (1990)	*No record*	-

- **Rev.1 (Aug 2015)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Updates of references to IMO instruments.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 18 November 2014 made by a member
Panel Approval: 7 July 2015
GPG Approval: 6 August 2015 (Ref: 15026_IGd)

- **New (1990)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC5:

Note: *There are no Technical Background (TB) documents available for New (1990) and Rev.1 (Aug 2015).*

◄▲►

UI MPC6 "Calculation of the aggregate capacity of SBT"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2015)	6 August 2015	1 July 2016
New (1997)	*No record*	-

- **Rev.1 (Aug 2015)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Updates of references to IMO instruments and includes MEPC UI.

Note: Rev.1 was not submitted to the IMO as this version merely updates the references to the IMO requirements to which the UI refers; and includes Unified interpretation 40.1 of MARPOL Annex I.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 18 November 2014 made by a member
Panel Approval: 7 July 2015
GPG Approval: 6 August 2015 (Ref: 15026_IGd)

- **New (1997)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC6:

Note: *There are no Technical Background (TB) documents available for New (1997) and Rev.1 (Aug 2015).*

UI MPC9 "Interpretation of Width of Wing Tanks and Height of Double Bottom Tanks at Turn of the Bilge Area"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2015)	6 August 2015	1 July 2016
New (Jun 2002)	*No record*	1 January 2003

- **Rev.1 (Aug 2015)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Updates of references to IMO instruments.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 18 November 2014 made by a member
Panel Approval: 7 July 2015
GPG Approval: 6 August 2015 (Ref: 15026_IGd)

- **New (Jun 2002)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC9:

Note: *There are no Technical Background (TB) documents available for New (Jun 2002) and Rev.1 (Aug 2015).*

Technical Background Document
UI SC 183(Rev.1, November 2005)
UI LL 67(Rev.1, November 2005)
UI MPC 10(Rev.1, November 2005)

1. Background

Survey Panel reported on 31 October 2005 that the ex-WP/SRC had agreed to amend UI SC 183, LL 67 and MPC 10 by adding the word “periodical” in front of the sentence “survey visit on which all statutory and class items…” .

2. GPG discussion

2.1 ABS proposed that this revision refer to the resolutions adopted at MSC 79, which revised the content of the certificates required by various Conventions and Codes, rather than MSC/Circ.1012 and MEPC/Circ.384 and the quoted text contained in paragraphs 1 and 2 of the current UI.

2.2 Concerning MSC.176(79), GPG noted that it specifically included a model form of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, and this form contained the text regarding completion date of the survey on which it is based, (see page 161 of Annex 10 of MSC 79/23/Add.1), GPG agreed that this Resolution should also be included in the opening text.

2.3 In light of the 1 July 2006 entry into force date of the resolutions, the uniform implementation date was set at 1 July 2006 (Note: MSC.181(79) enters into force on 1 January 2007).

2.4 GPG, noting that MSC 80 and MEPC 53 had approved a Circular from FSI 13 incorporating the original IACS UIs SC183, LL67 and MEPC10, agreed that the revised UIs be submitted to FSI 14 in order for IMO to amend the IMO Circular.

Permanent Secretariat
17 Nov 2005

UI MPC11 "Interpretation to MARPOL I/27"

Summary

The Corr.1 of UI MPC11 is updated to align with MEPC.1/Circ.867.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (June 2021)	02 June 2021	-
Rev.2 (June 2016)	03 June 2016	1 January 2017
Rev.1 (Oct 2012)	06 Nov 2012	1 July 2013
New (May 2004)	28 May 2004	1 April 2005

- **Corr.1 (June 2021)**

1 Origin for Change:

☑ Suggestion by IACS member
☑ Based on IMO Regulation (MEPC.1/Circ.867, unified interpretations of regulations 1.24, 12, 27 and 28.3.3 of MARPOL Annex I)

.2 Main Reason for Change:

To update UI MPC11 to be in line with MEPC.1/Circ.867.

.3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Environmental Panel conducted the Periodical Review of IACS Resolutions pertaining to C5.2.1.15 of IACS procedures Vol.1. The Environmental Panel agreed that UI MPC 11 should be amended to be in line with MEPC.1/Circ.867.

.5 Other Resolutions Changes:

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 26 February 2021 (Made by Environmental Panel)
Panel Approval: 16 May 2021 (Ref:PE21003a)
GPG Approval: 02 June 2021 (Ref: 21080_IGb)

- **Rev.2 (June 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity *(Dutch Safety Board)*
☑ Other *(Based on Vessel Incident - Collision and capsizing of the tug Fairplay 22)*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24 that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed.

.5 Other Resolutions Changes

Similar UIs were developed for IBC Code Ch.2 Section 2.9, IGC Code Ch.2 Section 2.9, MARPOL Reg. 28 and SOLAS/Ch.II-1-Reg.7-2.

.6 Dates:

Original Proposal: June 2014 made by Safety Panel
Panel Approval: April 2016 (Ref: SP12006r)
GPG Approval: 3 June 2016 (Ref: 15145bIGd)

- **Rev.1 (Oct 2012)**

.1 Origin of Change:

☑ Suggestion by IACS Statutory Panel

.2 Main Reason for Change:

UI was reviewed by Panel under the long-standing Task 8 - Maintenance of IACS Resolutions and editorially revised.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Statutory Panel proposed that UI MPC11 should be editorially revised as follows:

- Reference to “MARPOL Reg. I/ 25A” and “MARPOL Unified Interpretation 11A” should read “MARPOL Reg. I/ 27” and “MARPOL Unified Interpretation 52.1” throughout;

- The whole text quoted from the old Reg.25A should be replaced with the text from the current Reg.27; and

- "MARPOL I/13F and I/25” in footnote 2 should read “MARPOL I/28” since MARPOL I/13F and I/25 were combined as “MARPOL I/28” in resolution MEPC.117(52).

- MARPOL UI 52.1 (with mandatory text) should be added so that 52.1 is made equal with the mandatory text of 52.2 as reflected in this version of MPC 11.

- a clear chapeaux which allows the user to apply para 1 (= 52.1, but with mandatory text) or 2 (= 52.2, but with mandatory text) should be added

- Note 3 - an application statement- is to be added.

GPG approved the proposal.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *24 April 2012 Made by the Statutory Panel*
GPG Approval: *06 November 2012 (Ref: 12069_IGg)*

- **New (May 2004)**

Outcome of (WP/SSLL) of task 27.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC11:

Annex 1. **TB for Rev.2 (June 2016)**

See separate TB document in Annex 1.

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Note: *There are no separate Technical Background (TB) document for the original resolution (May 2004), Rev.1 (Nov 2012) and Corr.1(June 2021).*

Technical Background (TB) document for UI MPC11 (Rev.2 June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points in the intact stability calculation when they have to be left open for operational purposes. This should confirm that intact stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed unified interpretations for the intact stability criteria contained in the MARPOL Reg.27 based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as points of down-flooding for the purpose of determining angle of Down-flooding.

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

A new interpretation regarding downflooding points is added to the existing UI Rev.1.

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4) which have to be considered as downflooding points, but only those which are left open during normal operation.

6. Attachments if any

None.

UI MPC12 "Annex VI of MARPOL 73/78"

Summary

The UI provides a unified interpretation regarding the term "all ships" in the regulation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Dec 2023)	11 December 2023	-
Rev.3 (Aug 2018)	07 August 2018	1 January 2020
Corr.1 (June 2014)	03 June 2014	-
Rev.2 (Apr 2014)	16 April 2014	1 January 2015
Rev.1 (Mar 2006)	29 March 2006	1 July 2006
New (July 2004)	7 July 2004	19 May 2005

Corr.2 (Dec 2023)

1 Origin of Change:

☑ Based on IMO Resolution MEPC.328(76)

2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.328(76)

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

The Environmental Panel has conducted the periodical review of all IACS Resolutions responsible to the Panel as consequence of the decisions taken by MEPC 79 and 80. As a result, the panel agreed that UI MPC 12 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.328(76), as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise ~~in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21, 22 and 22A of this Annex~~."

It has been considered a corrigenda as the amendment results in no change of the outcome of the Resolution between the previous versions and the amended one, when applied in practice.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	18 September 2023	(PE23029b_Ria)
Panel Approval:	14 November 2023	(Ref: 23029b)
GPG Approval:	11 December 2023	(Ref: 22005cIGc)

- **Rev.3 (Aug 2018)**

1 Origin of Change:

☑ Based on IMO Resolution MEPC.278(70) (Corrected)

2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.278(70) (Corrected).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that UI MPC 12 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.278(70), as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21, 22 and 22A of this Annex."

It is considered as revisions as they introduce references to MARPOL Annex VI Reg. 22A, coming into force in 2019.

5 Other Resolutions Changes

MPC14

6 Dates:

Panel Approval: 08 March 2018 (Ref: PE17007a)

GPG Approval: 07 August 2018 (Ref: 18081_IGe)

- **Corr.1 (June 2014)**

1 Origin for Change:

☑ Based on IMO Resolution MEPC.203(62) (Corrected)

2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.203(62) (Corrected).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

A member proposed GPG that UI MPC 12 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.203(62), as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21 and 22 ~~and 23~~ of this Annex."

GPG agreed with the proposal and decided to issue a correction to the UI.

5 Other Resolutions Changes

None

6 Dates:

Proposed by: A member on 03 June 2014
GPG Approval: 03 June 2014 (Ref: 8657_IGu)

- **Rev.2 (Apr 2014)**

1 Origin for Change:

☑ Based on IMO Resolution MEPC.203(62)

2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.203(62).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

The revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

5 Other Resolutions Changes

None

6 Dates:

GPG Approval: 16 April 2014 (Ref: 8657_IGr)

- **Rev.1 (Mar 2006)**

1 Origin for Change:

☑ Based on IMO Regulation (Annex VI of MARPOL 73/78)

2 Main Reason for Change:

HF/TB was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

None.

5 Other Resolutions Changes

None

6 Dates:

GPG Approval: 29 March 2006

- **New (July 2004)**

1 Origin for Change:

☑ Based on IMO Regulation (Annex VI of MARPOL 73/78)

2 Main Reason for Change:

The aim of the UI is to interpret the term "all ships" in the regulation.

HF/TB was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

None.

5 Other Resolutions Changes

None

6 Dates:

GPG Approval: 07 July 2004

Part B. Technical Background

List of Technical Background (TB) documents of UI MPC 12:

Annex 1. **TB for New (July 2004)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Mar 2006)**

See separate TB document in Annex 2.

◄▼►

Annex 3. **TB for Rev.2 (Apr 2014)**

See separate TB document in Annex 3.

◄▼►

Annex 4. **TB for Rev.3 (Aug 2018)**

See separate TB document in Annex 4.

◄▼►

Note: *There is no separate Technical Background (TB) document available for Corr.1 (June 2014) and Corr.2 (Dec 2023).*

Technical Background (TB) document for UI MPC12 (New July 2004)

1. Scope and objectives

The aim of the UI is to interpret the term "all ships" in the regulation.

2. Engineering background for technical basis and rationale

It was decided that for the application of this regulation the term "all ships" shall be interpreted as applicable to all ships (as defined by MARPOL 73 Article 2 (4)) operating under the administration of a MARPOL convention country.

3. Source/derivation of the proposed IACS Resolution

IMO Regulation (Annex VI of MARPOL 73/78), MARPOL 73 Article 2 (4)

4. Summary of Changes intended for the revised Resolution:

Not applicable.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC12 (Rev.1 Mar 2006)

1. Scope and objectives

This version brings the IACS UI in line with MEPC/Circ.473.

2. Engineering background for technical basis and rationale

As IMO decided that, unlike for example Annex I, Annex VI applies to all ships and hence it is necessary to be clear that this applies to "ships" as defined by the MARPOL Convention. Therefore, except where specifically given, the Annex VI provisions apply to the full range of craft as so defined under the Convention as ships which includes, for example, hovercraft, hydrofoils and fixed and floating platforms.

3. Source/derivation of the proposed IACS Resolution

MEPC/Circ.473.

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (Mar 2006) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC12 (Rev.2 Apr 2014)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.203(62).

2. Engineering background for technical basis and rationale

1. Update regulation text to that as now given in resolution MEPC.203(62) – noting that this now also includes reg 16 (but still not reg 12) – reg 19 is retained from the original IACS UI but in the meantime reg 19 had been dropped from this clause in the revised Annex (MEPC.176(58)) but was re-inserted along with regs 20–23 as part of the newly introduced energy efficient requirements of Chapter 4.

2. Delete the brackets around the definition text as this needs to be read as part of the overall interpretation

3. Delete reference to MEPC/Circ.473 as this circular does not take account of resolution MEPC.203(62).

3. Source/derivation of the proposed IACS Resolution

Resolution MEPC.203(62)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.2 (Apr 2014) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC12 (Rev.3 Aug 2018)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.278(70)

2. Engineering background for technical basis and rationale

The panel agreed that UI MPC 12 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.278(70).

It is considered as revisions as they introduce references to MARPOL Annex VI Reg.22A, coming into force in 2019.

3. Source/derivation of the proposed IACS Resolution

Resolution MEPC.278(70)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.3 (May 2018) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI MPC14 "Annex VI of MARPOL 73/78"

Summary

The revision 3 of this UI takes into account the provisions of IMO Resolutions MEPC.324(75) and MEPC.328(76) regarding the criteria for ship in the context of MARPOL Annex VI.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Dec 2022)	16 December 2022	01 January 2023
Rev.2 (Aug 2018)	07 August 2018	1 January 2020
Corr.1 (June 2014)	03 June 2014	-
Rev.1 (Apr 2014)	16 April 2014	1 January 2015
New (July 2004)	7 July 2004	19 May 2005

- **Rev.3 (Dec 2022)**

1 Origin of Change:

☑ Based on IMO Resolutions MEPC.324(75) and MEPC.328(76)

2 Main Reason for Change:

To update the UI to take account of IMO Resolutions MEPC.324(75) and MEPC.328(76).

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that UI MPC 14 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.324(75) and MEPC.328(76) as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise."

It is considered as a revision as the UI introduces references to MARPOL Annex VI Reg.1, which entered into force on 1 April 2022 in accordance with MEPC.324(75) and entered into force on 1 November 2022 in accordance with MEPC.328(76). In addition, a slight editorial modification was agreed and included in the interpretation.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 19 September 2022	(Made by a Member)
Panel Approval	: 29 September 2022	(Ref: PE22035a)
GPG Approval	: 16 December 2022	(Ref: 22005bIGc)

- **Rev.2 (Aug 2018)**

.1 Origin of Change:

☑ Based on IMO Resolution MEPC.278(70) (Corrected)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.278(70) (Corrected).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that UI MPC 14 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.278(70), as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21, 22 and 22A of this Annex."

It is considered as revisions as they introduce references to MARPOL Annex VI Reg.22A, coming into force in 2019.

.5 Other Resolutions Changes

UI MPC 12

.6 Dates:

Panel Approval: 08 March 2018 (Ref: PE17007a)
GPG Approval: 07 August 2018 (Ref: 18081_IGe)

- **Corr.1 (June 2014)**

.1 Origin for Change:

☑ Based on IMO Resolution MEPC.203(62) (Corrected)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.203(62) (Corrected).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

A member proposed GPG that UI MPC 12 & UI MPC 14 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.203(62), as follows:

"The provisions of this Annex shall apply to all ships, except where expressly provided otherwise in regulations 3, 5, 6, 13, 15, 16, 18, 19, 20, 21 and 22 ~~and 23~~ of this Annex."

GPG agreed with the proposal and decided to issue a correction to the UI.

.5 Other Resolutions Changes

UI MPC 12

.6 Dates:

Proposed by: A member on 03 June 2014
GPG Approval: 03 June 2014 (Ref: 8657_IGu)

- **Rev.1 (Apr 2014)**

.1 Origin for Change:

☑ Based on IMO Resolution MEPC.203(62)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.203(62).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 16 April 2014 (Ref: 8657_IGr)

- **New (July 2004)**

.1 Origin for Change:

☑ Based on Annex VI of MARPOL 73/78

.2 Main Reason for Change:

To clarify the criteria for ship & engine certification in the context of MARPOL Annex VI.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The UI was developed by AHG/EEC and submitted to IMO MEPC 52 on 09 July 2004 (Ref 4130_IAe).

The HF/TB of the revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 07 July 2004

Part B. Technical Background

List of Technical Background (TB) documents of UI MPC 14:

Annex 1. **TB for New (July 2004)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Apr 2014)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.2 (Aug 2018)**

See separate TB document in Annex 3.

Annex 4. **TB for Rev.3 (Dec 2022)**

See separate TB document in Annex 4.

Note: There is no separate Technical Background (TB) document available for Corr.1 (June 2014).

Technical Background (TB) document for UI MPC14 (New July 2004)

1. Scope and objectives

To clarify the criteria for ship & engine certification in the context of MARPOL Annex VI.

2. Engineering background for technical basis and rationale

The criteria for ship certification (reg.5) and that for engine certification (reg. 13) are independent of each other.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

Not applicable.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC14 (Rev.1 Apr 2014)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.203(62).

2. Engineering background for technical basis and rationale

1. Updates interpreted regulations and their format to that as now given in resolution MEPC.203(62).
2. Deletes reference to reg 19 (in terms of emissions from sea-bed mineral activities as given in the original Annex) as those clauses are now given within the revised reg 3 together with other possible exemption provisions.
3. The link between the two regs is changed to “or” as these two regulations operate separately from each other – exemption is not provided by the exempting provisions of both reg 3 and reg 13 being met.

3. Source / derivation of the proposed IACS Resolution

Resolution MEPC.203(62)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (Apr 2014) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC14 (Rev.2 Aug 2018)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.278(70)

2. Engineering background for technical basis and rationale

The panel agreed that UI MPC 14 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.278(70).

It is considered as revisions as they introduce references to MARPOL Annex VI Reg.22A, coming into force in 2019.

3. Source / derivation of the proposed IACS Resolution

Resolution MEPC.278(70)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.2 (May 2018) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI MPC 14 (Rev.3 Dec 2022)

1. Scope and objectives

To update the UI to take account of IMO resolutions MEPC.324(75) and MEPC.328(76)

2. Engineering background for technical basis and rationale

The panel agreed that UI MPC 14 should be modified consistently with the current text of Regulation 1 of MARPOL Annex VI as amended by Res. MEPC.324(75) and MEPC.328(76)

It is considered as revision as they introduce references to MARPOL Annex VI Reg.1, which has entered into force on 1 April 2022 in accordance with MEPC.324(75) and has entered into force on 1 November 2022 in accordance with MEPC.328(76).

3. Source/derivation of the proposed IACS Resolution

Resolutions MEPC.324(75) and MEPC.328(76)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.3 underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

TECHNICAL BACKGROUND

UI MPC 16

1) IACS UI MPC 16, Rev.0, states that ..."*the term installed relates to an engine that is permanently secured or connected to the ship's structure, fuel / coolant / exhaust systems or power systems*." MPC 16 was not included in MEPC/Circ.473 as MEPC 53/4/3 reports that DE 48 found MPC 16 unacceptable.

2) In noting the outcome of the BLG Working Group on Air Pollution held in Oslo, Norway, in November 2006, with particular regard to the application of MARPOL Annex VI regulation 13(1)(b), IACS took the opportunity to comment on the WG's Report by submitting BLG 11/5/20 which provides three applications that MPC 16 would address:

(a) engines installed in mobile machinery carried onboard, are not "installed" under MARPOL VI/13.1;
(b) engines installed in water borne or other craft (e.g., deployable underwater vehicles or craft used as tenders) carried onboard (other than those installed in lifeboats which are already given as being not applicable) are "installed" under MARPOL VI/13.1; and
(c) engines which are temporarily placed onboard a ship (e.g., to cover a breakdown or otherwise non-availability of one of the ship's installed engines or used for certain repair or maintenance work) are not "installed" under MARPOL VI/13.1.

3) BLG 11 concluded that the need for the certification of engines covered by MPC 16 should be left to the discretion of the relevant (flag State) Administration which is a more favorable outcome than DE 48 in that it allows IACS Members to submit MPC 16 to an Administration for consideration.

4) Based on the above and with the understanding that the three scenario's are addressed by MPC 16, it was concluded that MPC 16 should not be revised to address the three applications, but that this TB would be sufficient to document the course of action taken by IACS and the reasons to maintain MPC 16 without revision in light of the conclusions by IMO.

Submitted by Statutory Panel Chairman
1 July 2007
(ref. SP7012dPCd)

Permanent Secretariat note (September 2007):
TB document approved by GPG, 24 August 2007 (6143jIGb).

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

Ref. 5077aIGh dated 2 December 2005

Dear Sir,
1. You may remember that the Statutory Panel was tasked to:

1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and
1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

UI MPC 20 "Annex VI of MARPOL 73/78 Regulation 13.2.1.1 and 13.2.2"

Summary

The Corr.2 of UI MPC 20 is updated to reflect the amended text of regulation 13.2.2 of MARPOL VI adopted by Resolution MEPC.251(66).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Feb 2022)	09 February 2022	-
Corr.1 (July 2020)	07 July 2020	-
Rev.1 (Apr 2014)	16 April 2014	1 January 2015
New (July 2004)	7 July 2004	19 May 2005

- **Corr.2 (Feb 2022)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To update the UI for reflecting the amended text of regulation 13.2.2 of MARPOL VI adopted by Resolution MEPC.251(66), which entered into force on 1 September 2015.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Environmental Panel conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that UI MPC 20 should be modified consistently with the amended text of regulation 13.2.2 of MARPOL VI, even though UI MPC 20 was amended to apply only to engines installed under the provisions of the original Annex (before the amendments set out in MEPC 176(58)) from Rev.1. In addition, the Panel agreed to add the text of the original Regulation 13(2)(a)(i) before the 2008 amendments.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Panel Approval : 28 December 2021 (Ref: PE21046_IEf)
GPG Approval : 09 February 2022 (Ref: 22005_IGb)

- **Corr.1 (July 2020)**

1 Origin of Change:

☑ Suggestion by IACS member
☑ Based on IACS Requirement : In lined with the term used in MPC 98

2 Main Reason for Change:

To update the UI to take account of the term "time of the replacement or addition" with respect to major conversion in MPC 98 and regulation 13.2.2 of MARPOL VI.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that UI MPC 20 should be modified consistently with the term "time of the replacement or addition" with respect to major conversion in MPC 98 and regulation 13.2.2 of MARPOL VI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Panel Approval: 14 October 2019 (Ref: PE19019b)
GPG Approval: 07 July 2020 (Ref: 19273_IGe)

- **Rev.1 (Apr 2014)**

.1 Origin for Change:

☑ Based on IMO Resolution MEPC.176(58)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.176(58).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 16 April 2014 (Ref: 8657_IGr)

- **New (July 2004)**

.1 Origin for Change:

☑ Based on Annex VI of MARPOL 73/78

.2 Main Reason for Change:

To clarify the application of MARPOL Annex VI regulation 13(2)(a)(i).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The UI was developed by AHG/EEC and submitted to IMO MEPC 52 on 09 July 2004 (Ref 4130_IAe).

The HF/TB of the revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 07 July 2004

Part B. Technical Background

List of Technical Background (TB) documents of UI MPC 20:

Annex 1. **TB for New (July 2004)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Apr 2014)**

See separate TB document in Annex 2.

Note: There are no separate Technical Background (TB) documents available for UI MPC 20 (Corr.1 July 2020) and (Corr.2 Feb 2022)

Annex 1 Technical Background (TB) document for UI MPC 20 (New July 2004)

1. Scope and objectives

To clarify the application of MARPOL Annex VI regulation 13(2)(a)(i).

2. Engineering background for technical basis and rationale

This UI only applies to engines installed after ship construction on or after 1 January 2000 but before the entry into force of the Annex as revised by MEPC.176(58) of 1 July 2010.

The wording of the original regulation 13(2)(a)(i) did not explicitly cover the case of additional as opposed to replacement engines. However it would be illogical within the overall intent of the Annex that such additional engines should not be NOx certified even if installed on ships constructed before 1 January 2000.

The word ‘new’ as used in 13(2)(a)(i) in itself has no meaning and is necessary to distinguish from ‘old’ engines. Since the regulation did not give that any engine installed on or after 1st January 2000 on a ship keel laid before that date is to be compliant the intent must be that an ‘old’ engine (without NOx certification), provided that it has not been subject to ‘major conversion’ as defined, could be fitted to such a ship.

Engines considered to be subject to ‘major conversion’ under reg 13(2)(a)(i) would have required certification to what is now termed Tier I level under reg 13.3.

In contrast the Annex as revised by MEPC.176(58) introduced a distinction in the NOx certification requirements between identical and non-identical replacement engines and specifically included additional engines as requiring certification.

Therefore under the original Annex it was permitted to replace an engine with another engine built prior to 1 January 2000 - provided it was in its pre 1 January 2000 condition (in terms of NOx performance) - on a ship constructed prior to 1 January 2000 irrespective of whether that was an identical or non-identical engine.

Under the Annex as revised, the Tier requirement for replacement engines is set by the ship construction date for identical engines or the installation date for non-identical engines.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

Not applicable.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Annex 2 Technical Background (TB) document for UI MPC 20 (Rev.1 Apr 2014)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.176(58).

2. Engineering background for technical basis and rationale

1. Updates interpreted regulation to that as now given in resolution MEPC.176(58) which has fundamentally changed this part of the regulation as compared to the original requirement.
2. Interpretation has been amended to apply only to engines installed under the provisions of the original Annex since the Annex as revised by resolution MEPC.176(58) introduced a distinction in the NOx certification requirements between identical and non-identical replacement engines and specifically included additional engines as requiring certification.

3. Source / derivation of the proposed IACS Resolution

Resolution MEPC.176(58)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (Apr 2014) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

Ref. 5077aIGh dated 2 December 2005

Dear Sir,
1. You may remember that the Statutory Panel was tasked to:

1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and
1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

UI MPC 29 Annex VI of MARPOL 73/78

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Dec 2023)	11 December 2023	1 July 2024
Rev.1 (Apr 2014)	16 April 2014	1 January 2015
New (July 2004)	7 July 2004	19 May 2005

- **Rev.2 (Dec 2023)**

.1 Origin for Change:

☑ Based on IMO Circular MEPC.1/Circ.795/Rev.8

.2 Main Reason for Change:

To update the UI to take account of IMO Circular MEPC.1/Circ.795/Rev.8.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The revision was based on the periodical review of the UI taking into account the report by MEPC 80. The draft UI was originally proposed by a flag Administration and then circulated to IACS seeking its co-sponsorship. The Environmental Panel and further GPG agreed to co-sponsor to the paper, which was subsequently submitted to PPR 10. (Ref: PE22031_, 22086b)

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval:	14 November 2023	(Ref: PE23029aIEc)
GPG Approval:	11 December 2023	(Ref: 22005cIGc)

- **Rev.1 (Apr 2014)**

.1 Origin for Change:

☑ Based on IMO Resolution MEPC.176(58)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.176(58).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 16 April 2014 (Ref: 8657_IGr)

- **New (July 2004)**

.1 Origin for Change:

☑ Based on Annex VI of MARPOL 73/78

.2 Main Reason for Change:

To clarify the application of MARPOL Annex VI regulation 18(3).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The UI was developed by AHG/EEC and submitted to IMO MEPC 52 on 09 July 2004 (Ref 4130_IAe).

The HF/TB of the revision was developed as a result of project undertaken in 2013 by IACS accredited representative to IMO and one man project team, under Statutory Panel task number 35 (Ref: SP12007j & 8657_).

.5 Other Resolutions Changes

None

.6 Dates:

GPG Approval: 07 July 2004

Part B. Technical Background

List of Technical Background (TB) documents of UI MPC 29:

Annex 1. **TB for New (July 2004)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Apr 2014)**

See separate TB document in Annex 2.

◄▼►

Annex 3. **TB for Rev.2 (Dec 2023)**

See separate TB document in Annex 3.

◄▼►

Annex 1 Technical Background (TB) document for UI MPC 29 (New July 2004)

1. Scope and objectives

To clarify the application of MARPOL Annex VI regulation 18(3).

2. Engineering background for technical basis and rationale

As there are Administration optional aspects of Regulation 5 it is considered necessary to highlight that the decision taken also affects the extent to which compliance with the Regulation 18 requirements is demonstrated.

3. Source/derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

Not applicable.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Annex 2 Technical Background (TB) document for UI MPC 29 (Rev.1 Apr 2014)

1. Scope and objectives

To update the UI to take account of IMO resolution MEPC.176(58).

2. Engineering background for technical basis and rationale

1. Updates interpreted text of reg 18.5 to that as now given by MEPC.176(58).

2. Adds reg 18.6 to that being interpreted as it specifies the retention on board of this bunker delivery note which is the point being verified when Annex VI surveys are undertaken.

3. Source/derivation of the proposed IACS Resolution

Resolution MEPC.176(58)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (Apr 2014) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Annex 3 Technical Background (TB) document for UI MPC 29 (Rev.2 Dec 2023)

1. Scope and objectives

To update the UI to take account of IMO Circular MEPC.1/Circ.795/Rev.8.

2. Engineering background for technical basis and rationale

Adds the interpretations to reg. 18.5 and 18.6 as now given by MEPC.1/Circ.795/Rev.8.

3. Source/derivation of the proposed IACS Resolution

IMO Circular MEPC.1/Circ.795/Rev.8

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.2 (Dec 2023) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI MPC 30: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Table 3 – Symbols and subscripts for terms and variables)"

Summary

This UI provides a unified interpretation of terms contained in Table 3 of the Introduction to the NTC 2008.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (July 2004)	No record available	19 May 2005

- **Rev.1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Updates based on revisions/amendments of IMO NOx Technical Code and on the adoption of the 2017 SCR Guidelines (Res. MEPC.291(71)).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: 4 October 2017 (Ref: PM17906_IMe based on Recommendation 10.2 of the PPR4 IACS Observer's Report)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

New (2004)

No records available

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 30:

Annex 1. **TB for Rev.1 (Nov 2019)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) document available for New (2004)*

Technical Background (TB) document for UI MPC 30 (Rev.1 Nov 2019)

1 Scope and objectives

In light of the adopted 2017 SCR Guidelines, IACS UI MPCs were reviewed for possible revision. The subject UI revision aims at refining the UI considering items that have been transferred from the previous version of the UI into the NTC 2008.

2 Engineering background for technical basis and rationale

The initial version of UI MPC 30 contained interpretations for some parameters given in Table 3 of the pre-2008 edition of the NOx Technical Code (NTC); In that UI, the dry atmospheric pressure p_s was given by a formula combining the saturation vapor pressure of the engine intake air, the total barometric pressure and the relative humidity of the intake air. Moreover the UI interpreted the absolute temperature of the intake air.

The 2008 NTC adopted in Table 3 of the Introduction the interpretation and formula of the IACS UI MPC 30 for the dry atmospheric pressure. In this regard, Revision 1 of the UI removes all items that can be found in the NTC 2008 and retains only the interpretation for T_a (replacing “absolute temperature of the intake air” by “intake air temperature at the engine intake” for consistency with the NTC 2008). The interpretation states that T_a is the temperature determined at the engine/turbocharger intake suction filter.

3 Source / derivation of the proposed IACS UI

The text of the UI is directly derived from the initial edition of UI MPC 30 and the wording of NTC 2008 for T_a.

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

The text of the UI has been unanimously agreed upon by the Machinery Panel and no points of discussions have been raised.

6 Attachments if any

N/A

UI MPC 32 "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines "

Summary

This UI provides a unified interpretation regarding the "increase of emission characteristics" according to regulation 1.3.2.2 of the NOx Technical Code 2008

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Jan 2020)	15 January 2020	1 July 2020
New (July 2004)	July 2004	19 May 2005

- **Rev. 1 (Jan 2020)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Update text and references to adapt to the NOx Technical Code 2008.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev. 1 has been agreed by correspondence under Machinery Panel task PM17906.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: June 2018 (Proposal by Panel member)
Panel Approval: 09 October 2019 (Ref: PM17906_IMo)
GPG Approval: 15 January 2020 (Ref: 17075_IGt)

- **New (July 2004)**

No HF/TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC32:

Annex 1. **TB for Rev. 1 (Jan 2020)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no Technical Background (TB) document available for New (July 2004).*

Technical Background (TB) document for UI MPC32 (Rev. 1, Jan 2020)

1 Scope and objectives

The revision of the NOx Technical Code makes it necessary to update UI MPC32.

2 Engineering background for technical basis and rationale

Updated text and references, no substantive changes to the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC 33: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines

(NOx Technical Code 2008, Chapter 2, Paragraph 2.2.4.1)"

Summary

This UI provides a unified interpretation for engines undergoing an onboard certification test in order to be issued with an EIAPP Certificate, according to regulation 2.2.4.1 of the NOx Technical Code 2008

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2019)	9 November 2019	1 July 2020
Rev.1 (Mar 2006)	-	1 July 2006
New (Jul 2004)	-	19 May 2005

- **Rev.2 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Update text and references to adapt to the NOx Technical Code 2008.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.2 has been agreed by correspondence under Machinery Panel task PM17906.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: June 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

- **Rev.1 (Mar 2006)**

  See the Part B for TB

- **New (July 2004)**

  No records available

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC33:

Annex 1. **TB for Rev.1 (Mar 2006)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Nov 2019)**

See separate TB document in Annex 2.

Note: *There is no Technical Background (TB) document available for New (2004)*

◄▼►

Technical Background (TB) document for UI MPC33 (Rev.1, Mar 2006)

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rshead.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG
Copy: GPG Members
Copy: Statutory Panel Members
Copy: Permsec
Ref. 5077aIGh dated 2 December 2005
Dear Sir,

1. You may remember that the Statutory Panel was tasked to:

1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and

1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to

Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

Technical Background (TB) document for UI MPC33 (Rev.2, Nov 2019)

1 Scope and objectives

The revision of the NOx Technical Code makes it necessary to update UI MPC33.

2 Engineering background for technical basis and rationale

The text of previous version of UI MPC33 is quoted below:

For engines undergoing an on-board certification test, to be issued with an EIAPP Certificate, the same procedures apply as if the engine had been pre-certified on a test-bed:
(a) the survey on-board meets the pre-certification survey requirements; and
(b) the on-board test fully meets all of the requirements of a test-bed procedure as specified in chapter 5 of the NOx Technical Code; and
(c) the application average weighted NOx emission value meets the requirements of regulation 13 of Annex VI; and
(d) the engine has an approved Technical File.

The first paragraph has been dropped from the UI as it is now included in the amended text of the NOx Technical Code, Regulation 2.2.4.1.

Clauses (a) to (c) are considered as satisfied since the same procedure as for normal pre-certification on a test bed has to be applied.

It was agreed that only clause (d) was to be retained however it was observed that as the results of the parent engine emission test shall always be a part of the Technical File, and these results are not available before the onboard certification test, the Technical File could not be finally approved at this stage of certification; for this reason the wording "..an approved Technical File" was changed to "..a preliminary approved Technical File, pending the results of the emission test". The interpretation was finally agreed as follow:

"Engines undergoing an onboard certification test shall have a preliminary approved Technical File, pending the results of the emission test.
If the result of the emission test does not comply with the applicable NOx regulation, the engines are to be re-adjusted to the compliance condition originally approved, if any, or the applicant is to apply to the Flag Administration for acceptance of further testing."

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

Ref. 5077aIGh dated 2 December 2005

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1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and
1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
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UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
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To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

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Best regards
Claudio Abbate
Chairman, Statutory Panel

UI MPC 40: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.3.9)"

Summary

This UI provides a unified interpretation regarding the procedure for certification of an engine if any adjustment or modification is made which is outside the approval limits documented in the technical file, as a condition For the Engine IAPP Certificate for the compliance with MARPOL Annex VI and the provisions of the NOX Technical Code (NTC) 2008.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Jul 2004)	-	19 May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to update text and references to the NOx Technical Code 2008

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev. 1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: June 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (July 2004)

No records of this revision are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC40:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC40 (Rev. 1, Nov 2019)

1 Scope and objectives

Within the requirements of NOx Technical Code, procedure is given for certification of an engine if any adjustment or modification is made which is outside the approval limits documented in the technical file, as a condition For the Engine IAPP Certificate. The requirements are given by:

- Para. 2.3.11, Ch. 2.3 in the original version of NOx Technical Code (adopted by resolution 2 of the MARPOL Conference)
- Para. 2.3.9, Ch. 2.3 of the revised NOx Technical Code 2008 (revision given by resolution MEPC.177(58)).

The revision of the NOx Technical Code, makes it necessary to update UI MPC40.

2 Engineering background for technical basis and rationale

Update text and references to adapt to the NOx Technical Code 2008.
No substantive changes to the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

Ref. 5077aIGh dated 2 December 2005

Dear Sir,
1. You may remember that the Statutory Panel was tasked to:

1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and
1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
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Chairman, Statutory Panel

UI MPC 45: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 2, Paragraph 2.4.1.7)"

Summary

This UI provides a unified interpretation of the requirements related to on-board NOx verification procedures and information about spare parts/components which, when used in the engine, will result in continued compliance of the engine with the MARPOL Annex VI and the provisions of the NOX Technical Code (NTC) 2008.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Jul 2004)		19 May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to update text and references to the NOx Technical Code 2008

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev. 1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: June 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (July 2004)

No records of this revision are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC45:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC45 (Rev.1, Nov 2019)

1 Scope and objectives

Within the requirements of NOx Technical Code, criterion was given to enable an Administration to perform the engine surveys as defined in the Code.
For that purpose required Technical File shall, at a minimum, contain certain scope of relevant information, which includes the specifications of those spare parts/components which, when used in the engine, according to those specifications, will result in continued compliance of the engine with the NOx emission limits.
The revision of the NOx Technical Code, makes it necessary to update UI MPC45.

2 Engineering background for technical basis and rationale

Update text and references to adapt to the NOx Technical Code 2008.
No substantive changes to the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC 51: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 3, Paragraph 3.2.1)"

Summary

This UI provides a unified interpretation how test cycles are to be applied for verification of compliance with the applicable NOX emission limits contained in regulation 13 of MARPOL Annex VI and the provisions of the NOX Technical Code (NTC) 2008

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2019 Withdrawn)	5 May 2020	-
Rev.1 (Jan 2017 Withdrawn)	18 January 2017	-
New (July 2004)	-	19 May 2005

• Rev.2 (Nov 2019 Withdrawn)

UI MPC51 (Rev.2 Nov 2019) approved on 9 November 2019 was withdrawn on 5 May 2020 prior to coming into force on 1 July 2020 (Ref: 17055_IGx).

• Rev.1 (Jan 2017 Withdrawn)

UI MPC51 (Rev.1 Jan 2017) approved on 18 January 2017 was withdrawn on 08 June 2018 prior to coming into force on 1 July 2018 (Ref: 17128iIGzd).

• New (July 2004)

No records of this revision are available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC51:

Note: *There are no Technical Background (TB) document available for New (July 2004), Rev.1 (Jan 2018 Withdrawn) and Rev.2 (Nov 2019 Withdrawn).*

UI MPC 53: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.1.1 to 4.1.4)"

Summary

This UI provides a unified interpretation regarding application of the Engine Family and Engine Group concept acc. to chapter 4.1 of the NOx Technical Code 2008

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (July 2004)	-	May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Update text and references to adapt to the NOx Technical Code 2008

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev. 1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: June 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (July 2004)

No records of this revision are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC53:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

Note: *There is no Technical Background (TB) document available for New (2004)*

◄▼►

Technical Background (TB) document for UI MPC53 (Rev.1, Nov 2019)

1 Scope and objectives

The revision of the NOx Technical Code makes it necessary to update UI MPC53.

2 Engineering background for technical basis and rationale

Updated text and references, no substantive changes to the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC 54: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.3.1 and 4.4.1)"

Summary

This UI provides a unified interpretation how to issue an EIAPP certificate for a subsequent member engine within an engine family.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Jul 2004)	-	19 May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

To align with an amendment of NOx Technical Code adopted by Res.MEPC.177(58).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: July 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

- **New (Jul 2004)**

No records of this revision are available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC54, Rev. 1:

Annex 1. **TB for Rev. 1 (Nov2019)**

See separate TB document in Annex 1.

Note: *There is no Technical Background (TB) document available for New (2004)*

Technical Background (TB) document for UI MPC54 (Rev. 1, Nov 2019)

1 Scope and objectives

IACS recognizes that relevant paragraphs (4.3.1 &4.4.1) of UI MPC54 has been changed by an amendment of NOx Technical Code, adopted by Res.MEPC.177(58).

2 Engineering background for technical basis and rationale

No substantial changes has been made to the UI (MPC54, July 2004).

Paragraph 4.3.1 : The word “Engine” has been added in the second part of the first sentence ‘……*Engine family comply with the approval requirements’*. And the words “ within the family” has been deleted from the second sentence of paragraph 4.3.1 by an amendment of NOx technical code.

Paragraph 4.4.1 : The first sentence which is only specified for main propulsion engines has been replaced with “ Engine group engines” and is clubbed with the second sentence of the paragraph 4.4.1 as per the amendment to NOx technical code. The regulation reference has been changed to regulation 13 as the applicable limits of the NOx emissions in the concluding part of the paragraph 4.4.1 of the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC 58: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.3.10.2 and 4.3.10.3)"

Summary

This UI provides a unified interpretation how to issue an EIAPP certificate for a subsequent member engine within an engine family.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Jul 2004)	-	May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

To align with an amendment of NOx Technical Code adopted by Res.MEPC.177(58).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: July 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

- **New Version (Jul 2004)**

No HFTB document available

****

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC58, Rev. 1:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

Note: *There is no Technical Background (TB) document available for New (2004)*

◄▲►

Technical Background (TB) document for UI MPC58 (Rev. 1, Nov 2019)

1 Scope and objectives

IACS recognizes that an interpreted paragraphs at UI MPC58 has been changed by an amendment of NOx Technical Code, adopted by Res.MEPC.177(58).

2 Engineering background for technical basis and rationale

Updated text and references, no substantive changes to the UI.
The word 'entire family' has been replaced by ‘engine family’ in 4.3.10.2 of NOx Technical code. For this reason, the first sentence of interpretation has been deleted.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC 59: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 4, Paragraphs 4.4.6.2 and 4.4.6.3)"

Summary

This UI provides a unified interpretation to consider a rated power at rated speed as one parameter and be applied on a paragraph 4.4.6.3 of NOx technical code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev. 1 (Nov 2019)	13 November 2019	1 July 2020
New (Jul 2004)	-	May 2005

- **Rev. 1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

To align with an amendment of NOx Technical Code adopted by Res.MEPC.177(58).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: July 2018 Proposed by Panel member
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 13 November 2019 (Ref: 17075_IGp)

- **New (Jul 2004)**

No HFTB document available

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC59, Rev. 1:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI MPC59 (Rev. 1, Nov 2019)

1 Scope and objectives

IACS recognizes that an interpreted paragraphs at UI MPC59 has been changed by an amendment of NOx Technical Code, adopted by Res.MEPC.177(58).

2 Engineering background for technical basis and rationale

Updated references, no substantive changes to the UI.

3 Source / derivation of the proposed IACS Resolution

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

Following a proposal by a Member Society the qualified majority agreed to delete the wording “per cylinder” in the first sentence of the interpretation in order to be aligned with the same wording used in Paragraph 4.4.6.2.6 of the NOx Technical Code (NTC) 2008

6 Attachments if any

N/A

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
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1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

UI MPC74: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines

(NOx Technical Code 2008, Chapter 5, Paragraph 5.10.1)"

Summary

This UI provides a unified interpretation regarding the necessary data to fully define the engine performance and enable calculation of the gaseous emissions, in accordance with paragraph 5.12.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	13 November 2019	1 July 2020
New (July 2004)	-	19 May 2005

- **Rev. 1 (Nov 2019)**

.1 Origin for Change:

☑ Suggestion by IACS members

.2 Main Reasons for Change:

- The existing UI refers to NOx Technical Code instead of the version of NOx Technical Code (2008);
- The Appendix 5 of NTC 2008 has made some amendments comparing previous version in NTC when this existing UI comes;
- In order to meet Tier III requirement, emissions abatement equipment has been applied (i.e. SCR) to engine. The relevant parameters for SCR in accordance with IMO Resolution MEPC. 291(71) should be recorded during the testing.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal:	31 May 2018	Made by Machinery Panel
Panel Approval:	9 October 2019 (Ref: PM17906_IMo)	
GPG Approval:	13 November 2019 (Ref: 17075_IGp)	

- **New (Jul 2004)**

No HF&TB document available

****

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 74:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) documents available for New (2004)*

◄▼►

Technical Background (TB) document for UI MPC 74 (Rev. 1, Nov 2019)

1. Scope and objectives

The task was initiated to update UI MPC 74 since it was found that:

- The existing UI refers to NOx Technical Code instead of the version of NOx Technical Code (2008);
- The Appendix 5 of NTC 2008 has made some amendments comparing previous version in NTC when this existing UI comes;
- In order to meet Tier III requirement, emissions abatement equipment has been applied (i.e. SCR) to engine. The relevant parameters for SCR in accordance with IMO Resolution MEPC. 291(71) should be recorded during the testing.

2. Engineering background for technical basis and rationale

The Panel majority considered that the July 2004 version of MPC 74 should be updated in order to catch up the NTC2008 and relevant IMO Resolutions, i.e. MEPC.291(71).

3. Source / derivation of the proposed IACS Resolution

n.a.

4. Summary of Changes intended for the revised Resolution:

- update the title of “Resolution 2 of the 1997 MARPOL conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines” to “Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 5, Paragraph 5.10.1)”;
- update the Chapter 5.10.1 as indicated in NTC2008;
- in the “Interpretation” section, to add engine fitted with SCR and Dual fuel engines.
- The year of publication for the ISO standards mentioned in the UI has been included.

5. Points of discussions or possible discussions

- Following a proposal by a Member Society the first sentence of the interpretation was modified as follow to clarify the wording which need to be interpreted:

  ~~“For application of this section the term “as a minimum” shall be interpreted as incorporating~~ tThe “necessary data to fully define the engine performance and enable calculation of the gaseous emissions” shall be incorporated, in accordance with 5.12, from….”

  The proposal was agreed by the qualified majority.

- One Member Society proposed to delete the sub-paragraph “b)” of the interpretation for the reason that the “Fuel properties” mentioned in this sub-paragraph have not been incorporated into MEPC.1/Circ.540 (IMO UI) but this proposal was not supported by the qualified majority.

- One Member Society suggesting to make reference, in the text of the UI, to the 2005 edition of the ISO 8217 standard (i.e ISO 8217:2005) for consistency with the NTC2008 as the NTC2008 mandates the use of ISO 8217:2005 in its paragraphs (5.3.2, 6.3.4.1, 6.3.4.2, 6.3.11.2 etc.) and Appendix V Section 2.
  The proposal was however not supported by the qualified majority that instead decided to make reference to the latest edition of the ISO 8217 standard (i.e ISO 8217:2017) for the reason that it was the Panel understanding that the Rev.1 of this UI is to be uniformly implemented by IACS Societies from 1 July 2020, therefore making reference to the last year of publication seems to be correct; for the previous version of the UI (I.e UI MPC74 (July 2004)) the previous editions of the ISO 8217, in force at the time of application of the UI, applies.

6. Attachments if any

None

UI MPC77: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines

(NOx Technical Code 2008, Chapter 6, Paragraph 6.2.1.2)"

Summary

This UI provides a unified interpretation of the requirements of the NOx Technical Code (NTC) 2008, Chapter 6, Paragraph 6.2.1.2

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (July 2004)	-	19 May 2005

- **Rev.1 (Nov 2019)**

.1 Origin for Change:

☑ Suggestion by IACS members

.2 Main Reasons for Change:

- The existing UI refers to NOx Technical Code instead of the version of NOx Technical Code (2008);
- The NTC 2008 has made some changes and the existing "Interpretation" does not match with new paragraph in NTC 2008.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes

N/A

6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original proposal: 31 May 2018 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

- **New Version (Jul 2004)**

No HF & TB document available

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 77:

Annex 1. **TB for Rev. 1 (Nov 2019)**

See separate TB document in Annex 1.

Note: *There is no Technical Background (TB) document available for New (2004)*

◄▼►

Technical Background (TB) document for UI MPC 77 (Rev.1, Nov 2019)

1. Scope and objectives

The task was initiated to update UI MPC 77 since it was found that:

- The existing UI refers to NOx Technical Code instead of the version of NOx Technical Code (2008);
- The NTC 2008 has made some changes and the existing "Interpretation" does not match with new paragraph in NTC 2008.

2. Engineering background for technical basis and rationale

The Panel majority considered that the July 2004 version of MPC 77 should be updated in order to catch up the NTC2008.

3. Source / derivation of the proposed IACS Resolution

n.a.

4. Summary of Changes intended for the revised Resolution:

- Update the title of "Resolution 2 of the 1997 MARPOL conference Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines" to "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008, Chapter 6, Paragraph 6.2.1.2)";
- Update the Chapter 6.2.1.2 as indicated in NTC2008;
- In the "Interpretation" section, to amend 6.2.3.2.2 to 6.2.2.7 accordingly.

5. Points of discussions or possible discussions

n.a.

6. Attachments if any

None

Technical Background

UI MPC 12 (**Rev.1,** March 2006)
UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
UI MPC 21 (**Rev.1,** March 2006)
UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
Subject: 5077aPSa: UIs agreed by MEPC 53 (SP5039gPCd)

To: Chairman, GPG

Copy: GPG Members

Copy: Statutory Panel Members

Copy: Permsec

Ref. 5077aIGh dated 2 December 2005

Dear Sir,
1. You may remember that the Statutory Panel was tasked to:

1.a review the IACS UIs as taken into MEPC Circ.473, amend them to conform to the MEPC Circ. where that is considered correct/appropriate, or retain them as is; and
1.b report the results of its review to GPG so that Perm Sec can retain the IACS UIs as mandatory IACS requirements but annotate them to note that they are

included in MEPC Circ.473.

2. Panel Secretary prepared the above amendments, and circulated them to Panel Members for comments. No disagreement has been recorded.

3. On the basis of the above, I'm sending you the amended UIs, in the zip file herewith attached, for GPG consideration and approval. Corrections carried out may be detected by using MS Word "Track change" option.

4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

Technical Background

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UI MPC 13 (**Rev.1,** March 2006)
UI MPC 18 (**Rev.1**, March 2006)
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UI MPC 33 (**Rev.1**, March 2006)
UI MPC 35 (**Rev.1,** March 2006)
UI MPC 39 (**Rev.1**, March 2006)
UI MPC 42 (**Rev.1**, March 2006)
UI MPC 43 (**Rev.1,** March 2006)
UI MPC 62 (**Rev.1,** March 2006)
UI MPC 66 (**Rev.1,** March 2006)
UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
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UI MPC 13 (**Rev.1,** March 2006)
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UI MPC 33 (**Rev.1**, March 2006)
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UI MPC 72 (**Rev.1,** March 2006)
UI MPC 78 (**Rev.1**, March 2006)
UI MPC 79 (**Rev.1,** March 2006)
UI MPC 80 (**Rev.1,** March 2006)

From: Claudio Abbate [mailto:Claudio.Abbate@rina.org] **On Behalf Of** RINA Statutory Panel
Sent: 09 March 2006 09:13
To: AIACS@eagle.org
Cc: iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; krsiacs@krs.co.kr; iacs@lr.org; clnkiacs@classnk.or.jp; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; permsec@iacs.org.uk; ABSPST@eagle.org; bvpstat@bureauveritas.com; CCSPSTA@ccs.org.cn; DNVPSTAT@dnv.com; inbose@irclass.org; stat-panel@gl-group.com; KRPST@krs.co.kr; LRPST@lr.org; nkstyp@classnk.or.jp; RINAPSTAT@rina.org; RSPST@rs-head.spb.ru
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4. You may note that the new implementation date 1 July 2006 has been added to all revised UIs.

Best regards
Claudio Abbate
Chairman, Statutory Panel

UI MPC 82(New, Sept. 2005)

Reg. 14, Annex VI, MARPOL 73/78

TECHNICAL BACKGROUND

According to Annex VI regulations 1 and 14, sulfur requirements apply to all sea going ships regardless of the tonnage and navigation. For existing ships to be issued an IAPP certificate, it is not clear if the sulfur requirements are to be applied from the date of entry into force (for signatory States, 19 May 2005 for the 4.5% limit and 19 May 2006 for the 1.5% limit when trading in the Baltic Sea SECA), or when the ship is issued with an IAPP certificate. The UI was developed in order to clarify this aspect.

Submitted by Statutory Panel Chairman
1 Sept 2005

UI MPC 83(New, Sept. 2005)

Reg. 18, Annex VI, MARPOL 73/78

TECHNICAL BACKGROUND

By reading regulation 18(3) it is not clear, for existing ships to be issued an IAPP certificate, if the bunker delivery notes are requested from the entry into force of the Annex (19 May 2005 for signatory States) or when the ship is issued with an IAPP certificate. The UI was developed in order to clarify this aspect.

Submitted by Statutory Panel Chairman
1 Sept 2005

UI MPC 84, Technical Background Document

(New, Nov 2005)

This Unified Interpretation has been developed in order to clarify that the requirement for monitoring of combustion flue gas outlet temperature set out in regulation 16(9) of Annex VI to MARPOL 73/78 is equally applicable to continuous-feed and batch-loaded shipboard incinerators. No opposition to this UI is recorded. Footnote [1] is included since application of this temperature to either type of incinerator may be beyond the capabilities or design of older units not approved under MEPC.76(40).

Note: GPG/Council (s/n 4205e) decided that *'This UI is to be uniformly implemented by IACS Members and Associates from 3 February 2006'.*

Submitted by Statutory Panel Chairman
10 Oct 2005

UI MPC 85 (New, Jan 2006)

TECHNICAL BACKGROUND

IACS submitted a paper to MEPC 53 (document MEPC 53/6/2) seeking clarification on issues associated with the application of regulation 22 of the MARPOL Annex I, as amended by resolution MEPC.117(52). The paper indicated that there is the need for clear guidance by IMO on:

- the applicability of the regulation to ballast pump-rooms, since the text vaguely refers to “pump-rooms”; and
- the acceptability that ballast piping may be located within the pump-room double bottom.

IACS also expressed the opinion that such a regulation applies to cargo and ballast pump-rooms and that ballast piping (which must be located in the double bottoms as they cannot be located in cargo tanks as per regulation 13F) is permitted to be located within the required pump-room double bottom provided any damage to that piping does not render the ship’s pumps (ballast and cargo) ineffective.
The Committee concurred with this opinion and agreed that it would be desirable to develop a Unified Interpretation at its next session due to time constraints and heavy workload at the current session. In this respect, IACS undertook to submit a suitable proposal to MEPC 54.

Note:
The IACS submission to IMO MEPC 54 is annexed to this TB (5110cIGb, 6 Jan 2006).

MARINE ENVIRONMENT PROTECTION COMMITTEE
54th session
Agenda item 6

MEPC 54/6/x
[DATE]
Original: ENGLISH

INTERPRETATIONS AND AMENDMENTS OF MARPOL 73/78 AND RELATED INSTRUMENTS

Clarifications to Regulation 22, Annex I, of MARPOL 73/78 as amended by resolution MEPC.117(52)

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive summary: This document advises on IACS Unified Interpretation MPC 85 to be implemented by IACS Members. This document also contains a request of clarification on the application of regulation 22, Annex I, MARPOL 73/78 as amended by resolution MEPC.117(52).

Action to be taken: Paragraph 10.

Related documents: Resolution MEPC.117(52), MEPC 47/18/1, MEPC 53/6/2, MSC 53/24.

Background

1. The Committee, at its fifty second session, adopted resolution MEPC.117(52) "Amendments to the annex of the protocol 1978 relating to the international convention for the prevention of pollution from ships (revised Annex I of MARPOL 73/78)" containing the text of the revised Annex I to MARPOL 73/78.

2. Regulation 22 "Pump–room bottom protection" of the revised Annex I to MARPOL 73/78 reads:
"1 This regulation applies to oil tankers of 5,000 tonnes deadweight and above constructed on or after 1 January 2007.

2 The pump-room shall be provided with a double bottom such that at any cross-section the depth of each double bottom tank or space shall be such that the distance h between the bottom of the pump-room and the ship's base line measured at right angles to the ship's base line is not less than specified below:

h = B/15(m) or

h = 2 m, whichever is the lesser.

The minimum value of h = 1 m.

3 In case of pump rooms whose bottom plate is located above the base line by at least the minimum height required in paragraph 2 above (e.g. gondola stern designs), there will be no need for a double bottom construction in way of the pump-room.

4 Ballast pumps shall be provided with suitable arrangements to ensure efficient suction from double bottom tanks.

5 Notwithstanding the provisions of paragraphs 2 and 3 above, where the flooding of the pump room would not render the ballast or cargo pumping system inoperative, a double bottom need not be fitted.".

3. IACS submitted the document MEPC 53/6/2 seeking clarification on issues associated with the application of regulation mentioned in 3. The paper indicated that there is the need for clear guidance by IMO on:

- the applicability of the regulation to ballast pump-rooms, since the text vaguely refers to "pump-rooms"; and
- the acceptability that ballast piping may be located within the pump-room double bottom.

4. In presenting the above submission at the fifty third session of the Committee, IACS expressed the view that such a regulation applies to cargo and ballast pump-rooms and that ballast piping (which must be located in the double bottoms as they cannot be located in cargo tanks as per regulation 13F) is permitted to be located within the required pump-room double bottom provided any damage to that piping does not render the ship's pumps (ballast and cargo) ineffective.

5. The Committee concurred with this opinion (MEPC 53/24, paragraph 6.14) and agreed that it would be desirable to develop a Unified Interpretation., IACS undertook to submit a suitable proposal to MEPC 54.

Unified Interpretation MPC 85

6. The IACS Unified Interpretation MPC 85 at Annex has been prepared in light of paragraphs 4. to 6. above.

.

Clarification needed

7. In addition to the above, it is noted that regulation I/22 does not state if the double bottom has to be a void space or if it can be a ballast tank or a fuel tank.

8. IACS recalls MEPC 47/18/1, where it was indicated that one of the benefits of protecting the pump room with a double bottom would be "*maintaining the capacity and availability of ships' pumps after bottom damage which includes damage in way of the cargo pump room*" so that "*lightening and salvage operations, after damage/grounding can be undertaken with an enhanced degree of certainty with regard to structural strength implications*". Based on the above and the text of regulation I/22, it would appear that the designation of the double bottom tank (void space, ballast tank, or a fuel oil tank etc) would have little bearing on the capability to protect the pump room.

9. IACS requests clarification if the double bottom protection for pump rooms located outside of the cargo tank length is to be limited to a tank which does not carry oil or if the tank can carry oil other than oil as cargo.

Action requested by the Committee

10. The Committee is invited to consider the above and take actions as appropriate.

*****

Technical Background of UI MPC85 (Rev.1 July 2006)

IACS submitted a paper to MEPC 53 (document MEPC 53/6/2) seeking clarification on issues associated with the application of regulation 22 of the MARPOL Annex I, as amended by resolution MEPC.117(52). The paper indicated that there is the need for clear guidance by IMO on:

- the applicability of the regulation to ballast pump-rooms, since the text vaguely refers to “pump-rooms”; and
- the acceptability that ballast piping may be located within the pump-room double bottom.

IACS also expressed the opinion that such a regulation applies to cargo and ballast pump-rooms and that ballast piping (which must be located in the double bottoms as they cannot be located in cargo tanks as per regulation 13F) is permitted to be located within the required pump-room double bottom provided any damage to that piping does not render the ship’s pumps (ballast and cargo) ineffective.
The Committee concurred with this opinion and agreed that it would be desirable to develop a Unified Interpretation at its next session due to time constraints and heavy workload at the current session. In this respect, IACS undertook to submit a suitable proposal to MEPC 54.

Rev. 1 has been prepared to reflect the interpretation developed by MEPC 54 (refer to MEPC54/21, paragraphs 6.4 to 6.11 and Annex 8) on the basis of UI MPC 85 as presented by document MEPC 54/6/3. Considering the regulations contained in the UI will enter into force on 1 Jan 2007, the GPG Chairman suggested to insert a new note about the implementation into the UI, and this suggestion received unanimous agreement among all members with their Council members' concurrence.

Submitted by Statutory Panel Chairman
19 June 2006

Technical Background

UI MPC 85 Rev.3 (Jan 2008) and Rev.4 (Sept 2008)

Rev.3:

In accordance with the Regulation I/22, in particular I/22(3), paragraph 3 of the UI Rev.2 is revised to provide for measurement of the double bottom height below a well from the ship's baseline rather than from its bottom shell plating.

Additionally, a new paragraph 4 is developed with consideration of the arrangement where only a portion of the pump bottom is not only above the required height but above the base line under the Regulation I/22(3) so as to apply gondola sterns and transverse deadrise of the ship’s bottom plating.

Rev.4:

Subsequently, taking into account the outcome of MEPC 57 (MEPC57/ 21/Corr.2), the UI MPC85 is further revised by deleting the words “*protected by*” in paragraph 4.

Submitted by the Statutory Panel Chair

20 August 2008

Permanent Secretariat note:

- UI MPC85 Rev.3 was approved on 25 January 2008 and submitted to MEPC 57.
- UI MPC85 Rev.4 was approved by GPG on 9 September 2008 (ref. 8510_IGe).

Technical Background (External)

UI MPC 85 Rev.3 (Jan 2008) and Rev.4 (Sept 2008)

Rev.3:

In accordance with the Regulation I/22, in particular I/22(3), paragraph 3 of the UI Rev.2 is revised to provide for measurement of the double bottom height below a well from the ship's baseline rather than from its bottom shell plating.

Additionally, a new paragraph 4 is developed with consideration of the arrangement where only a portion of the pump bottom is not only above the required height but above the base line under the Regulation I/22(3) so as to apply gondola sterns and transverse deadrise of the ship’s bottom plating.

Rev.4:

Subsequently, taking into account the outcome of MEPC 57 (MEPC57/ 21/Corr.2), the UI MPC85 is further revised by deleting the words “*protected by*” in paragraph 4.

Technical background

(UI MPC86, June 2006)

This UI has been developed to assure the provision of a shore connection for sewage discharge for ships of any size, irrespective of the presence of a sewage treatment plant or sewage holding tank.

A standard discharge connection is required to be provided to ensure there is a capability to discharge sewage ashore in cases when

- a sewage treatment plant is not available due to malfunction or maintenance and discharge of sewage into the sea is not possible or it is forbidden by local law,or
- a holding tank needs to be emptied for tank cleaning and/or inspection purposes, or
- in the event of a prolonged stay in port where the capacity of the holding tank is exceeded.

Submitted by Statutory Panel
12 May 2006
(s/n: 6099_IGb, 16 June 2006)

Technical background – Internal

UI MPC 87 (New, Jan 2007)

This interpretation has been prepared with the view of clarifying the meaning of the wording "*within or immediately adjacent to"* used in MARPOL regulation I/12A.9 for describing the position of valves to be fitted on lines oil fuel piping located at a distance from the ship's bottom of less than *h* or from the ship's side less than *w*, as defined in paragraphs 6 and 7-8, respectively, of the same regulation by treating valves in a manner similar to the treatment of suction wells under MARPOL I/12A.10.

Clarification is also provided with respect to valves serving tanks which are assessed under the accidental oil fuel outflow performance standard of MARPOL regulation I/12A.11.

This UI also clarifies that fuel tank air escape pipes and overflow pipes are not considered as part of '*lines of fuel oil piping"* and therefore excluded from these requirements.

GL did not support the development of this UI for the following reasons:
a) "with valves or similar closing devices within or immediately adjacent to...". h/2 could be 1 m, which is definitely not immediately adjacent and which clearly against the intention of the new regulation;
b) regarding the proposed interpretation on air pipes: Air pipes are no lines of oil fuel piping and thus not subject of this regulation and we should not start to bring it in.
The above view was not shared by the remaining Panel Members because:
a) the criteria adopted has been derived from the requirement in MARPOL regulation I/12A.for suction well. It is also noted that the comment by GL is vague since it does not give any idea on what for GL the wording "within or immediately adjacent to" may mean in term of measurement.
b) it had been concurred that para. 3) of the UI provides an useful clarification to both Societies and users and it shall be kept.

Submitted by Statutory Panel
30/12/2006

Technical background – External

UI MPC 87(New, Jan 2007)

This interpretation has been prepared with the view of clarifying the meaning of the wording "*within or immediately adjacent to"* used in MARPOL regulation I/12A.9 for describing the position of valves to be fitted on lines oil fuel piping located at a distance from the ship's bottom of less than *h* or from the ship's side less than *w*, as defined in paragraphs 6 and 7-8, respectively, of the same regulation by treating valves in a manner similar to the treatment of suction wells under MARPOL I/12A.10.

Clarification is also provided with respect to valves serving tanks which are assessed under the accidental oil fuel outflow performance standard of MARPOL regulation I/12A.11.

This UI also clarifies that fuel tank air escape pipes and overflow pipes are not considered as part of '*lines of fuel oil piping"* and therefore excluded from these requirements.

Submitted by Statutory Panel
30/12/2006

Technical Background

UIs MPC90 and MPC91, New (September 2007)

MARPOL Annex I and Annex IV

MARPOL Annex I and Annex IV contain the phrase "*similar stage of construction*" in the numerous definitions of "ship delivered" which is used to determine the application of regulations in these Annexes.

The phrase "*similar stage of construction*" is not defined in Annex I and Annex IV, as it is in MARPOL Annex II and Annex VI as shown below:

> *"A similar stage of construction" means the stage at which:*
> *(a) construction identifiable with a specific ship begins; and*
> *(b) assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.*

To provide for consistency of MARPOL Annexes I and IV with MARPOL Annexes II and VI, the definition of "*similar stage of construction*" in MARPOL Annexes II and VI is extended to apply to MARPOL Annexes I and IV.

Submitted by Statutory Panel Chair
9 July 2007

Permanent Secretariat note (Sept 2007):
Documents were approved by GPG on 7 September 2007 (ref. 7572aIGc) with an implementation date of 1 October 2007.
UIs to be submitted to IMO for MEPC 57.

Technical Background

UIs MPC90 and MPC91, New (September 2007)

MARPOL Annex I and Annex IV

MARPOL Annex I and Annex IV contain the phrase "*similar stage of construction*" in the numerous definitions of "ship delivered" which is used to determine the application of regulations in these Annexes.

The phrase "*similar stage of construction*" is not defined in Annex I and Annex IV, as it is in MARPOL Annex II and Annex VI as shown below:

> *"A similar stage of construction" means the stage at which:*
> *(a) construction identifiable with a specific ship begins; and*
> *(b) assembly of that ship has commenced comprising at least 50 tonnes or one per cent of the estimated mass of all structural material, whichever is less.*

To provide for consistency of MARPOL Annexes I and IV with MARPOL Annexes II and VI, the definition of "*similar stage of construction*" in MARPOL Annexes II and VI is extended to apply to MARPOL Annexes I and IV.

Submitted by Statutory Panel Chair
9 July 2007

Permanent Secretariat note (Sept 2007):
Documents were approved by GPG on 7 September 2007 (ref. 7572aIGc) with an implementation date of 1 October 2007.
UIs to be submitted to IMO for MEPC 57.

UI MPC93 "Annex I of MARPOL 73/78 Regulation 23 Accidental oil outflow performance, as amended by Resolution MEPC.117(52)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Apr 2016)	21 April 2016	1 July 2017
New (July 2008)	16 July 2008	1 April 2009

- **Rev.1 (Apr 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To make it identical to MARPOL Annex I interpretation, No. 47.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The IACS Environmental Panel agreed, by correspondence and at its 4th meeting, to amend the UI MPC93 to make it identical to MARPOL Annex I interpretation, No. 47.

The Panel also agreed that this revision will not need to submit to IMO.

No technical background document was prepared for the revision.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: made by an Environmental Panel
Panel Approval: 29 March 2016 (Ref: EP15025)
GPG Approval: 21 April 2016 (Ref: 16067_IGb)

- **New (July 2008)**

Response to industry inquiries regarding definition of overpressure used for calculations of cargo level after damage.

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC93:

Annex 1. **TB for New (July 2008)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no Technical Background (TB) document available for Rev.1 (Apr 2016).*

TECHNICAL BACKGROUND

UI MPC93 (NEW, JULY 2008)

Annex I of MARPOL 73/78 Regulation 23Accidental oil outflow performance, as amended by Resolution MEPC.117(52)

1. Scope and objective

A class society have received inquiries from the industry asking for a common interpretation of MARPOL Annex I, Reg. 23.7.3.2 regarding the definition of the overpressure used for calculations of cargo level after damage. For bottom damages the calculation of oil outflow of a tank is based on hydrostatic balance and the effect of overpressure.

It became apparent that this definition is directly decisive for the design of the ship and a task was opened in the panel with an aim to get a unified interpretation.

2. Points of discussions

In Reg. 23.7.2.3, the overpressure *p* is defined as:

> *"p = if an inert gas system is fitted, the normal overpressure, in kilopascals, to be taken as not less than 5 kPa; if an inert gas system is not fitted, the overpressure may be taken as 0."*

The "normal overpressure" is a vague expression which may be subject to interpretation.

The initial view on the definition was:

a) The pressure *p* is to be taken as the maximum static inert gas pressure that can be obtained by the inert gas fans or 5 kPa, whichever is the greatest. However, *p* need not to be higher than the maximum tank pressure corresponding to the P/V valve set-point.

b) It was noted that appendix 8 of the previous revision of Marpol Annex I says "normally 0.05 bar" (5 kPa) and that the new text specifies that the 5 kPa limit is a minimum.

After the panel discussion, the following other/ additional views can be summarized as follows:

a) Two societies support the initial proposal.

b) Two societies wish to use 5 kPa

c) One society suggests that an average of PV release pressure and high pressure alarm setting

d) Two societies suggest max operational pressure

e) One society suggests 5-10 kPa

With these replies it was difficult to find a "decisive" majority. However, it was important that the figure to be used is clear and that it is not possible for the yard to choose a low (in-operable) operational pressure in order to reduce the number of bulkheads. Therefore a UI was developed based on the original proposal. The text of the draft UI was editorially changed and subsequently further revised by consideration of the inert gas generator system having no inert gas blowers/fans on the discharge side of the scrubber. The application statement of the draft UI is revised so that the UI is not retroactive to oil tankers that may have already been certified under a different interpretation of normal overpressure.

3. Extent of Approval by Working Group

The draft revised UI was accepted by all members of the Statutory Panel.

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
23 June 2008

Permanent Secretariat note (July 2008):
New UI MPC 93 was approved by GPG on 16 July 2008 (ref. 8605_IGc) with an implementation date of 1 April 2009.

TECHNICAL BACKGROUND

UI MPC94 (NEW, JULY 2008)

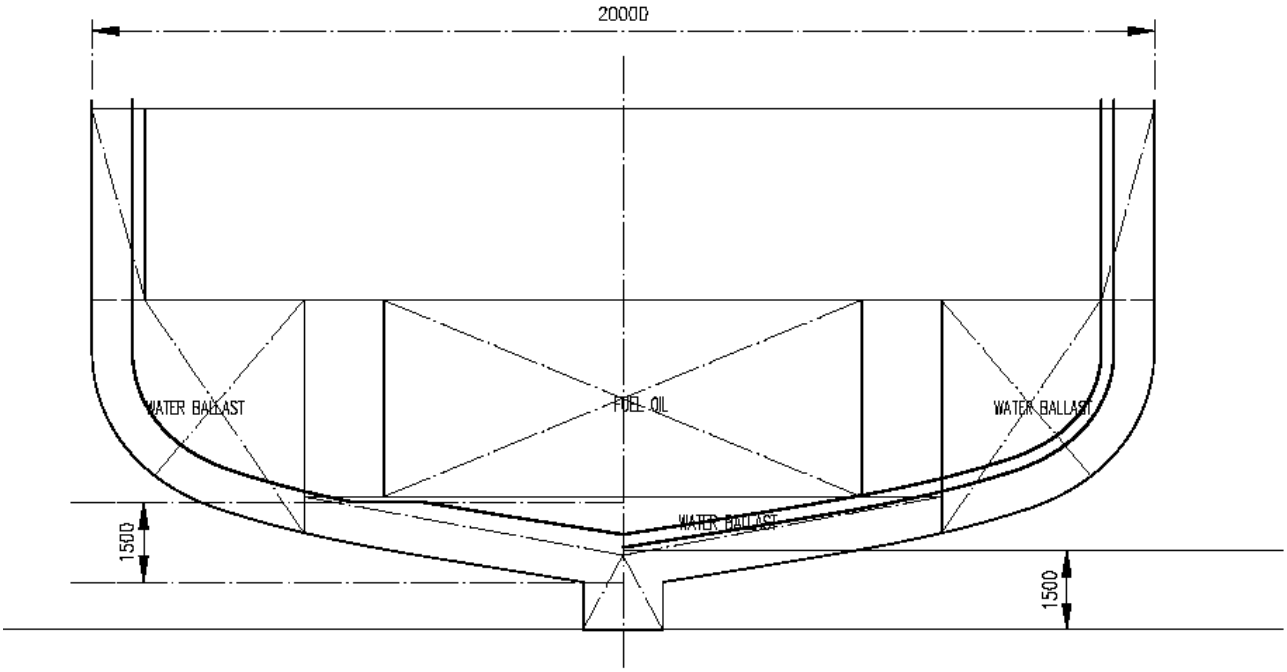
Annex I of MARPOL 73/78 Regulation 12A.6-8 and 11.8 Oil Fuel Tank Protection, as amended by Resolution MEPC.141(54)

1. Scope and objective

A class society has received questions from ship designers on how to apply the h measured from the baseline shown in Fig. 2 of MARPOL Annex I Reg. 12A, when the vessel has skeg or when the vessel is designed with permanent trim.

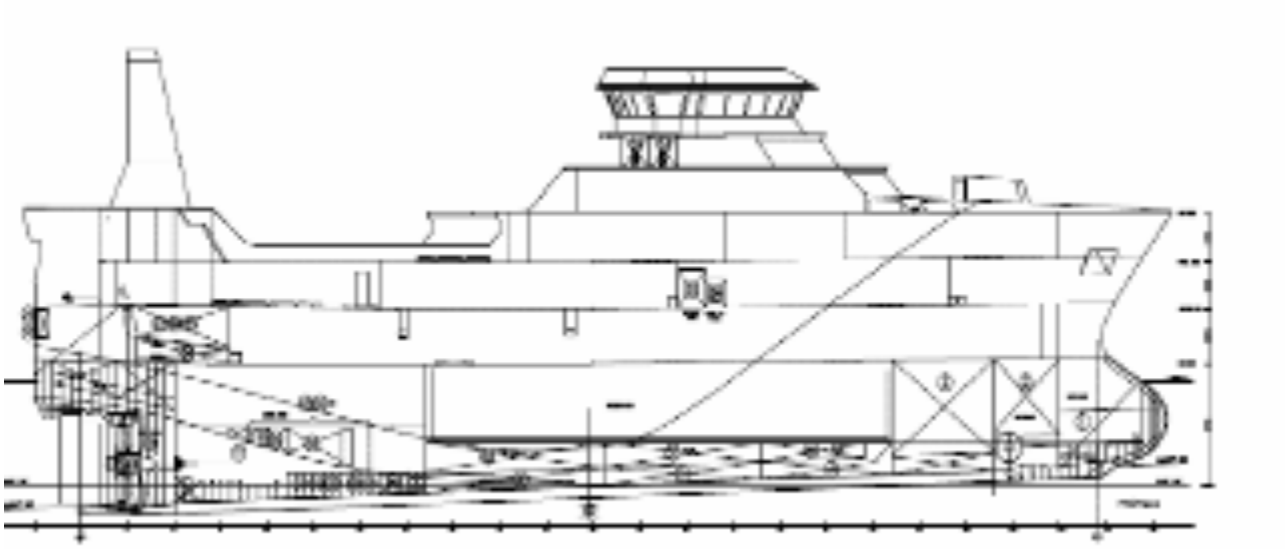
2. Points of discussion

1. Enclosed is a drawing of a vessel where the baseline is partly below, partly inside the vessel. This designer has shown two different interpretations, one including the skeg (stb), one not including the skeg (port). After a panel discussion, it was agreed that the skeg should not be included



FR. 30

2. The second matter is the term "baseline" used on Figure 1 and Figure 2 of MARPOL I. For vessels designed e.g. for a permanent aft trim, see enclosed fig.2 (vessel w aft trim.pdf). the baseline does not follow the moulded line, and is found not to be correct as a reference point. It was agreed that “h” should be measured from the bottom of the shell plating and not from the baseline.



3. Extent of Approval by Working Group

The draft UI has been accepted by the members of the Statutory Panel.

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
23 June 2008

Permanent Secretariat note (July 2008):
New UI MPC 94 was approved by GPG on 14 July 2008 (ref. 8611_IGd) with an implementation date of 1 April 2009.

TECHNICAL BACKGROUND

UIS SC224, LL74 AND MPC95 (NEW, AUGUST 2008)
"Measurement Of Distances"

1. Scope and objective

Several requirements in IMO instruments require a minimum distance between the inner and outer skins for protecting the spaces inside the inner skins (e.g. SOLAS regulation II-1/9, MARPOL Annex I regulation 12A and 19, IBC Code para.2.6.1 and IGC Code para.2.6.1.) However, it is not clear from which surface of the inner skins the minimum distance should be measured.

Objective is to clarify the measurement of distances between the inner and outer skins for protecting the spaces inside the inner skins by developing new UIs.

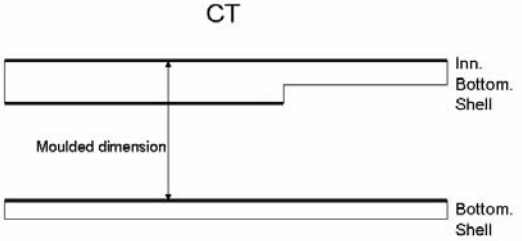
2. Points of discussions

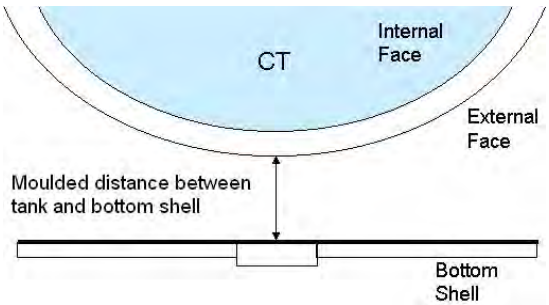
To obtain a unified interpretation for the measurement of such a distance above para.1, it was agreed to develop new UIs by Statutory Panel without any objection. In addition, NK proposed that the minimum distance should be determined by measurements between the moulded lines of inner and outer skins for the following reasons, and no Member objected to them.

1. The majority of principal particulars of ships are defined on the basis of moulded shapes;
2. In damage stability calculations, all distances may be measured between moulded lines;
3. At the basic design stage, it is practical to determine distances by measurements between moulded lines because thickness of some plating is not finalized and therefore distances may be variable; and
4. As there are structural members already inside double skin spaces, the decline in safety protection by having the plate thickness within the double skin space would be negligible.

Based on the above consensus and recognition Members also supported CCS proposal to expand the application of the UI to ship (or subdivision or waterline) length as there is no clear explanation in ICLL, SOLAS or IS Code on such length with regard to whether they should be moulded length or if plate thickness should be considered.
However, the length as defined in ICLL regulation 3(1) is not moulded length

Furthermore, members confirmed that
1: this UI can apply only to tanks for negligible thickness difference such as integral tank type whose boundaries are hull structure
2: For independent cargo tank type, dimensions to the external face of the tanks should be measured as moulded dimensions.





(Independent cargo tank type)

3. Extent of Approval by Working Group

The draft UIs are accepted [unanimously].

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
22 July 2008

Permanent Secretariat note (August 2008):
GPG approved new UIs SC224, LL74 and MPC95 on 12 August 2008 (ref. 8630_IGb) with an implementation date of 1 April 2009.

UI SC234 / LL76 / MPC96 "Initial Statutory Surveys at New Construction"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Dec 2014)	12 December 2014	1 July 2015
Rev.1 (Feb 2014)	18 February 2014	1 July 2014
Corr.1 (Jul 2010)	-	-
NEW (Apr 2009)	14 April 2010	1 July 2010

- **Rev.2 (Dec 2014)**

.1 Origin of Change:

☑ Based on the amendments of IMO Regulation (Res. A.1053 (27)) as set by Res. A1076(28)

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement contained in the IMO Resolution A.1076(28) which amends the IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007.
These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27) as amended by IMO Res. A.1076(28).

Survey Panel amended the text of IACS document to make it consistent with the requirements of the amendments of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision under PSU14010.

Survey Panel during the 20th Meeting agreed small changes of the Annex to UI.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 19 April 2014 by Survey Panel Chairman
Survey Panel Approval: 04 September 2014 (20th Survey Panel Meeting)
GPG Approval: 12 December 2014 (Ref: 13245aIGc)

- **Rev.1 (Feb 2014)**

.1 Origin of Change:

☑ Based on IMO Regulation (Res. A.1053 (27))

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement of IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007. These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27).

Survey Panel amended the text of IACS document to make it consistent with the requirements of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision by group works where all Panel members actively took part to review the requirements of current UIs SC234/ LL76/ MPC 96 with the provisions of A.1053 (27).

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 30 May 2013 by Survey Panel Chairman
Survey Panel Approval: 15 November 2013
GPG Approval: 18 February 2014 (Ref: 13245_IGc)

- **Corr.1 (Jul 2010)**

.1 Origin of Change:

☑ Other *(IMO Secretariat)*

.2 Main Reason for Change:

UI SC234/LL76/MPC96 was submitted to IMO as an Annex to FSI 18/13. During IMO's processing of the submission they noticed that in para 5 the stated order of the tables in Appendix 1 of the UI was different from the actual order.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

-

.4 History of Decisions Made:

Noting the feedback from IMO, Permsec decided to prepare a corrected version of UI SC234/LL76/MPC96 in order to revise the list of tables in para 5 of the UI.

.5 Other Resolutions Changes:

N/A

.6 Dates:

Corrected file circulated to members: *21 July 2010 (Ref. 9529_IAf)*

- **NEW (Apr 2009)**

See TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC234/LL76/MPC96:

Annex 1. **TB for Original Resolution (Apr 2009)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) documents for Corr.1 (Jul 2010), Rev.1 (Feb 2014) and Rev.2 (Dec 2014).*

TECHNICAL BACKGROUND

UI SC234, LL76 and MPC96 (New, April 2009)
"Initial Statutory Surveys at New Construction"

1. Introduction

The IACS EG/NCSR was guided by the objectives in the Form A which had been approved by the GPG.

Following on from the introduction of UR Z23 it was noted that the UR concentrated on hull surveys of new construction and only dealt with the statutory aspects where they coincided.

The EG was tasked to develop an IACS UI for initial statutory surveys at new construction addressing all other aspects of statutory certification during new construction which are not addressed in the UR Z23 on the basis of A.948(23) and to suggest any modifications to A.948(23) for the following:

- International Load Line Certificate (1966)
- Cargo Ship Safety Equipment Certificate
- International Oil Pollution Prevention Certificate

During the development of this UI, A.948(23) was superseded by A.997(25) and the requirements have been amended to comply with A.997(25)

This UI applies to surveys held at new construction and is not applicable to conversions and other initial surveys.

This UI does not cover the requirements for type approval or certification at vendor's works and for which evidence of acceptance is to be provided as indicated in the survey tables.

The purpose of this UI for Initial Statutory surveys during new construction:

a) is to verify that ships are constructed in accordance with the relevant Statutory requirements as part of the new building process;

b) aims to ensure unified application of the applicable requirements of A.997(25);

c) gives guidance on the specific requirements involved in the initial statutory surveys as detailed in A.997(25).

In developing this UI it is assumed that:-

a) delegation of authority from the flag state for the initial statutory surveys is a prerequisite for the verification of Statutory Regulations by the classification society;

b) compliance with the UI does not remove the responsibility from the shipbuilder to demonstrate that a satisfactory level of quality has been achieved;

c) the shipbuilder should bring to the attention of the classification society any deviations from the statutory regulations found during construction.

2. Background

Following the approval of the Form A the EG met several times and has progressed the task by consensus.

It was not the task of the EG to provide interpretations of the technical requirements of the statutory regulations which are covered by the Plan Approval process and other IACS Working Groups, but to provide clear and unified interpretations for the survey procedures required to ensure compliance with the regulations

Initial discussion centred on the scope of the Task and how to approach the work. It was agreed that the survey requirements in A.997(25) gave a comprehensive list of requirements for initial surveys however it was agreed that there was a need to demonstrate the survey procedures and actions required to be taken to comply these requirements. Detailed discussions were held around the current working practices for testing the statutory items to confirm that they met the intent of the requirements of A.997(25).

The members of the group reviewed the requirements of A.997(25) and prepared a unified interpretation of the requirements using the format of the table for *Shipboard and Shipyard Inspections* from the RINA *Rules for Testing and Certification of Marine Materials and Equipment.*

The EG considered the requirements for the Ship Construction File in the Draft Goal Based Standards and did not feel that there was any reference to the surveys items in Appendix 1 as these are predominately related to Hull Integrity and are covered in UR Z23.

Submitted by EG/NCSR Chairman
27 February 2009

Permanent Secretariat note (April 2009):

The new UI was approved by GPG, with an implementation date of 1st July 2010, on 14 April 2009 (ref. 9529_IGd) together with Rev.2 of UR Z23.

UI MPC97 "Volatile Organic Compounds (VOCs) Management Plan"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (July 2010)	22 July 2010	1 August 2010

- **NEW (July 2010)**

.1 Origin of Change:

☑ Suggestion by IACS member within review of the revised MARPOL Annex VI as contained in resolution MEPC.176(58)

.2 Main Reason for Change:

Formalizes the clarification contained in MEPC 58/WP.9 as stated in paragraphs 15 and 16 on the scope of application of MARPOL Annex VI, regulations 15.6 and 15.7 concerning the VOC Management Plan.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

Nil

.4 History of Decisions Made:

- After initially receiving mixed views from Statutory Panel Members on the application of the VOC Management Plan to gas carriers based on a reading of MARPOL VI, regulations 15.6 and 15.7, the interpretation provide in MEPC 58/WP.9 concerning paragraphs 15 and 16 clarified the scope of application of MARPOL Annex VI, regulations 15.6 and 15.7 concerning the VOC Management Plan

- The Panel concluded that it would advantageous to reflect the decision contained in MEPC 58/WP.9, which was endorsed by the Committee (MPEC 58//23, paragraph 5.43) in a formal IACS Unified Interpretation.

.5 Other Resolutions Changes:

None.

.6 Dates:

Original Proposal: *9 June 2010 made by Statutory Panel*
Panel Approval: *16 July 2010*
GPG Approval: *22 July 2010 (Ref.: 10101bIGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC97:

Annex 1. **TB for Original Resolution (July 2010)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI MPC97 NEW (July 2010)

1. Scope and objectives

This original version of the UI clarifies the scope of application of MARPOL Annex VI, regulations 15.6 and 15.7 concerning the VOC Management Plan to facilitate a uniform application to the ship types indicated in MARPOL Annex VI, regulations 15.6 and 15.7.

2. Engineering background for technical basis and rationale

N/A

3. Source / derivation of the proposed IACS Resolution

The source of the interpretation is contained in MEPC 58/WP.9 (paragraphs 15 and 16) as endorsed by the Committee in MPEC 58//23, paragraph 5.43.

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

Initially, there were mixed views from Statutory Panel Members on the application of the VOC Management Plan to gas carriers. However, a level of certainty was discovered in the conclusion of the WG as per MEPC 58/WP.9, paragraphs 15 and 16.

6. Attachments if any

None

UI MPC98 ""Time of the Replacement or Addition" for the Applicable Tier Standard For the Supplement to the IAPP Certificate"

Summary:

The UI provides a unified interpretation regarding a common date to be used for determining the applicable Tier standard for engines that are added or non-identical engines that are replaced onboard a ship.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Aug 2018)	07 August 2018	1 January 2020
NEW (Jan 2012)	11 January 2012	1 January 2013

- **Rev.1 (Aug 2018)**

.1 Origin of Change:

☑ Based on IMO Resolution MEPC.258(67) and MEPC.286(71)

.2 Main Reason for Change:

To update the UI to take account of IMO resolution MEPC.258(67) and MEPC.286(71)

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, it was agreed by Environmental Panel that the meaning of text of the UI should cover MEPC.258(67) and MEPC.286(71), taking account of the fact that any consequential change should be avoided when additional NOX Tier III control areas are designated in the future.

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval: 08 March 2018 (Ref: PE17007a)
GPG Approval: 07 August 2018 (Ref: 18081_IGe)

- **New (Jan 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member
☑ Based on IMO Regulation (MARPOL Annex VI Regulation 13.2.2)

.2 Main Reason for Change:

MARPOL Annex VI Regulation 13.2.2 states:

"For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply."

The Supplement to the IAPP Certificate does not refer to the "*time of replacement or addition"* in item 2.2.1 instead it refers to "Date of major conversion – According to Reg. 13.2.2".

Furthermore, although MARPOL Annex VI does not define "*time of the replacement or addition"* it does specify that the *time of the replacement or addition* establishes the applicable Tier standard to be applied to that engine --- as opposed to the "ship construction" which otherwise, for new buildings, sets the applicable Tier.

The particular impact of this issue will be at the transition point between the Tier II and the Tier III requirements (1 January 2016) noting that there will be substantial differences in fit, arrangement and cost of engines for the two different Tiers. While for new buildings the transition point is clearly given by the "Ships constructed" and "A similar stage of construction" definitions (Regs. 2.19 and 2.2 respectively) this is not defined in any manner in respect of "time of replacement or addition".

This could therefore clearly lead to:

a) Different interpretations as to what date represented the "time of replacement or addition"
b) Situations where due to unforeseen delays on the part of the engine builder, engine delivery service, ship operations, installation service provider or surveyor that although the engine had been ordered to Tier II the eventual "time of replacement or addition" was after the Tier II / Tier III transition point. However, any latitude provided would need to be limited to avoid abuse of the provision.

with potentially extremely serious consequences due to the completely different fit and arrangement requirements (and hence cost) between Tier II and Tier III engines.

Therefore, to clarify to interested parties, including PSC, that the "Date of major conversion – According to Reg. 13.2.2" as so specified in item 2.2.1 of the IAPP Supplement corresponds to *time of the replacement or addition* in Reg. 13.2.2 and hence sets the applicable Tier standard, to provide a common approach in determining the *time of the replacement or addition*, and to provide a practical approach to the application of the requirements over the transition point this UI has been developed.

Recognizing that the later date of 1 July 2016 given in the UI represents a relaxation of the requirements, a uniform application date of 1 January 2013 has been specified so that in the event MEPC 63 were to decide otherwise in March 2012 and the UI needed to be revised, it could be done well before the uniform application date.

The discussions behind this UI have highlighted the need for further clarifications of the various entries under 2.2.1 of the Supplement to the IAPP Certificate, particularly related to the “Date of installation” row, which will be the subject of another UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Considering that item 2.2.1 of the Supplement to the IAPP Certificate (which includes the *date of installation*) is readily available to interested parties such as PSC, there was significant discussion on using the *date of installation* as the date to determine the applicable Tier standard. However, as MARPOL Annex VI Regulation 13.2.2 clearly specifies that the time *of the replacement or addition* establishes the applicable Tier standard, it was ultimately agreed that that entry should not be used and that instead the “Date of major conversion – According to Reg. 13.2.2” should be clearly given as the applicable entry.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: August 2010 made by: a Member
Panel Approval: September 2011 by: Statutory panel
GPG Approval: 11 January 2012 (Ref. 11150_IGe)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC98:

Annex 1. **TB for New (Jan 2012)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1 (Aug 2018)**

See separate TB document in Annex 2.

◄▼►

Technical Background (TB) document for UI MPC98 (New Jan 2012)

1. Scope and objectives

The UI provides a common date to be used for determining the applicable Tier standard for engines that are added or non-identical engines that are replaced onboard a ship as well as establishing the row and date to be used in item 2.2.1 of the Supplement to the IAPP Certificate.

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

MARPOL Annex VI Regulation 13.2.2:

> *"For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply."*

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The overriding need to ensure that there are no different interpretations as to the Tier of engine to be installed given the lack of any definition of the term "*time of the replacement or addition".*

A 6 month period (to 1 July 2016) beyond the 1 January 2016 entry into force date of the Tier III standard was included from a practical perspective.

6. Attachments if any

None

Technical Background (TB) document for UI MPC98 (Rev.1 Aug 2018)

1. Scope and objectives

This version brings the IACS UI in line with MEPC.258(67) and MEPC.286(71)

2. Engineering background for technical basis and rationale

Following the consideration on :

1) the amendments(as amended by MEPC.286(71)) to MARPOL Annex VI related to the designation of the Baltic Sea and the North Sea ECAs for NOX Tier III control to ship constructed on or after 1 January 2021, and

2) the amendment to the Supplement to the IAPP Certificateas amended by MEPC.258(67),

it was agreed by Environmental Panel that the text of the UI should be modified to reflect MEPC.286(71) and MEPC.258(67), taking account of the fact that any consequential change should be avoided when additional NOX Tier III control areas are designated in the future.

3. Source / derivation of the proposed IACS Resolution

MEPC.286(71)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (May 2018) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI MPC99 "Oil residue (sludge) tank discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators (MARPOL 73/78 Annex I Regulation 12.3)"

Summary

UI MPC99 (Dec 2011) has been deleted, since the content of UI MPC99 (Dec 2011) are now covered by the following:

a) amended text of Reg.12.3 of MARPOL Annex I (amended vide MEPC.266(68)) and

b) new unified interpretation 20(UI 20) "*No discharge connection*" in MARPOL Annex I, providing interpretation of Reg.12.3.3 (approved at MEPC 70 vide MEPC.1/Circ.867).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (July 2020)	17 July 2020	-
New (Dec 2011)	21 Dec 2011	1 July 2012

- **Del (July 2020)**

1 Origin of Change:

☑ Suggestion by IACS member
☑ Based on IMO Regulation *(MARPOL Annex I, Regulation 12.3.3 and UI 20)*

2 Main Reason for Change:

Regulation 12 of MARPOL Annex I has been amended (MEPC.266 (68) EIF 2017) and the regulation 12.2 part has been moved to 12.3. As per the amendments a common sludge/bilge standard discharge connection is acceptable, provided there are no transfer possibilities from the sludge system to the bilge system; a screw-down non-return valve will ensure the latter. Further, a new MARPOL UI 20 to the new regulation 12.3.3 based on this IACS UI has been included in MARPOL Annex I. Hence, the content of MPC 99 is now covered by the new regulation text and the new Unified Interpretations UI 20 given in MARPOL Annex I.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Environmental Panel initiated periodical resolution review, and members were assigned to review relevant IACS Resolutions. One member advised that MPC99 should be deleted as the content of MPC99 has been covered by the new regulation text and the new Unified Interpretations UI 20 given in MARPOL Annex I.

During the discussion, ten (10) members agreed to or had no objection to the deletion. Two members held the view that this UI could be kept even though current convention has the same UI, but the reference regulation number on this UI needs to be updated from 12.2.2 to 12.3.3.

In this regard, Environmental Panel concluded that deletion of MPC UI 99 was agreed by the qualified majority.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	8 August 2019 (Made by: a member)
Panel Approval:	26 June 2020 (Ref: 19273_PEb)
GPG Approval:	17 July 2020 (Ref: 19273_IGg)

- **New (Dec 2011)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Equivalency to satisfy a prescriptive requirement within an IMO instrument.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issue was raised within the Statutory Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 4 October 2011 (Made by: a member)
Panel Approval: 2 December 2011 (by: Statutory Panel)
GPG Approval: 21 December 2011 (Ref.11198_IGb)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC99:

Annex 1. **TB for New (Dec 2011)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate technical background document for the deletion of UI MPC99 (July 2020).*

Technical Background for UI MPC99 New, Dec 2011

1. Scope and objectives

The UI describes an equivalence by which the MARPOL Annex I requirement for no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators can be achieved, whilst retaining operational flexibility in the oil residue (sludge) and bilge systems.

2. Engineering background for technical basis and rationale

Resolution MEPC.187(59), which entered into force on 1 January 2011, revised MARPOL Annex I Regulation 12, incorporating former UI 17.1.3 into the mandatory MARPOL text. This required that the oil residue (sludge) tank(s) shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators.

Furthermore, MEPC.1/Circ.753 introduced a Unified Interpretation to regulation 12.2.2 requiring that there should be no interconnections between the sludge tank discharge piping and bilge-water piping other than possible common piping leading to the standard discharge connection.

Whereas it is understood that the common piping may serve only one purpose and that is to connect the discharge lines of the bilge and sludge pumps to the standard discharge connection referred to in regulation 13, or any other approved means of disposal, the means by which this common connection is to be made is not stipulated.

The UI offers a solution to achieving the required separation.

3. Source / derivation of the proposed IACS Resolution

The applicable MARPOL Annex I paragraphs are as follows:

Regulation 12.2 (as amended by MEPC.187(59)):

> *2. Oil residue (sludge) may be disposed of directly from the oil residue (sludge) tank(s) through the standard discharge connection referred to in regulation 13, or any other approved means of disposal. The oil residue (sludge) tank(s):*
>
> > *.2. shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators except that the tank(s) may be fitted with drains, with manually operated self-closing valves and arrangements for subsequent visual monitoring of the settled water, that lead to an oily bilge water holding tank or bilge well, or an alternative arrangement, provided such arrangement does not connect directly to the bilge piping system.*

Unified Interpretation to regulation 12.2.2 introduced by MEPC.1/Circ.753

> *2 There should be no interconnections between the sludge tank discharge piping and bilge-water piping other than possible common piping leading to the standard discharge connection referred to in regulation 13.*

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

MARPOL Annex I Regulation 12.2 as amended by Resolution MEPC.187(59) requires that oil residue (sludge) tank(s) shall have no discharge connections to the bilge system, oily bilge water holding tank(s), tank top or oily water separators.

The Unified Interpretation to regulation 12.2.2 introduced by MEPC.1/Circ.753 states that there should be no interconnections between the sludge tank discharge piping and bilge-water piping other than possible common piping leading to the standard discharge connection referred to in regulation 13.

It is appreciated that common piping may serve only one purpose and that is to connect the discharge lines of the bilge and sludge pumps to the standard discharge connection referred to in regulation 13, or any other approved means of disposal. It must however be realised that this ability will inevitably lead to connections between the oil residue (sludge) piping and the piping leading to the standard discharge connection and other approved means of disposal, in order to retain a degree of operational flexibility.

MEPC 62/7/3 submitted by Hong Kong, China and IACS suggested, in paragraph 7, an equivalence to the requirement for “no interconnections” or “no discharge connections” thereby preventing sludge from discharging to the bilge system, oily bilge water holding tank(s), tank top or oily water separators,

It is therefore considered that screw-down non-return valves arranged in lines connecting to common piping leading to the standard discharge connection and other approved means of disposal, to prevent sludge from discharging to the oil water bilge system, provide a means equivalent to an arrangement that has “no interconnection” or “no discharge connections” as so specified in regulation 12.2 and the Unified Interpretation thereto.

6. Attachments if any

None

UI MPC100 "Date of Delivery under SOLAS and MARPOL Conventions"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (June 2012)	28 June 2012	28 June 2012

- **NEW (June 2012)**

.1 Origin for Change:

☑ Inquiry from IMO Secretariat and suggestion by IACS member

.2 Main Reason for Change:

Inquiry from IMO Secretariat and suggestion by IACS member.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In the year 2011, upon the request of IMO Secretariat, IACS submitted a reply on how IACS considers the meaning of "date of delivery". A year later, there was a renewed proposal in the Statutory Panel of developing a binding IACS UI from the perspective of determining the application of mandatory requirements of SOLAS and MARPOL Conventions on new buildings related to "date of delivery". Subsequently the Panel agreed upon an interpretation on "date of delivery" and associated HF and TB.

.5 Other Resolutions Changes

UI SC256 (New, June 2012)

.6 Dates:

Original proposal: *27 April 2012 made by: a Member*
Panel Approval: *18 June 2012 by: Statutory panel*
GPG Approval: *28 June 2012 (Ref. 12093_IGc)*

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC100:

Annex 1. **TB for New (June 2012)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI MPC100 New, June 2012

1. Scope and objectives

The UI provides a common approach in determining the application of mandatory requirements of the SOLAS and MARPOL Conventions to new ships related to date of delivery.

2. Engineering background for technical basis and rationale

Not applicable.

3. Source / derivation of the proposed IACS Resolution

Under certain provisions of the SOLAS and MARPOL Conventions, the application of regulations to a new ship is governed by the dates:

1. for which the building contract is placed on or after dd/mm/yyyy; or
2. in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after dd/mm/yyyy; or
3. the delivery of which is on or after dd/mm/yyyy.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

In 2011, upon the request of IMO Secretariat, IACS submitted a reply on how IACS considers the meaning of "date of delivery", in which IACS did not provide a binding unified interpretation. The current situation is still open to different interpretations in the industry. It is deemed later by IACS that a common practice and an UI on this fundamental concept will benefit all members, flag States and the industries in the long term.

In such a pursuit, it is noted that in some cases (e.g. change of shipowner at the last stage of newbuilding, or when the ship is built for speculation), the date of the Protocol of Delivery and Acceptance signed by both the Builder and Owner could be quite later than the completion date (the year, month and day) of the initial survey (that is entered on the relevant certificates), which may result in request for application of additional mandatory requirements of SOLAS and MARPOL Conventions which may enter into force between these dates.

Therefore, in such cases, as far as the technical requirements of SOLAS/MARPOL Conventions are concerned, it should be more appropriate and reasonable to use the completion date (the year, month and day) of the initial survey that is entered on the relevant certificates rather than the date of the Protocol of Delivery and Acceptance signed by both the Builder and Owner to determine the application of mandatory requirement of SOLAS and MARPOL Conventions.

Thus, from the perspective of determining the application of mandatory requirements of SOLAS and MARPOL Conventions, UI SC256 and UI MPC100 were proposed and agreed within IACS.

6. Attachments if any

None

UI MPC101 "Supplement to the International Air Pollution Prevention (IAPP) Certificate – Section 2.3"

Summary

The Corr.1 of UI MPC 101 is updated to align with paragraph 3.2 of MSC/MEPC.5-Circ.6.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2020)	18 September 2020	-
Rev.1 (July 2020)	07 July 2020	1 March 2020
New (July 2012)	18 July 2012	1 January 2013

- **Corr.1 (Sep 2020)**

1 Origin of Change:

☑ Suggestion by IACS member
☑ Based on IMO Instrument, i.e. MSC/MEPC.5-Circ.6, Guidance on the Timing of Replacement of Existing Certificates by the Certificates Issued After the Entry Into Force of Amendments to Certificates in IMO Instruments

2 Main Reason for Change:

To update the UI to align with paragraph 3.2 of MSC/MEPC.5-Circ.6 which states that "in cases where the ship has to comply with new requirements, the certificate (and its supplement, if any) is re-issued at the opportunity of the survey specified with the new requirement occurring after the date of entry into force of the amendments".

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Environmental Panel reviewed the discussion on the application date of Revision 1 of UI MPC 101 and the statement made by IACS concerning the opportunity of the survey after the enforcement of Resolution MEPC.305(73) at MEPC74. Recognising that paragraph 3.2 of MSC/MEPC.5-Circ.6 provides a common practice, the Environmental Panel agreed the UI MPC 101 should be modified to reflect the alignment with MSC/MEPC.5-Circ.6.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 16 July 2019 (Made by: A Member)
Panel Approval: 27 August 2020 (Ref: PE20025)
GPG Approval: 18 September 2020 (Ref: 19273_IGi)

- **Rev.1 (July 2020)**

1 Origin of Change:

☑ Suggestion by IACS member
☑ Based on IMO Regulation, i.e. Resolution MEPC.305(73), Amendments to regulation 14 of MARPOL Annex VI and the form of the supplement to the IAPP certificate

2 Main Reason for Change:

To update the UI to reflect the Resolution MEPC.305(73), i.e. Amendments to regulation 14 of MARPOL Annex VI and the form of the supplement to the IAPP certificate, adopted at MEPC 73rd session.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Environmental Panel has conducted a review of all IACS Resolutions responsible to the panel. As a result, the panel agreed that the UI MPC 101 should be amended to reflect amendment on the form of the supplement to the IAPP certificate as per Resolution MEPC.305(73).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Panel Approval: 14 October 2019 (Ref: PE19019b)
GPG Approval: 07 July 2020 (Ref: 19273_IGe)

- **New (July 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member
☑ Based on IMO Regulation (MARPOL Annex VI Regulation 8, and MEPC.194(61) and the decision of MEPC 62 (MEPC 62/24))

.2 Main Reason for Change:

To provide a reasonable means to complete Section 2.3 of the Supplement to the IAPP Certificate without doing so repetitively as each time the entry into force date for the new fuel oil sulphur limit requirement occurs.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

It was identified by IACS that there was a possibility that it could be interpreted that section 2.3 of the Supplement requires that section 2.3 is to be completed at the time the IAPP Certificate is issued on the basis of the sulphur content of the fuel oils used as documented by the bunker delivery notes which are retained on board as required under regulation 18.5 of MARPOL Annex VI, as amended.

However, annotating section 2.3 of the Supplement as per the above will lead to situations that do not accurately reflect the current or future means by which the ship intends to operate to comply with the provisions in MARPOL Annex VI either when inside/outside an ECA (the Supplement having been completed when the ship was outside/inside an ECA) or when lower sulphur limits enter into force.

The UI was therefore developed to avoid the scenario described above and takes into account the operation of the ship subsequent to onboard surveys. Accordingly, the relevant boxes can be completed prior to the entry into force of the particular requirement. This alleviates the Supplement from being reissued each time the fuel oil sulphur limit requirement changes.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *December 2009 made by: a Member*
Panel Approval: *July 2012 by: Statutory panel*
GPG Approval: *18 July 2012 (Ref: 12111_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC101:

Annex 1. **TB for New (July 2012)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (July 2020)**

See separate TB document in Annex 2.

◄▼►

Note: There is no separate Technical Background (TB) document available for Rev.1 Corr.1 (Sep 2020).

Technical Background for UI MPC101 New, July 2012

1. Scope and objectives

The UI provides a reasonable means to complete Section 2.3 of the Supplement to the IAPP Certificate.

2. Engineering background for technical basis and rationale

Not applicable

3. Source / derivation of the proposed IACS Resolution

MARPOL VI, Reg.8, MEPC.1/Circ.757; resolutions A.997(25), MEPC.180(59), MEPC.181(59) and the decision as per MEPC 62/24.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

A discussion took place on the literal reading of section 2.3 of the Supplement which requires that section 2.3 is to be completed at the time the IAPP Certificate is issued on the basis of the sulphur content of the fuel oils used as documented by the bunker delivery notes which are retained on board versus the practicality of doing so each time the entry into force date for the new fuel oil sulphur limit requirement occurs.

6. Attachments if any

None

Annex 2 Technical Background (TB) document for Rev.1 (July 2020)

1. Scope and objectives

This version brings the IACS UI in line with the Resolution MEPC.305(73), i.e. Amendments to regulation 14 of MARPOL Annex VI and the form of the supplement to the IAPP certificate.

2. Engineering background for technical basis and rationale

The panel agreed that the UI MPC 101 should be amended to reflect Resolution MEPC.305(73) and following IACS intervention reflected in the report of MEPC 74.

QUOTE (Report of MEPC 74)
5.28 The Committee noted an intervention by the observer from IACS concerning the timing of renewal of the IAPP Certificate as a consequence of amendments to the Supplement to the IAPP Certificate adopted by resolution MEPC.305(73) in October 2018 which were expected to enter into force on 1 March 2020. The observer from IACS stated that, pursuant to paragraph 3.2 of MSC-MEPC.5/Circ.6, the certificate was not required to be renewed until the renewal survey and Parties to MARPOL Annex VI should notify IACS members if they wanted to have certificates issued earlier. As requested, the statement by the observer from IACS is set out in annex 27.
UNQUOTE

3. Source / derivation of the proposed IACS Resolution

MEPC.305(73)

4. Summary of Changes intended for the revised Resolution:

Refer to the Rev.1 (Jun 2020) underline version.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI MPC 103 "Identical Replacement Engines (MARPOL Annex VI Regulation 13)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (Jan 2013)	24 January 2013	1 January 2014

- **NEW (Jan 2013)**

.1 Origin for Change:

☒ Request by non-IACS entity – IMO, BLG 16 re application of MARPOL Annex VI reg 13.1.1.2 and (by application of the converse) reg 13.2.2

Reg 13.1.1.2 "each marine diesel engine with a power output of more than 130 kW which undergoes a major conversion on or after 1 January 2000 except when demonstrated to the satisfaction of the Administration that such engine is an identical replacement to the engine which it is replacing and is otherwise not covered under paragraph 1.1.1 of this regulation"

Reg 13.2.2 "For a major conversion involving the replacement of a marine diesel engine with a non-identical marine diesel engine or the installation of an additional marine diesel engine, the standards in this regulation in force at the time of the replacement or addition of the engine shall apply. ….."

.2 Main Reason for Change:

MARPOL Annex VI Regulation 13 provides that where replacement engines are 'identical' their NOx certification status (not required to be certified / Tier I / Tier II / Tier III) will continue to be set by the ship construction date whereas if 'non-identical' their status will instead be set by the date of installation of that engine.

Primarily this provision in respect of 'identical' engines was to cover those engines which are serviced ashore (rather than onboard) and hence operate on a pool basis. Nevertheless there is potential that an 'identical' replacement engine may be one purchased to cover such instances as the total write-off of an existing engine.

However what constitutes 'identical' in this context is not defined in either the regulation or the NOx Technical Code 2008 but could be subject to any number of interpretations.

Regulation 13.1.1.2 gives that it shall be '… demonstrated to the satisfaction of the Administration …' that the replacing engine is identical to the replaced engine but without giving guidance on what is essentially a technical point but one with potentially considerable cost implications.

Given that it is essential that ship owners, engine builders / installers and Administrations / IACS Members acting as Recognised Organisations on their behalf all have the same understanding of what constitutes an 'identical engine' given engine production lead times and engine costs (together with the costs / delay / disputes which would occur should an engine which was intended to be identical was deemed to be in fact non-identical). Furthermore it needs to be clear to port State control that engines which have clearly been recently replaced but which do not have NOx certification (or have NOx certification to a Tier appropriate to a date prior to the date of replacement) that that replacement has been undertaken in full accordance with the provisions of reg 13.

In developing this UI it was recognised that an identical engine is to be one which is not only the 'same' but one which has identical NOx emissions in so far as that could be established without emission testing – that is an engine having the same NOx influencing factors as that of the engine being replaced which could be readily verified in a pragmatic manner without dismantling or specialist equipment or knowledge.

Taking the range of scenarios which may lie behind the need to replace an engine and the provisions of reg 13 it was necessary that the UI address cases where the to be replaced engine has an EIAPP Cert. and also those instances where that engine does not have an EIAPP Cert (i.e. installed on a ship constructed before 1.1 2000). In the later case such engines are effectively undefined in terms of NOx emissions since there is not the Technical File (as in the case of EIAPP certified engines) which defines the engine and lists its NOx critical components and settings.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The need to define what constitutes an identical engine was identified during the work of the Correspondence Group relating to Reg 13 and NOx Technical Code matters which operated between BLG 15 and BLG 16. At BLG 16 IACS was asked to provide a definition of this term. The development of this UI was undertaken within the Statutory Panel through a series of iterations from the original proposal.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: March 2012 made by a Member
Panel Approval: 20 December 2012 by Statutory Panel
GPG Approval: 24 January 2013 (Ref: 12234_IGb)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (January 2013)**

See separate TB document in Annex 1.

Technical Background for UI MPC 103 New, January 2013

1. Scope and objectives

The UI provides a common basis by which to assess whether or not a replacement engine is identical to the engine being replaced. In this instance identical relates specifically to the NOx emission characteristic of the engine and therefore needs to cover more than the superficial aspects of engines which appear to be identical.

Due to the potentially significant delivery, cost and ship operation consequences should there be differences of interpretation of this term it is necessary that all parties who may be involved have a clear understanding of this point. This is particularly necessary as the initial actions relating to an engine replacement will be the commercial aspects of ordering the engine from the supplier well in advance of any attendance onboard by the Administration / RO to update the ship's IAPP Cert covering that replacement.

2. Engineering background for technical basis and rationale

The NOx emissions from an engine are a function of a number of different factors; rating, use / test cycle together with detailed aspects of the fuel system, charge air and combustion chamber components and associated settings.

For engines which have approved Technical Files the necessary details – both as regards the base engine and the NOx critical aspects are already available. However in the case of engines potentially exempted from NOx controls by reg 13.1.1.2 it is necessary that the definition particularly addresses engines which do not have approved Technical Files. However in developing the criterion by which this identicality is assessed needed to be such that it does not require extensive dismantling or specialist equipment or knowledge.

3. Source / derivation of the proposed IACS Resolution

NOx Technical Code 2008 Chapter 4 and Appendix VII

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The proposed UI is intended to ensure that identical replacement engines are not only superficially identical (i.e. they appear the same) but that in terms of the factors which affect NOx emissions they are identical in so far as that can be readily established.

However it could be argued that any replacement engine (ie one of a quite different design, power and speed ratings etc.) should be acceptable provided that its NOx emission value is no higher than that of the engine it is replacing. The arguments against this is that such a wide interpretation of what constitutes an identical engine would not represent a 'direct replacement' and that, for engines not certified to the NOx Technical Code (as potentially exempted from the reg 13 requirements by virtue

of the date of ship construction), there is not the established NOx emission value by which to make this assessment.

Within the Statutory Panel the discussion has been on the need to avoid any vague or generalised statements when defining identical in terms of NOx emissions while at the same time avoiding over detailed and complex assessments of the various NOx critical elements.

6. Attachments if any

None

UI MPC 104 "Keel Laying Date for Fibre-Reinforced Plastic (FRP) Craft"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2014)	10 January 2014	-
NEW (Mar 2013)	19 March 2013	1 January 2014

- **Corr. 1 (Jan 2014)**

.1 Origin of Change:

☒ Suggestion by an IACS member

.2 Main Reason for Change:

To insert an important missing word into the text of the UI.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Suggestion from a Statutory Panel member was agreed by correspondence.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 09 Dec 2013 Made by a Statutory Panel member
GPG Approval: 10 January 2014 (Ref: 13047_IGg)

- **New (Mar 2013)**

.1 Origin for Change:

☒ Suggestion by IACS members

.2 Main Reason for Change:

With the introduction of the NOx Tier I/II/III requirements and other emerging statutory legislation, it is necessary to agree a consistent interpretation for the term "the keels of which are laid or which are at a similar stage of construction" for Fibre-Reinforced Plastic (FRP) Craft.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: November 2012 made by Statutory Panel
Panel Approval: 10 February 2013 by Statutory Panel
GPG Approval: 19 March 2013 (Ref: 13047_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (March 2013)**

See separate TB document in Annex 1.

****

Note: No Technical Background (TB) document has been prepared for Corr.1 (Jan 2014).

Technical Background for UI MPC 104 New, March 2013

1. Scope and objectives

This UI is intended to define a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" when applied to Fibre-Reinforced Plastic (FRP) Craft.

2. Engineering background for technical basis and rationale

The Keel Laying date can be difficult to define accurately when FRP Craft are considered. This has not caused a great problem in the past as FRP vessels are rare.

However MARPOL Annex VI uses the term "ship constructed," particularly in relation to NOx Tier I/II/III requirements (noting that Tier III applies to a marine diesel engine that is installed on a ship constructed on or after 1 January 2016).

For most composite vessels it would require the application of the latter, i.e. that the mass of 1% of the structural material is estimated from the laminate schedule and agreed between the Builder and the Surveyor. However, this is not a practical approach.

It was considered necessary therefore to agree a consistent interpretation for the term "*the keels of which are laid or which are at a similar stage of construction*" for Fibre-Reinforced Plastic (FRP) Craft.

3. Source / derivation of the proposed IACS Resolution

IMO Conventions and Codes (Performance Standards, Technical Standards, Resolutions and Circulars)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The initial suggestion was for the commencement of keel laying to be when the gel coat and back up reinforcements are laid and at the point of commencement of the main structural laminate.

Therefore where there is no gel coat then the structural laminate is the first item laid in the mould so that is the start of the Keel Layup.

To simplify this it was agreed that the start of Keel Layup is when the main structural laminate commences which in most cases will be after the gel coat is applied. Therefore the definition could bypass the gel coat stage because that is "equivalent" to a paint system on the outside of a steel hull.

A definition using the words "hull resin application" was rejected as it did not suit vessels that use a resin infusion technique - several weeks of loading the hull mould

with dry reinforcements may take place and the proposal would be the date when the hull is actually infused.

To satisfy all scenarios it was concluded that the start of Keel Layup is the “commencement of laying the main structural reinforcements of the hull". This definition suits moulding in a female mould or on a male plug. This definition excludes any gel coat and the associated gel coat back up reinforcements (i.e. typically light weight powder bound CSM back up layer(s)).

6. Attachments if any

None

UI MPC105 "Gaseous emissions calculation of marine diesel engines fitted with selective catalytic reduction (SCR) systems"

Summary

UI MPC105 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2013)	22 November 2013	1 January 2015

- **Deleted (Nov 2019)**

UI MPC105 was deleted in November 2019.

- **New (Nov 2013)**

.1 Origin for Change:

☑ Suggestion by IACS members

.2 Main Reason for Change:

Resolution MEPC.198(62) paragraph 5.2.1 states:

"The calculation method in section 5.12 of the NTC 2008 is also applied to engine systems fitted with SCR. No allowance is made for the reductant solution injected into the exhaust gas stream in respect of its effect on exhaust gas mass flow rate calculation (appendix VI) or dry/wet correction factor (equation (11), paragraph 5.12.3.2.2 of the NTC 2008). The NOx correction factor for humidity and temperature (equations (16) or (17), paragraphs 5.12.4.5 and 5.12.4.6, respectively, of the NTC 2008) should not be applied."

The above gaseous emissions calculation method was given in chapter 5 of Resolution MEPC.198(62) for Scheme A. In fact, the calculation method should be considered as general principles to be applied in all instances of engine and SCR certification.

In order for marine diesel engines fitted with SCR systems be surveyed on a common basis for compliance with the annex requirements, it is necessary to clarify the gaseous emissions calculation method given in Resolution MEPC.198(62) paragraph 5.2.1 apply to all engine and SCR certifications.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The United States of America submitted Interim Report of the Correspondence Group (CG) on Assessment of Technological Developments to Implement the Tier III NOX Emission Standards under MARPOL Annex VI in MEPC64/4/16. The interim report was reviewed and comments were provided by the IACS representative to the CG.

The SCR certification issue was raised within the Machinery Panel during discussions on the comments of the IACS representative to the CG to MEPC64/4/16. And after several rounds of intra-Panel correspondence, the Panel agreed to draft an IACS UI.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: October 2012 made by a member of Machinery Panel
Panel Approval: 06 September 2013
GPG Approval: 22 November 2013 (Ref: 13076_IGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC105:

Annex 1. **TB for New (Nov 2013)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI MPC105 (New, Nov 2013)

1 Scope and objectives

The UI provides an interpretation or clarification for the gaseous emissions calculation method which could be applied in all instances of certification of marine diesel engines fitted with selective catalytic reduction (SCR) systems.

2 Engineering background for technical basis and rationale

During certification procedure of marine diesel engines fitted with SCR systems, a generic direction is needed to determine the exhaust gas mass flow and constants, such as NOx correction factor.

The effect of the reductant solution injected into the exhaust gas stream was accepted as negligible taking into account the little increase in exhaust gas mass. So the exhaust gas mass flow rate calculation or dry/wet correction factor is NOT amended to take into account the increase in exhaust gas mass flow resulting from the injection of the urea solution.

In the SCR equipped engine the NOx emission after SCR chamber is much more dependent on SCR design and operation rather than intake air conditions. So the NOx correction factor is NOT applied to marine diesel engines fitted with SCR systems.

The above conclusions are appropriate for all marine diesel engines fitted with SCR systems and the gaseous emissions calculation method can be applied to all SCR certification.

3 Source / derivation of the proposed IACS Resolution

Resolution MEPC.198(62) paragraph 5.2.1:

“The calculation method in section 5.12 of the NTC 2008 is also applied to engine systems fitted with SCR. No allowance is made for the reductant solution injected into the exhaust gas stream in respect of its effect on exhaust gas mass flow rate calculation (appendix VI) or dry/wet correction factor (equation (11), paragraph 5.12.3.2.2 of the NTC 2008). The NOx correction factor for humidity and temperature (equations (16) or (17), paragraphs 5.12.4.5 and 5.12.4.6, respectively, of the NTC 2008) should not be applied.”

4 Summary of Changes intended for the revised Resolution

None

5 Points of discussions or possible discussions

The question is should the gaseous emissions calculation method given for Scheme A be the usual approach to all SCR certification – not just where the Administration agrees that the Guidelines should be applied.

There is no argument about the question and a consistent agreement is reached in the machinery Panel to develop a UI to clarify the applicability of the gaseous emissions calculation method.

6 Attachments if any

None

UI MPC106 "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NOx Technical Code 2008)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2015)	10 July 2015	1 July 2016

- **NEW (July 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To establish a unified interpretation with regard to the EIAPP certification for engines manufactured by licensor and licensees under the group/family concept.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Machinery Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

- Original Proposal: Form A submitted to GPG under 12164_PMa dated 15 Sept. 2012 made by Machinery Panel
- Panel Approval: 2 June 2015
- GPG Approval: 10 July 2015 (Ref:12164_IGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC106:

Annex 1. **TB for New (July 2015)**

See separate TB document in Annex 1.

◄▲►

Annex 1 Technical Background (TB) for UI MPC106 (New, July 2015)

1. Scope and objectives

The UI is intended to establish a unified interpretation with regard to the EIAPP certification for engines manufactured by licensor and licensees under the group/family concept. Reference is made also to UR M44 where the involvement of the engine designer/licensor and engine builder/licensee in the certification of engines is addressed.

2. Engineering background for technical basis and rationale

N/A

3. Source / derivation of the proposed IACS Resolution

NOx Technical Code 2008 Chapter 4

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

One member raised issues concerning application of engine group/family concept for license produced diesel engine at the time of EIAPP certification.

So far, in general cases, each licensee who is an applicant for the EIAPP certification and responsible for the NOx emission compliance of the engine has established the engine group/family. The engine group/family certification so far was only valid for the specific licensee production.

Recently, an engine licensor asked some IACS members to establish an engine group/family whose certification is valid for both the licensee and the licensor. And, a member received a request from the licensor to clarify the necessity of production conformity testing including NOx emission test because different requests were made between the IACS members.

For unified implementation of EIAPP certification, a UI regarding application of group/family concept for the license produced diesel engines including necessity of the production conformity testing has been created, reviewing possibility of establishment of the engine group/family which is applicable for the licensee and the licensor.

6. Attachments if any

N/A

UI MPC107 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.1.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of New (Nov 2015)	23 May 2016	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Withdrawal of New (Nov 2015)**

UI MPC107 (New Nov 2015) was not supported by PPR3 thus on 23 May 2016 GPG agreed to withdraw UI MPC107 (New Nov 2015) and consider submitting a new IACS paper to MEPC70.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify the applicability of the Scheme B option for the approval of SCR system and provide guidance to assist in assessing when applications to use Scheme B should be accepted.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team concluded that Scheme B is applicable when the combined engine/SCR systems can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC107:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC107 (New Nov 2015)

1. Scope and objectives

To clarify the applicability of the Scheme B option for the approval of SCR and provide guidance to assist in assessing where applications to use MEPC.198(62) Scheme B should be accepted.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.1.1 states:

3.1.1. Engine systems fitted with SCR should be certified in accordance with chapter 2 of the NTC 2008. In cases where combined engine/SCR systems can neither be tested on a test bed due to their size, construction and other restrictions nor an on board test can be performed fully complying with the requirements of Chapter 5 of the NTC 2008 the procedures provided by Scheme B of these guidelines should be applied.

The project team interprets this as meaning that an applicant may request certification in accordance with Scheme B where the combined engine/SCR system can neither be tested on a test bed due to size, construction and other restrictions nor on-board as allowed by 2.2.4.1 of the NTC 2008. The project team found that whilst this is widely accepted as a general principle by the engine builders there are different opinions as to what would constitute not being able to test the combined engine/SCR system on a test bed. At least one engine builder argued that they have a right to use Scheme B as a default but after discussions accepted the project team's argument. However, the project team also accepts that Scheme B is an option and that it is a useful tool for industry where Scheme A is not suitable.

There have been some arguments that since the engine and SCR system will generally be manufactured by different companies that this is itself an argument that they cannot be tested together. This is no different to engine turbo chargers for example being supplied by third parties and the project team agreed that the fact that an engine and SCR system may be manufactured by different entities is not in itself a justification for application of Scheme B.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team concluded that Scheme B is applicable where the combined engine/SCR systems can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted where:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR systems due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR system
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and where other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and where acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC108 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.3)"

Summary

UI MPC108 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC108 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of design features of SCR specific components in the exhaust duct from the engine exhaust manifold to the SCR chamber are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team developed a list of parameters which may need to be provided in the Technical File. The list is not exhaustive and since it is possible not all will be applicable the list is provided in terms of “may include but not be limited to” rather than “is to include”.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC108:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC108 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of design features of SCR specific components in the exhaust duct from the engine exhaust manifold to the SCR chamber are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198 (62), Section 3.2.1.3 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.3 Design features of SCR specific components in the exhaust duct from the engine exhaust manifold to the SCR chamber;

The exhaust duct design and configuration and any fixtures within the exhaust duct will affect the performance of the SCR. SCR performance is dependent upon satisfactory dispersion of reductant in the exhaust gas stream and SCR performance is sensitive to changes made to the exhaust duct. This sensitivity however is mainly in the area between the point of reductant injection and the SCR chamber therefore it is possible for the applicant to define configuration and design controls for the exhaust duct which only apply to that section of the exhaust between the point of reductant injection and SCR chamber. This makes it possible for the Technical File to be limited to a relatively short section of exhaust duct, avoiding the significant difficulty in that the design and configuration of the duct between the engine and SCR may not be known at the time of engine certification.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team developed a list of parameters which may need to be provided in the Technical File. The list is not exhaustive and since it is possible not all will be applicable the list is provided in terms of “may include but not be limited to” rather than “is to include”.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project developed the following list of exhaust duct parameters which may affect NO_x emissions and which are to be included in the Technical File where applicable:

a) Limiting ranges for physical parameters such as the space velocity (SV), area velocity (AV), linear velocity (LV), cells per square inch (CPSI) or metric equivalent and exhaust pressure, as applicable
b) Any restrictions specified by the applicant relating to exhaust duct configuration/design, including the position and number of bends in exhaust duct along with orientation and geometry, exhaust duct changes of diameter and arrangements fitted to manipulate exhaust flow, where applicable
c) Minimum distance between reductant injection point(s) and SCR chamber
d) Position of reductant injection equipment within duct and the direction of reductant injection, e.g. counter flow or parallel flow
e) Reductant mixing arrangements
f) Reductant lances, nozzles, atomising arrangement
g) Inlet plenum design, top entry or bottom entry
h) SCR By-pass arrangements, when fitted

When a by-pass is fitted then the by-pass valve and its control arrangements are to be considered NO_x critical components.

When it is proposed to use an integrated reductant injection and SCR chamber arrangement which is supplied as a packaged item to be fitted into an exhaust duct then the parameters of such a unit which may affect NO_x emissions are to be specified by the applicant.

6. Attachments if any

N/A.

UI MPC109 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.4)"

Summary

UI MPC109 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC109 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of the design and arrangement of catalyst blocks are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team developed a list of parameters which may need to be provided in the Technical File. The list is not exhaustive and since it is possible not all will be applicable the list is provided in terms of “may include but not be limited to” rather than “is to include”.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November (Ref: 14059_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC109:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC109 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of the design and arrangement of catalyst blocks are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.4 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.4 catalyst block specification and arrangement in the SCR chamber;

The performance of an SCR will be dependent upon the design of catalyst block and how the blocks are arranged in the chamber. This will include details such as the catalyst material, the shape of blocks, gas flow channels in the blocks, soot blowing arrangements and the sealing arrangement between blocks and the SCR chamber. A relatively small amount of leakage of exhaust gas between the blocks and chamber can have a significant effect on SCR performance. Additionally the team also considered the health and safety risks of entering the SCR chamber and consider that where possible surveys should be a survey of a spare part which in conjunction with the initial survey and records of catalyst blocks in the record book of engine parameters can provide assurance that the correct blocks are used without exposing persons to the potentially hazardous environment within the SCR chamber.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team developed a list of parameters which may need to be provided in the Technical File. The list is not exhaustive and since it is possible not all will be applicable the list is provided in terms of “may include but not be limited to” rather than “is to include”.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team developed the following list of catalyst block parameters which are to be included within the Technical File:

a) Installation of blocks within the SCR chamber, including the number of blocks, number of layers and sealing arrangements between blocks and SCR chamber casing and frame to prevent exhaust gas slip.
b) Catalyst block geometry, including the CPSI (cells per square inch) or metric equivalent.
c) Catalyst material, this may be identified by means of a part number or specification number.
d) Arrangement of soot blowing equipment.
e) Inspection and access arrangements.
f) Any baffle plates or other devices installed within the SCR chamber for exhaust gas and reductant flow distribution.

The SCR block needs to be easily identified as being of the type in the Technical File. This may be by stamping the catalyst block casing with an IMO number where practical.

6. Attachments if any

N/A.

UI MPC110 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.6)"

Summary

UI MPC110 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC110 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of SCR cross parameters are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November (Ref: 14059_IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC110:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC110 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of SCR cross parameters are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198 (62), Section 3.2.1.6 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.6 Cross-unit parameters: allowable pressure loss (Δp) between inlet and outlet of SCR chamber and in the exhaust duct caused by SCR components;

Elements of the SCR system upstream and/or downstream of the SCR chamber may affect the allowable pressure loss therefore the allowable pressure loss is to be based on the entire SCR system.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198 (62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The allowable pressure loss is to be based upon proper operation of the engine without SCR.

6. Attachments if any

N/A.

UI MPC111 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.7)"

Summary

UI MPC111 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC111 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of aspects related to fuel oil quality which may affect continued compliance of the engine with the applicable NO_x emission limit.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198 (62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC111:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC111 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of aspects related to fuel oil quality which may affect continued compliance of the engine with the applicable NO_x emission limit.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.7 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

7 aspects related to the fuel oil quality resulting in continued compliance of the engine with the applicable NO_x emission limit;

The performance of the SCR may be affected by fuel composition and certain potential contaminants found in marine fuels may significantly reduce the NO_x reducing capacity of the SCR. This may result in the combined engine/SCR systems no longer complies with the applicable NO_x emission limit. In extreme cases certain contaminants such as alkaline metals may poison the catalyst in a way which cannot be reversed, necessitating replacement of the catalyst blocks.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that the engine technical file is to include details of any such fuel oil quality aspects. The project team has developed the following list, this list is not exhaustive:

a) The maximum allowable sulphur content of fuel which can be combusted, where applicable
b) Any restrictions applicable to the composition of fuel other than sulphur, such as ash, vanadium, where applicable
c) Guidance on fuel contaminants which may poison active material under operational conditions, such as alkaline metals

6. Attachments if any

N/A.

UI MPC 112: "2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines Fitted with Selective Catalytic Reduction (SCR) Systems

(Resolution MEPC.291(71), Paragraph 3.2.8)"

Summary

This UI provides a unified interpretation of terms contained in MEPC.291(71), Paragraph 3.2.8, in particular NOx measurement devices incorporated in a SCR feedback or feed forward reductant control system, criteria for catalyst block exchange, periodical spot checks and strategies for monitoring the catalyst condition/degradation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Nov 2015)	11 November 2015	1 July 2016

- **Rev.1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to update UI as a consequence of the adoption of Resolution MEPC.291(71) which superseded Resolution MEPC.198(62) as amended by MEPC.260(68).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev. 1 agreed by correspondence under Machinery Panel task PM17906

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: February 2019 (Proposal by Panel member)
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (Nov 2015)

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of factors related to the deterioration rate of SCR performance to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 112:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Nov 2019)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI MPC112 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of factors related to the deterioration rate of SCR performance to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198 (62), Section 3.2.1.8 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.8 Factors related to the deterioration rate of SCR performance, e.g., exchange condition for SCR blocks and recommended exchange time of SCR blocks;

The SCR blocks will have a finite life and will deteriorate in service. The rate of deterioration will be sensitive to a range of variables (e.g. fouling, plugging, operating profile of engine, block temperature in service). The Technical File is to include details of the factors which will affect this deterioration rate and recommendations and guidance for when SCR blocks will need to be replaced.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

If a feedback reductant control strategy is adopted, then this will require NOx monitoring to provide the feedback loop. This monitoring will indicate deterioration of SCR block performance and so can be used to monitor catalyst condition/degradation.

Where a feed forward control reductant control strategy is used then there may be no NOx monitoring from which to monitor SCR block performance. In such cases the

applicant will have to provide information on how SCR block performance will be assessed. This information needs to include guidance for:

a) the expected deterioration curve under expected operating conditions
b) the life of catalyst under expected operating conditions
c) factors which can influence catalyst condition
d) guidance on how to assess catalyst condition and activity spot checks should be undertaken and records which are to be made available for inspection during annual survey, intermediate and renewal surveys

The technical file should also include guidance to assist the crew in recovering from SCR fouling and poisoning mechanisms where recovery from such fouling and poisoning can be achieved without exchanging catalyst blocks or applying specialized re-activation techniques.

6. Attachments if any

N/A.

Technical Background (TB) document for UI MPC 112 (Rev.1, Nov 2019)

1 Scope and objectives

In light of the adoption of 2017 Guidelines (Resolution MEPC.291(71)), IACS UI MPC was reviewed for possible revisions. The subject UI MPC 112 revision aims to update the UI considering items that have been changed compared to 2011 Guidelines.

Additionally, some aspects of the issues covered by paragraph 3.2.8.1, 3.2.8.2.3 and 3.2.8.3 of the 2017 Guideline are considered to be in need of further clarification.

2 Engineering background for technical basis and rationale

Editorial adjustments to paragraph numbers in line with 2017 Guidelines (Paragraph 3.2.1. has been renumbered as 3.2.8 with subparagraphs 1. – 3.).

Recent experience with certification of engine+SCR systems has revealed that there is a need for further and more detailed interpretation of some aspects of these paragraphs in the 2017 Guideline, in particular in relation to NOx measurement devices incorporated in a SCR feedback or feed forward reductant control system, criteria for catalyst block exchange, periodical spot checks and strategies for monitoring the catalyst condition/degradation.

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

With respect to 3.2.8.1:

- The use of a NOx measurement devices for monitoring the deterioration rate is further clarified.
- Allowances for assessment of reduction efficiency with respect to the onboard verification procedure are defined.
- With respect to exchange criteria of catalyst blocks, the use of alarm and failure codes of the SCR control system is further specified.

With respect to 3.2.8.2.3:

- Additional guidance on the specification of the procedures for periodical spot checks is given.

With respect to 3.2.8.3:

- Interpretation that alternative monitoring strategies may be accepted only if the entire SCR system is covered by this monitoring.

5 Points of discussions or possible discussions

With regard to paragraph 3.2.8.2.3 there was some discussion about the requirements for periodical spot checks. One member held the view that it should be stated explicitly that spot checks are mandatory where a feed forward reductant control strategy is adopted without a NOx measurement device, however, the Panel majority preferred the current wording in the UI.

6 Attachments if any

N/A

UI MPC113 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.9)"

Summary

UI MPC113 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC113 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of factors related to the controlling arrangements and settings of the SCR system, e.g., model, specification of control device, which are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes
None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC113:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC113 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of factors related to the controlling arrangements and settings of the SCR system, e.g., model, specification of control device, which are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.9 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.9 Controlling arrangements and settings of the SCR system, e.g., model, specification of control device;

The project team have considered what aspects of the control devices and settings need to be provided in the Technical File. This is to include, but not be limited to:

a) Crew guidance for adjusting control parameters, where allowed
b) analyser zero and span check procedures and the periodicity of such checks, as applicable
c) analyser calibration gases to be carried on-board as applicable
d) The reductant injection control strategy, whether this is a feed forward reductant injection control or feedback reductant injection control strategy
e) Instrumentation and sensors which form part of the SCR control arrangement, as applicable
f) Details of how access to the system configuration programs and data of programmable logic controllers (PLC) and central processing units (CPU) is restricted to prevent unauthorised alteration, where applicable
g) Where gas analysers are to be used, including for feedback control or for feed-forward control, the following details are to be included as a minimum:
    i. Type/model (identification number)
    ii. Calibration, zero and span check procedures and the periodicity of such checks
    iii. Calibration gases to be carried on-board
    iv. Maintenance and/or exchange requirements

When the combined engine/SCR system has different operating modes, such as separate modes for Tier II and Tier III compliance, then details of the control philosophy for selecting different modes of operation and for recording the mode of operation are to be in the Technical File.

3. Source/derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team initially considered software conformity but it was agreed that what was needed was controls to stop unauthorised tampering with control settings where these need to be secured.

6. Attachments if any

N/A.

UI MPC114 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.2.1.10)"

Summary

UI MPC114 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC114 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of measures to reduce ammonia slip are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings of the PT during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes
None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC114:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC114 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of measures to reduce ammonia slip are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.10 states:

3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.10 measures to minimize reductant slip;

SCR systems use a reductant which reacts on the surface of the catalyst, this reductant may be stored on-board as urea however this urea releases ammonia after injection and it is ammonia which reacts on the surface of the catalyst. Unreacted ammonia is released to atmosphere via the funnel as ammonia slip. There is no emission limit value for ammonia slip but the guidelines require the applicant details of measure of how the ammonia slip will be minimised.

In the absence of an emission limit or details in the guidance the project team considers that this should include instruction on when reductant injection should commence since it is recognised that injecting reductant into the SCR chamber before the catalyst blocks are at their operating temperature (typically 300°C) will result in high ammonia slip. The reductant injection permissive should consider catalyst operating temperature and not only inlet exhaust gas temperature since there will be a period of time between the exhaust gas inlet temperature reaching the required temperature and the catalyst blocks reaching their operating temperature. This may be demonstrated by the applicant supplying a minimum operating temperature downstream of the SCR.

The applicant is to provide details of measures to minimise ammonia slip after the SCR, along with guidance for checking at annual, intermediate and renewal surveys.

When ammonia measurement is fitted to measure ammonia concentration in the exhaust duct downstream of the SCR, or when an equivalent means such monitoring of other gaseous emissions such as NO_x in conjunction with system control reference values can effectively provide a means of measuring ammonia slip, this will be accepted as the means of checking that measures to minimise ammonia slip are being effectively implemented.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

There is no emission limit value for ammonia slip. The project team did consider proposing an emission limit value however it was felt that this was beyond the scope of the project and a matter for IMO.

6. Attachments if any

N/A.

UI MPC 115: "2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines Fitted With Selective Catalytic Reduction (SCR) Systems

(Resolution MEPC.291(71), Paragraph 3.2.11)"

Summary

This UI provides a unified interpretation of terms contained in MEPC.291(71), Paragraph 3.2.11

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (May 2020)	6 May 2020	-
Rev.1 (Nov 2019)	9 November 2019	1 July 2020
New (Nov 2015)	11 November 2015	1 July 2016

- **Corr.1 (May 2020)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to improve compatibility of this UI with UI MPC112(Rev.1), in particular, for the provisions applied to the NOx measurement device.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal:	6 January 2020
Panel Approval:	15 April 2020 (Ref: 17075_PMj)
GPG Approval:	6 May 2020 (Ref: 17075_IGy)

- **Rev.1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to update UI as a consequence of the adoption of Resolution MEPC.291(71) which superseded Resolution MEPC.198(62) as amended by MEPC.260(68).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: 11 October 2017
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (Nov 2015)

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what information and details of the parameter checks and verification procedure with regard to the application of the parameter check method as given in paragraph 2.3.6 of the NTC 2008 and in appendix VII, paragraph 2 of the NTC 2008 should be taken into account in assessing the adequacy of a proposed procedure with analysers meeting or exceeding the requirements of appendix III of the NTC 2008 are to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.
The wording in the UI was agreed by the project team and industrial partners.
The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 115:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Nov 2019)**

See separate TB document in Annex 2.

Annex 3. **TB for Corr.1 (May 2020)**

See separate TB document in Annex 3.

Technical Background (TB) document for UI MPC115 (New Nov 2015)

1. Scope and objectives

To clarify what information and details of the parameter checks and verification procedure with regard to the application of the parameter check method as given in paragraph 2.3.6 of the NTC 2008 and in appendix VII, paragraph 2 of the NTC 2008 should be taken into account in assessing the adequacy of a proposed procedure with analysers meeting or exceeding the requirements of appendix III of the NTC 2008 are to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.11 states:
3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.11 parameter check method as the verification procedure: with regard to the application of the parameter check method, requirements given in paragraph 2.3.6 of the NTC 2008 and guidance given in appendix VII, paragraph 2 of the NTC 2008 should be taken into account in assessing the adequacy of a proposed procedure with analysers meeting or exceeding the requirements of appendix III of the NTC 2008;

The parameter check method remains applicable to engines provided with SCR systems for NO_x abatement therefore the Technical File will need to include details of the application of the parameter check method, requirements given in paragraph 2.3.6 of the NTC 2008 and guidance given in appendix VII, paragraph 2 of the NTC 2008 should be taken into account in assessing the adequacy of a proposed procedure with analysers meeting or exceeding the requirements of appendix III of the NTC 2008. The project team agreed that other systems or analysers may be accepted if they yield equivalent results, see paragraph 5.4.2 of the NTC 2008.
NO_x monitoring may be used to demonstrate compliance, measurement of the NO_x reduction rate in accordance with chapter 7 of the guidelines is accepted as demonstrating compliance when analysers meet the requirements of appendix III of the NTC 2008.
Spot check may be taken as an on-board measurement of the NO_x reduction rate in accordance with chapter 7 of the guidelines. Systems using a feed forward reductant control strategy may be fitted with NO_x monitoring devices for the purposes of monitoring catalyst condition and SCR performance even if they are not used as part of the reductant control strategy. Instrumentation used for such spot checks or monitoring is to meet the requirements of Appendix III of the NO_x Technical Code 2008 For systems using feed forward reductant controls without NO_x monitoring the applicant will need to provide details of the relationship between engine load and reductant consumption and the means of checking that reductant flow is appropriate.

The Technical File should include a procedure for maintaining records of reductant consumption and also reductant composition and quality. Records of reductant composition and quality may be based on delivery notes where these delivery notes include reductant concentration and quality parameters. Reductant delivery notes may also be accepted for the purposes of verifying that the system has been operated using reductant. In such cases the reductant delivery notes will need to be made available at annual, intermediate and renewal surveys. Where it is proposed to produce aqueous reductant on-board then the recording system is to consider records of feedstock deliveries and quality.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.
The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

N/A.

6. Attachments if any

N/A.

Technical Background (TB) document for UI MPC 115 (Rev.1, Nov 2019)

1 Scope and objectives

In light of the adoption of 2017 Guidelines (Resolution MEPC.291(71)), IACS UI MPC was reviewed for possible revision. The subject UI revision aims at update of the UI considering items that have been changed compared to 2011 Guidelines.

2 Engineering background for technical basis and rationale

Updated text and point numbers, no substantive changes to the UI.

Point 3.2.1.11 has been renumbered as 3.2.11

Words ‘guidance given in appendix VII, paragraph 2 of the NTC 2008’ has been changed to ‘guidance given in paragraph 2 of appendix VII of the NTC 2008’.

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

Technical Background (TB) document for UI MPC 115 (Corr.1, May 2020)

1 Scope and objectives

After approval of Rev.1 of UI MPC115, Machinery Panel found the need to improve compatibility of this UI with UI MPC112(Rev.1), in particular, for the provisions applied to the NOx measurement device. With this correction, a missing phrase has been added in the third paragraph of interpretation. Considering the need that a corrected version of this UI should be implemented from the same implementation date as that of Rev.1 of this UI MPC115 (i.e. 1 July 2020), it was confirmed that a corrigendum was suitable and Rev.2 should be avoided.

2 Engineering background for technical basis and rationale

This correction was made only for clarification purpose and for harmonization with Rev.1 of UI MPC112.

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC116: "2017 Guidelines Addressing Additional Aspects of the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines Fitted With Selective Catalytic Reduction (SCR) Systems

(Resolution MEPC.291(71), Paragraph 3.2.12)"

Summary

This UI provides a unified interpretation of terms contained in MEPC.291(71), Paragraph 3.2.12

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2019)	9 November	1 July 2020
New (Nov 2015)	11 November 2015	1 July 2016

- **Rev.1 (Nov 2019)**

1 Origin of the UI creation:

☑ Suggestion by IACS members

2 Main Reason for Change:

Need to update UI as a consequence of the adoption of Resolution MEPC.291(71) which superseded Resolution MEPC.198(62) as amended by MEPC.260(68).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original proposal: 11 October 2017
Panel Approval: 9 October 2019 (Ref: PM17906_IMo)
GPG Approval: 9 November 2019 (Ref: 17075_IGo)

• New (Nov 2015)

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify what other parameter(s) specified by the manufacturer to be included within the Technical File.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.
The wording in the UI was agreed by the project team and industrial partners.
The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC 116:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Nov 2019)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI MPC116 (New Nov 2015)

1. Scope and objectives

To clarify what other parameter(s) specified by the manufacturer to be included within the Technical File.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.2.1.12 states:
3.2.1 In addition to the information supplied in paragraph 3.1.3 of these guidelines and items in section 2.4 of the NTC 2008, engine systems fitted with SCR should include the following information in its Technical File:

.12 any other parameter(s) specified by the manufacturer.

The information listed in the other sub sections of 3.2.1 cannot be exhaustive and it is the responsibility of the applicant to declare any information and/or parameters relevant to the Technical File that are not included in 3.2.1.1 – 3.2.1.11.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.
The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

Although this particular UI is somewhat obvious the project team felt it important that this be made explicit.

6. Attachments if any

N/A.

Technical Background (TB) document for UI MPC 116 (Rev.1, Nov 2019)

1 Scope and objectives

In light of the adoption of 2017 Guidelines (Resolution MEPC.291(71)), IACS UI MPC was reviewed for possible revision. The subject UI revision aims at update of the UI considering items that have been changed compared to 2011 Guidelines.

2 Engineering background for technical basis and rationale

Updated text and point numbers, no substantive changes to the UI.

Point 3.2.1.12 has been renumbered as 3.2.12

The word 'manufacturer' has been changed to 'applicant'

3 Source / derivation of the proposed IACS UI

N/A

4 Summary of Changes intended for the revised Resolution

N/A

5 Points of discussions or possible discussions

N/A

6 Attachments if any

N/A

UI MPC117 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 3.5.2)"

Summary

UI MPC117 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC117 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide requirements for pre-certification and the IAPP initial survey where the initial engines produced may not be the parent engine along with clarification of emission mode point requirements.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes
None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC117:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC117 (New Nov 2015)

1. Scope and objectives

To provide requirements for pre-certification and the IAPP initial survey where the initial engines produced may not be the parent engine along with clarification of emission mode point requirements.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 3.5.2 states:

3.5.2 When an applicant chooses the Scheme B for pre-certification, the IAPP initial survey should not be completed until the on-board initial confirmation test provides compliant results. The applicant remains the responsible entity until final acceptance of the system.

There will be cases where the first engine of an engine group to be installed is not the parent engine of the group. The guidelines require that a confirmation test is performed to the parent engine but it is technically possible that if the parent is never installed (noting that the parent may never be ordered by a customer) then it might be the case that no confirmation test is ever carried out. The project team believes that it is essential that a confirmation test is carried out, this was supported by industry. If the first engine is not the parent engine then a confirmation test is to be carried out to the first engine installed confirming that the measured values demonstrate that the NO_x reduction rate is within the NO_x reduction allowance given in section 7.5 of the guidelines. Subsequent engines installed with a design NO_x emission value not higher than the first engine installed are not required to have a confirmation test. when an engine is installed with a higher design total weighted NO_x emissions value than either the first engine installed, or any subsequent engines which have been subjected to a confirmation test then a confirmation test is required. This in effect means that there will be a de-facto parent as the engine with the highest NO_x emissions which has been installed on board a ship, at least until the actual parent engine is installed. The requirement to carry out the parent engine confirmation test when it is installed on a ship remains.

The UI also includes some details such as that:

- the applicant is responsible for submitting the design NO_x emission value.
- when engine is used in this interpretation then it is to be taken as meaning a combined engine/SCR system which is to be part of an engine group as defined in sections 4.1 & 4.4 of NTC 2008.
- the design NO_x emission value when used in this interpretation is to be taken as the NO_x emission values at the outlet from the SCR chamber at each of the mode points for the applicable test cycle, as per section 3.2 of NTC 2008.

Whilst these may appear obvious, after consultations with various stakeholders and based on the project teams experience it is felt beneficial to include these details as explicit requirements.

3. Source/derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team is that Scheme B is applicable where the combined engine/SCR system can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted where:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and where other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and where acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC118 "2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 4.1)"

Summary

UI MPC118 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC118 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide further clarification for the requirements in chapter 4 of the NTC 2008 which apply equally to engine systems fitted with SCR system, with particular regard to defining the parent engine.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC118:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC118 (New Nov 2015)

1. Scope and objectives

To provide further clarification for the requirements in chapter 4 of the NTC 2008 which apply equally to engine systems fitted with SCR system, with particular regard to defining the parent engine.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 4.1 states:

4.1 Requirements in chapter 4 of the NTC 2008 apply equally to engine systems fitted with SCR.

When Scheme B is applied then the engine group concept may be applied. However the engine family concept is not to be applied, as per section 2.2.4.2 of the NTC 2008.

The parent engine is to be the combined engine/SCR system with the highest NOx emission value of the group (sections 4.3.9.1 & 4.4.8.1 of the NTC 2008). For traditional Tier I and Tier II engines then this is relatively straightforward as it is easy to identify the engine of the group with the highest NO_x emissions. However for engines fitted with SCR which is an active downstream means of reducing NO_x levels in the exhaust gas it is expected that the SCR may be tuned to meet the Tier III emission limit with a harmonised NO_x emission level across the group. In such cases it is proposed that the parent engine be the engine with the lowest margin between raw NO_x emitted by the engine and the NO_x emitted from the SCR, this being the worst case as it is the worst case. Therefore where there is more than one engine with the same highest NO_x emission value within an engine group then the parent engine is to be the combined engine/SCR system with the lowest NO_x reducing margin of the group, i.e. the combined engine/SCR system with the lowest margin between raw NO_x emitted from the engine and NO_x emitted values at the SCR outlet. This can be expressed as:

NO_x reducing margin = (NO_x at SCR outlet/NO_x at raw emitted from engine) x 100%

When the engine is to be certificated to both Tier II and Tier III then this dual Tier approval is to be issued as a single EIAPPC covering both Tier modes.

When an engine is to be certificated as both a Tier II and as a Tier III engine then the parent engine is to be:

- the combined engine/SCR system with the highest NO_x emissions, or
- alternatively where NO_x emission values are harmonised across an engine group then the parent engine is to be the combined engine/SCR system with the smallest margin between the NO_x reduction rate required for compliance with MARPOL Annex VI, Regulation 13 requirements and the reduction rate that the SCR is capable of achieving, for each of the two tiers. In Tier II mode this may be the engine with the highest NO_x emissions without SCR.

This may mean that the parent engine for Tier II may not be the same parent combined engine/SCR system as for Tier III.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team is that Scheme B is applicable where the combined engine/SCR system can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted where:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and where other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and where acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC119 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 5.1.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of New (Nov 2015)	23 May 2016	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Withdrawal of New (Nov 2015)**

UI MPC119 (New Nov 2015) was not supported by PPR3 thus on 23 May 2016 GPG agreed to withdraw UI MPC119 (New Nov 2015) and consider submitting a new IACS paper to MEPC70.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

A test for a combined system of an engine fitted with an SCR in Scheme A is to ensure compliance with the applicable NO_x emission limits of MARPOL Annex VI, as required. The test bed measurement procedures of chapter 5 of the NTC 2008 should apply. The UI clarifies that whilst the engine and SCR configuration as tested is to be in accordance with the parameters and configuration provided in the Technical File it is not necessary to replicate by-pass arrangements on the test bed.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC119:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC119 (New Nov 2015)

1. Scope and objectives

To clarify that whilst the engine and SCR configuration as tested is to be in accordance with the parameters and configuration provided in the Technical File. It is not necessary to replicate by-pass arrangements on the test bed.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 5.1.1 states:

5.1.1 A test for a combined system of an engine fitted with an SCR in Scheme A is to ensure compliance with the applicable NO_x emission limits of MARPOL Annex VI, as required. The test bed measurement procedures of chapter 5 of the NTC 2008 should apply.

The combined engine/SCR system as tested is to be compliant with the configuration and parameters contained within the Technical File, see MEPC.198(62) paragraph 3.2 except for when a by-pass arrangement is to be provided then it is not necessary for the by-pass arrangement to be replicated on the test bed for the purposes of the emissions test.

This is because replicating the by-pass arrangement will not influence NO_x emissions and will add considerably to testing costs for no technical benefit.

3. Source/derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size.
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR.
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A.

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO.

Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant’s product portfolio.

6. Attachments if any

N/A.

UI MPC120 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 5.2.2)"

Summary

UI MPC120 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC120 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Section 5.2.2 provides a list of parameters to be measured during testing, this UI makes it explicit that these parameters are additional to those provided in Chapter 5 of the NO_x Technical Code 2008. The UI also recognises that for high pressure SCR system it is permissible to use a pressure loss sensor for measuring SCR differential pressure due to the pressure range required for instruments if using a subtraction method leading to potential inaccuracy.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC120:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC120 (New Nov 2015)

1. Scope and objectives

To make it explicit that these parameters are additional to those provided in Chapter 5 of the NO_x Technical Code 2008, to recognise that for high pressure SCR it is permissible to use a pressure loss sensor for measuring SCR differential pressure due to the pressure range required for instruments if using a subtraction method leading to potential inaccuracy.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 5.2.2 states:

5.2.2 For an engine system fitted with SCR, the following parameters should be measured and recorded in the engine test report in accordance with section 5.10 of the NTC 2008:

- *.1 injection rate of reductant at each load point (kg/h);*
- *.2 exhaust gas temperature at the inlet and outlet of the SCR chamber (°C);*
- *.3 pressure loss (kPa): it is necessary to measure the pressure at inlet and at outlet of the SCR chamber and to calculate pressure loss Δp. If the manufacturer sets an allowable limit of Δp, it should be confirmed; and*
- *.4 other parameter(s) as specified by the Administration.*

These parameters are additional to those required by Chapter 5 of the NTC 2008.

In the case of high pressure SCR system, when a SCR system is installed into the high pressure side of turbine(s), measuring pressure loss using a subtraction calculation in accordance with 5.2.2.3 is likely to introduce error because measurement instruments will have to be of a high pressure range type. Therefore it is recommended to allow measurement of the pressure loss of the SCR chamber with a pressure-loss sensor instead of calculating the pressure loss from two pressure values measured at the inlet and outlet of the SCR chambers separately.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted where:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and where other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and where acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC121 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.1.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of New (Nov 2015)	23 May 2016	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Withdrawal of New (Nov 2015)**

UI MPC121 (New Nov 2015) was not supported by PPR3 thus on 23 May 2016 GPG agreed to withdraw UI MPC121 (New Nov 2015) and consider submitting a new IACS paper to MEPC70.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Section 6.3.1.1 allows for the SCR chamber for validation testing to be either a full scale SCR chamber or a scaled version. The UI provides more detailed requirements for the scaling process and requires that this scaling is validated by a full size emissions test of a combined engine/SCR system as well as requiring the applicant to define the limiting factors for the scale model.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC121:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC121 (New Nov 2015)

1. Scope and objectives

To provide more detailed requirements for the scaling process and requires that this scaling is validated by a full size emissions test of a combined engine/SCR system as well as requiring the applicant to define the limiting factors for the scale model.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 6.3.1.1 states:

6.3.1.1 The SCR chamber for validation testing may be either a full scale SCR chamber or a scaled version. A SCR chamber should demonstrate the reduction in NO_x concentrations (ppm) expected in exhaust gas measured in section 6.2 of these guidelines. Therefore, NO_x reduction rate of the SCR chamber should be determined for each individual mode point. Where undertaken on a scaled version of the SCR chamber the scaling process should be validated to the satisfaction of the Administration.

The scaling process may include either testing of a full sized catalyst block (or blocks), or testing scaled catalyst blocks or a combination of testing of full sized catalyst blocks and also scaled catalyst blocks. The UI makes it explicit that each of these options is an acceptable means of testing a scaled SCR in order to model the performance of the full sized SCR chamber.

Where reference is made to scaling of the SCR chamber this is to mean that the scaled block or blocks are tested in a way which is representative of conditions expected within the SCR chamber.

The scaling process needs to be validated. The project team with the agreement of engine builders feel that with current tools this can only be done with sufficient surety to support engine certification by demonstrating that a scaled emission test has provided results which meet the requirements of 7.5 of these guidelines with reference to a combined engine/SCR system tested in accordance with Scheme A. Once the model has been validated then it can then be applied to other engine types when the applicant can provide evidence supporting the scalability of the model along with any limitations to which engine types it can be applied to and any limiting engine performance parameters such minimum and maximum power.

When changes are made which alter the assumptions upon which the model is based then proposals to validate changes to the scaled model process may be submitted based upon comparing test results for scaled catalyst blocks with testing on a single full sized catalyst block or a number of full size catalyst blocks.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC122 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.2.1.2)"

Summary

UI MPC122 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC122 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Section 6.3.2.1.2 includes composition requirements for exhaust gas which are not considered practical and which are not necessarily necessary. Therefore when the applicant can demonstrate that it is not necessary to replicate the composition of exhaust gas as per the requirements of 6.3.2.1.2 then this will be considered.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC122:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC122 (New Nov 2015)

1. Scope and objectives

To include composition requirements for exhaust gas which are not considered practical and which are not necessarily necessary. Therefore when the applicant can demonstrate that it is not necessary to replicate the composition of exhaust gas as per the requirements of 6.3.2.1.2 of the guidelines then this will be considered.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 6.3.2.1.2 states:

6.3.2.1 Exhaust gas, catalyst, reductant and an injection system should satisfy the following conditions at each mode point:

.2 Exhaust gas component
Exhaust gas for the test should either be diesel engine exhaust gas or simulated gas.

When diesel exhaust gas is used it should correspond, in terms of concentrations, to the exhaust gas in section 6.2 of these guidelines, in terms of NO_x, O_2, CO_2, H_2O, and SO_2 (±5% of the required concentration for each emission species).

Where simulated gas is used it should correspond, in terms of concentrations, to the exhaust gas in section 6.2 of these guidelines, in terms of NO, NO_2, O_2, CO_2, H_2O, and SO_2 (±5% of the required concentration for each emission species) balance N_2.

Meeting this requirement with a synthetic gas will be extremely difficult and in some cases not practical. It is expected that in most cases it is not necessary to formulate synthetic gas with the composition required. Therefore, when the applicant is able to demonstrate that one or more of the gas species and concentrations provided in 6.3.2.1.2 of the guidelines do not affect the modelling process then an exemption from the applicable concentration requirement for the species may be agreed.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant’s engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant’s engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant’s product portfolio.

6. Attachments if any

N/A.

UI MPC123 "2011 Guidelines Addressing Additional Aspects to the NOx Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 6.3.2.1.5)"

Summary

UI MPC123 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC123 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Section 6.3.2.1.5 states that the reductant concentration should be representative of the reductant concentration in the exhaust gas during actual operation. For scaled model testing this means the reductant used for testing will most likely be ammonia gas.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC123:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC123 (New Nov 2015)

1. Scope and objectives

To point out that for scaled model testing, the reductant used for testing will most likely be ammonia gas.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 6.3.2.1.5 states:

6.3.2.1 Exhaust gas, catalyst, reductant and an injection system should satisfy the following conditions at each mode point:

.5 Reductant
The reductant concentration should be representative of the reductant concentration in the exhaust gas during actual operation.

The reductant is to be representative of reductant concentration on the surface of the catalyst. Since reductant is generally stored on board as urea which unlocks ammonia after injection then for scaled model testing it is acceptable to use ammonia gas to represent the reductant.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC124 "2011 Guidelines Addressing Additional Aspects to the NO_x Technical Code 2008 with regard to Particular Requirements related to Marine Diesel Engines fitted with Selective Catalytic Reduction (SCR) Systems (Resolution MEPC.198(62), Section 7.5)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of New (Nov 2015)	23 May 2016	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Withdrawal of New (Nov 2015)**

UI MPC124 (New Nov 2015) was not supported by PPR3 thus on 23 May 2016 GPG agreed to withdraw UI MPC124 (New Nov 2015) and consider submitting a new IACS paper to MEPC70.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Section 7.5 states that NO_x emission concentrations should be measured at the inlet and outlet of the SCR chamber. The NO_x reduction rate should be calculated. Both values should either be dry or wet. The value obtained for NO_x reduction rate should be compared to the initial confirmation test required value at each mode point as given in the Technical File. Reduction efficiency values obtained at each of the test points should not be less than the corresponding values as given in the Technical File by more than 5%.

Since NO_x levels are sensitive to environmental conditions (temperature and humidity in particular) and fuel, and the SCR will be designed with a maximum absolute NO_x reducing capacity there is a risk that if the NO_x calculated value is not normalised with the conditions at the confirmation test then the combined engine/SCR system will fail to meet the requirement of the NO_x reducing efficiency not being less than 5% of the value provided in the Technical File. Ideally the guidelines should be amended to normalise the two values but this is outside the authority of IACS and so a solution is needed within the existing guidelines. After much discussion it was agreed that building a sufficient margin into the NO_x values submitted in the Technical File is a workable solution in the short term. A more complete solution will require an amendment to the guidelines.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes
None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 1 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC124:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC124 (New Nov 2015)

1. Scope and objectives

To show that since NO_x levels are sensitive to environmental conditions (temperature and humidity in particular) and fuel, and the SCR will be designed with a maximum absolute NO_x reducing capacity there is a risk that if the NO_x calculated value is not normalised with the conditions at the confirmation test then the combined engine/SCR system will fail to meet the requirement of the NO_x reducing efficiency not being less than 5% of the value provided in the Technical File. Ideally the guidelines should be amended to normalise the two values but this is outside the authority of IACS and so a solution is needed within the existing guidelines. After much discussion it was agreed that building a sufficient margin into the NO_x values submitted in the Technical File is a workable solution in the short term. A more complete solution will require an amendment to the guidelines.

2. Engineering background for technical basis and rationale

MEPC.198(62), Section 7.5 states:

7.5 NO_x emission concentrations should be measured at the inlet and outlet of the SCR chamber. The NO_x reduction rate should be calculated. Both values should either be dry or wet. The value obtained for NO_x reduction rate should be compared to the initial confirmation test required value at each mode point as given in the Technical File. Reduction efficiency values obtained at each of the test points should not be less than the corresponding values as given in the Technical File by more than 5%.

To provide a suitable margin to allow for the fact that the model test NO_x reduction values in the Technical File are not normalised with conditions at the time of the confirmation test and different fuels may be used the NO_x reduction rate in the Technical File may be lower than the nominal design value.

When the applicant submits a NO_x reduction rate which is lower than the nominal design value then applicant is to include a technical justification which explains the basis for any difference between the nominal design value and the NO_x reduction rate submitted in the Technical File.

The reduction rate allowance of 5% is to be taken as meaning 5% of the NO_x reduction rate, i.e.: 0.95 x the NO_x reduction rate submitted in the Technical File.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team is that Scheme B is applicable when the combined engine/SCR system can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC125 "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_x Technical Code 2008, Chapter 4, Paragraph 4.4.6.1)"

Summary

This revision clarifies the engine family concept issues (when number and arrangement of cylinders are different, but SCR parameters proven that NOx emission is either constant or lower than related parent engine)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2023)	1 May 2023	01 January 2024
New (Nov 2015)	11 November 2015	1 July 2016

- **Rev.1 (May 2023)**

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Need to update UI as a consequence of the adoption of circular MEPC.1 /Circ.895 /Rev.1 which superseded circular MEPC.1 /Circ.895.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.1 agreed by correspondence under Machinery Panel task PM20902o.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal:	16 December 2022	(by Machinery Panel member)
Panel Approval:	11 April 2023	(Ref: PM20902o)
GPG Approval:	1 May 2023	(Ref: 23051_IGc)

- **New (Nov 2015)**

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Paragraph 4.4.6.1 of the NO_x Technical Code 2008 states that the engine group may be defined by basic characteristics and specifications in addition to the parameters defined in paragraph 4.3.8 for an engine family.

Since some of the parameters which define an engine group are expected to move from the engine to the SCR system then some of the engine based parameters traditionally used to define an engine group will no longer be important and will be replaced by SCR based parameters.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). During this project it was recognised that a UI of NO_x Technical Code 4.4.6.1 is also necessary. One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC125:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (May 2023)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI MPC125 (New Nov 2015)

1. Scope and objectives

To provide further clarification for the requirements of paragraph 4.4.6.1. Since some of the parameters which define an engine group are expected to move from the engine to the SCR, then some of the engine based parameters traditionally used to define an engine group will no longer be important and will be replaced by SCR based parameters.

2. Engineering background for technical basis and rationale

Paragraph 4.4.6.1 cross references 4.3.8 which provides guidance for selection of an engine family. For engines fitted with SCR system to reduce NOx emissions some of the engine parameters provided may not be common to all engines within a group, in particular 4.3.8.2.3 and 4.3.8.2.4 includes:

.3 individual cylinder displacement:
- to be within a total spread of 15%
.4 number of cylinders and cylinder configuration:
- applicable in certain cases only, e.g., in combination with exhaust gas cleaning devices

For engines fitted with SCR system to reduce NOx emissions the number and arrangement of cylinders may not be common to all members of the engine group. The parameters for defining an engine group will move from the engine to the SCR and as such some of the engine based parameters may be replaced with new parameters derived from the SCR chamber and catalyst blocks, such as the SCR space velocity (SV), catalyst block geometry and catalyst material.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team is that Scheme B is applicable when the combined engine/SCR system can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicants engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size

2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicants engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

Technical Background (TB) document for UI MPC125 (Rev.1 May 2023)

1. Scope and objectives

MPC125 clarifies that the number of cylinders for engines, which are equipped with SCR in engine group does not necessarily have to be the same. On the other hand, due to the recent diversification of engines in consideration of NOx emission control, member engines with different numbers of cylinders are being manufactured despite being categorized as engines in one Engine Family. Against this background, the aim of this UI revision is to clarify that the number of cylinders for engines with SCR in engine family does not necessarily have to be the same.

2. Engineering background for technical basis and rationale

The technical aspects shown in the UI MPC 125 are also applicable to engine family.

3. Source/derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

Allow engine family with SCR to include different numbers and arrangements of cylinders where the applicant has provided clear evidence that an engine family concept.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

UI MPC126 "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_x Technical Code 2008, Chapter 4, Paragraph 4.4.6.2)"

Summary

UI MPC126 was deleted in November 2019.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Deleted (Nov 2019)	9 November 2019	-
New (Nov 2015)	11 November 2015	1 July 2016

- **Deleted (Nov 2019)**

UI MPC126 was deleted in November 2019.

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Paragraph 4.4.6.2 of the NO_x Technical Code states that the engine group may be defined by basic characteristics and specifications in addition to the parameters defined in paragraph 4.3.8 for an engine family. Since some of the parameters which define an engine group are expected to move from the engine to the SCR, then some of the engine based parameters traditionally used to define an engine group will no longer be important and will be replaced by SCR based parameters.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM13905 held four meetings during 2014 as part of the project to develop UIs for MEPC.198(62). During this project it was recognised that a UI of NO_x Technical Code 4.4.6.2 is also necessary. One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The wording in the UI was agreed by the project team and industrial partners.

The draft was submitted to the Machinery Panel on 6 May 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 7 March 2013 (Made by Machinery Panel member)
Panel Approval: 22 October 2015 (Ref: PM13905)
GPG Approval: 11 November 2015 (Ref: 14059IGh)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC126:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC126 (New Nov 2015)

1. Scope and objectives

To provide further clarification for the requirements of paragraph 4.4.6.2. Since some of the parameters which define an engine group are expected to move from the engine to the SCR, then some of the engine based parameters traditionally used to define an engine group will no longer be important and will be replaced by SCR based parameters.

2. Engineering background for technical basis and rationale

In paragraph 4.4.6.2 of the NO_x Technical Code the following parameters and specifications are required to be common to engines within an engine group:

.1 bore and stroke dimensions;
.2 method and design features of pressure charging and exhaust gas system:
- constant pressure;
- pulsating system;
.3 method of charge air cooling system:
- with/without charge air cooler;
.4 design features of the combustion chamber that effect NO_x emission;
.5 design features of the fuel injection system, plunger and injection cam which may profile basic characteristics that effect NO_x emission; and
.6 rated power at rated speed. The permitted ranges of engine power (kW/cylinder) and/or rated speed are to be declared by the manufacturer and approved by the Administration.

For engines fitted with SCR system to reduce NO_x emissions, some of the parameters provided in this section may not be common to all engines within a group and new parameters derived from the SCR chamber and catalyst blocks may be used instead, such as the SCR space velocity (SV), catalyst block geometry and catalyst material.

Whilst 4.4.6.2.1 is to remain common to all engines within the group, the other remaining parameters listed in paragraph 4.4.6.2 may be replaced by alternative SCR parameters when the applicant is able to demonstrate that these alternative parameters are suitable for defining the engine group.

The applicant remains responsible for selecting the parent engine and demonstrating the basis of this selection to the satisfaction of the Administration.

3. Source / derivation of the proposed IACS Resolution

Four meetings of the PT were held during 2014 as part of project PT 13905 to develop UIs for MEPC.198(62). One of these meetings included an open day with engine builders attended by MAN, Wartsila, WinGD, Mitsubishi, Hitachi and Caterpillar.

The project team with the agreement of the engine builders who engaged with the project team is that Scheme B is applicable when the combined engine/SCR system can neither be tested on a test bed nor an on board fully complying with chapter 5 of the NTC 2008 carried out.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

The project team recommends that Scheme B be accepted when:

1) The applicant's engine test facility cannot physically accommodate the combined engine/SCR system due to weight or size
2) As a result of space limitations within the engine test facility it is not possible to replicate the exhaust configuration between the engine and SCR
3) The applicant's engine test facility will require excessive modification/reconstruction in order to apply Scheme A

This list is not exhaustive and when other arguments are made which have not been anticipated by the project team they will be reviewed by the responsible RO. Applications to use Scheme B will be considered on a case by case basis and when acceptance of such an application is agreed then it is to be for an individual engine or engine group and not as approval for an applicant's product portfolio.

6. Attachments if any

N/A.

UI MPC128 "Inclusion of mediums of the fire-fighting systems in lightweight (MARPOL Annex I/Regulation 1.24)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2016)	10 May 2016	1 January 2017

- **New (May 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Extension of the scope of the unified interpretation UI SC273, clarifying if the weight of mediums of the fire-fighting systems are included in the lightweight, to MARPOL Convention.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The interpretation UI SC273 "Inclusion of the weight of mediums of the fire-fighting systems in lightweight" was submitted by IACS to SDC 3. The Subcommittee agreed with the paper submitted by IACS and included the proposed text with minor modifications in the list of the draft unified interpretations for submission to MSC 96.

Within the safety panel it was highlighted that the UI SC273 did not refer to MARPOL Convention and HSC Code where lightweight is also defined.

After short discussion of a qualifying majority in the Safety Panel decided to prepare a speaking note to be presented to MSC 96 proposing the extension of the interpretation to MARPOL Convention and HSC Code.

After MSC 96 issued MSC Circulars concerning the UI's related to SOLAS, HSC Code and MODU Code, it was agreed to send the UI concerning the MARPOL Convention, to MEPC 70, for approval. (Refer 15145dIGi dated 4 Aug 2016 adding this para to HF)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: March 2016 made by the Safety Panel
Panel Approval: April 2016 (Ref: PS15003d)
GPG Approval: 10 May 2016 (Ref: 15145dIGg)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC128:

Annex 1. **TB for New (May 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC128 (New May 2016)

1. Scope and objectives

To develop an interpretation in order to establish if the weight of mediums of the fire-fighting systems are included in the lightweight as defined in MARPOL Annex I/Regulation 1.24 in the light of UI SC273 submitted to SDC 3 and agreed by the Subcommittee.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

The definition of lightweight in MARPOL Annex I/Regulation 1.24 is:

"Lightweight means the displacement of a ship in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, and passengers and crew and their effects."

The above definition is similar to those contained in SOLAS regulations II-1/2.21 and II-2/3.28, 2008 IS Code, para. 2.23 where CO2 is not explicitly mentioned.

For what in the above, a qualifying majority in the Safety Panel decided to extend the text of the interpretation UI SC273 “Inclusion of the weight of mediums of the fire-fighting systems in lightweight” to MARPOL by means of a dedicated MPC UI.

The text of the interpretation takes into consideration the slight modifications to UI SC273 agreed by SDC 3 when drafting the draft unified interpretations of SOLAS chapter II-1 for submitting to the MSC 96 session for approval.

Following the IMO’s decision to include fresh water used for the fixed fire-fighting systems in the ship's light weight, there was further discussion in the Panel concerning the source of fresh water that should be included: that in dedicated tanks, that in the piping system and/or that in shared use tanks. After discussion the Panel agreed that:

“1. The weight of water used as the medium for the fixed fire-fighting systems means the weight of water (including any surplus margin of water as may be so specified) for the operation of all fixed fire-fighting systems installed onboard that is carried in dedicated tanks (i.e. system + quantity of water in dedicated tanks for fire-fighting); and

2. The water for the fixed fire-fighting systems in shared use tank should not be included into lightweight due to the problems associated with free surface effects of that tank."

*Underlined text added on 17 July 2017 (Ref: 15145dIGk).

After a short round of discussions the new Unified interpretation has been agreed.

6. Attachments if any

None.

UI MPC129 “Unprotected openings”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2016)	3 June 2016	1 January 2017

- **New (June 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity *(Dutch Safety Board)*
☑ Other *(Based on Vessel Incident - Collision and capsizing of the tug Fairplay 22)*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24 that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed for the treatment of unprotected openings for damage stability calculation under MARPOL Annex I / Regulation 28.3.3.

.5 Other Resolutions Changes

Similar UIs were developed for IBC Code Ch.2 Section 2.9, IGC Code Ch.2 Section 2.9, MARPOL Reg.27, ICLL Regulation 27 and SOLAS/Ch.II-1-Reg.7-2.

.6 Dates:

Original Proposal: June 2014 made by Safety Panel
Panel Approval: April 2016 (Ref: SP12006r)
GPG Approval: 3 June 2016 (Ref: 15145bIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC129:

Annex 1. **TB for New (June 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI MPC129 (New June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points / unprotected openings in the intact & damage stability calculation when they have to be left open for operational purposes. This should confirm that intact & damage stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in the stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed a unified interpretation for damage stability criteria contained in the MARPOL Annex I/Reg.28 based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as unprotected openings for the application of MARPOL Annex I/28.3.3.

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

N.A

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4), which have to be considered as unprotected points, but only those which are left open during normal operation.

6. Attachments if any

None

UI MPC130: "Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO_x Technical Code 2008, Chapter 2, Paragraph 2.2.5.1)"

Summary

This UI provides a unified interpretation of the wording "*Where a NOx-reducing device is to be included within the EIAPP certification, it must be recognized as a component of the engine*" in paragraph 2.2.5.1 of the 2008 NOx Technical Code, clarifying that, when an engine is fitted with an SCR and they are certified together in one EIAPP, MARPOL Annex VI Regulation 4 – Equivalents does not apply.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Nov 2019 Withdrawn)	5 May 2020	-

• New (Nov 2019 Withdrawn)

UI MPC130 (Rev.2 Nov 2019) approved on 9 November 2019 was withdrawn on 5 May 2020 prior to coming into force on 1 July 2020 (Ref: 17075_IGx).

Part B. Technical Background

List of Technical Background (TB) documents for UI MPC130:

Note: *There is no Technical Background (TB) document available for New (Nov 2019 Withdrawn).*

UI MPC131 "Unified Interpretation on the application of the amendments to Appendix IX of MARPOL Annex VI adopted by MEPC.385(81)"

Summary

This UI provides an interpretation of the amendments to Appendix IX of MARPOL Annex VI adopted by MEPC.385(81) to ensure the uniform application of these amendments, whether implemented early or not, maintaining a consistent level of reported data granularity throughout the calendar year and thereby preventing varying levels of granularity within the ship's data collected and reported for the same year. This UI also provides additional guidance to ensure that, following the entry into force of the amendments or the early implementation provisions, the SEEMP is revised in a timely manner.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2024)	23 July 2024	1 November 2024

- **New (July 2024)**

1 Origin of Change:

Suggestion from IACS member

2 Main Reason for Change:

Unclear regulation on the timing of the amendments to Appendix IX of MARPOL Annex VI"

3 Surveyability review of UR and Auditability review of PR

NA.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

NA

5 History of Decisions Made:

The need for clarification on the application of the amendments to Appendix XI of MARPOL Annex VI was brough up to the panel by a member who identified a potential source of misinterpretation regarding the application of the operating paragraph 4 of MEPC.385(81):

4 ALSO INVITES the Parties to consider the early application of the amendments to appendix IX with regard to information to be submitted to the IMO Ship Fuel Oil Consumption

While the initial inquiry focused on early application and whether the term 'submitted' should be interpreted as 'collected' or 'reported,' the panel's discussion expanded to include the broader application of these amendments as well as the need to clarify the timeline for SEEMP revisions.

In summary, the panel highlighted that since the amendments come into force in August but apply to data collected and reported on a calendar-year basis, this could potentially create a misalignment in their application. Consequently, a majority in the panel agreed on the necessity for the panel to address this issue through a UI.

Following this decision, the panel agreed to submit an action paper including the IACS UI in its annex, which was subsequently submitted to MEPC 82.

6 Other Resolutions Changes:

NA.

7 Any hinderance to MASS, including any other new technologies:

NA.

8 Dates:

Original Proposal	: 14 June 2024	(Made by: Environmental Panel)
Panel Approval	: 08 July 2024	(Ref: PE24017_/24071c)
GPG Approval	: 23 July 2024	(Ref: 24071cIGc)

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Part B. Technical Background

List of Technical Background (TB) documents for UI MPC131:

Annex 1. **TB for New (July 2024)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI MPC131

1. Scope and objectives

Scope:

Clarification on the application of the amendments to Appendix IX of MARPOL Annex VI as well as clarification on the timeline for SEEMP revision prompted by these amendments.

Objectives:

- Ensure the uniform application of MEPC.385(81) amendments, whether implemented early or not, to maintain consistent collected/reported data granularity throughout the calendar year.
- Prevent misalignment caused by the amendments coming into force in August but applying on a calendar-year basis.
- Provide guidance for timely SEEMP revisions to align data collection methodologies with the amendments before the start of the first data collection period post-amendments.
- Ensure the UI does not amend, extend, or contradict MEPC.385(81), but rather addresses potential misunderstandings, thereby aligning with the three IMO safeguards for UIs.

2. Engineering background for technical basis and rationale

1. MEPC.385(81) included amendments to Appendix IX "Information to be submitted to the IMO Ship Fuel Oil Consumption Database".

2. These amendments aim to enhance the granularity of data submitted through the DCS. This includes detailed information on transport work and fuel oil consumption by consumer type, such as main engines, auxiliary engines, boilers, and others, as well as whether the ship is underway or not.

3. The amendments are set to enter into force on 1st August 2025 with a provision for an early application from 1 January 2025

4. In addition, since the requirement to collect and report enhanced granularity will impact the data collection methodology outlined in the SEEMP, there is a necessity to update the SEEMP to incorporate new methodologies, such as those for collecting data per consumer type. This revision of the SEEMP must be completed before commencing data collection.

5. Misinterpretation of the amendments application may result in the following problematic situations:

    a. Making the change in granularity levels on 1st August 1 2025. This means that data reported at the beginning of 2026 will feature two different levels of granularity. Leaving aside all the technical problems due to the double reporting, it is difficult to discern the benefit of having enhanced granularity for only a portion of the calendar year. For instance, no information will be gained from having the transport work value from August if the fuel consumption data is reported for the entire year.

b. Since the term 'submitted' is used in the context of early application, it could be understood that early application applies to data reported to the DCS on January 1, 2025, consequently to data collected in 2024. However, this interpretation presents a challenge as it implies compliance with the amendments before their adoption.

c. Furthermore, since the new granularity directly impacts the data collection methodology, the amendment indirectly necessitates a revision of the SEEMP prior to data collection. This point is not explicitly mentioned in the amendments, posing a risk of oversight.

6. To ensure the uniform application of these amendments, whether implemented early or not, the qualified majority of the panel agreed to develop an UI based on the understanding that the amendments in resolution MEPC.385(81) should be applied as follows:
   a. for ships flying the flag of the Administration which implements the amendments early (1 January 2025):
      .1 The SEEMP should undergo revision and verification by the Administration, or its recognized organization, to incorporate a description of the methodology intended for collecting data with enhanced granularity before 1 January 2025 or the delivery date for vessels delivered on or after 1 January 2025. Those planning to retrofit flow meters or other methodologies should complete these actions within the same timeframe.
      .2 Data will be collected and reported with an enhanced level of granularity throughout the entire year of 2025 and beyond.

   b. for ships flying the flag of the Administration which implement the amendments on the entry into force date (1 August 2025):
      .1 The SEEMP should undergo revision and verification by the Administration, or its recognized organization, to incorporate a description of the methodology intended for collecting data with enhanced granularity before 1 January 2026. Those planning to retrofit flow meters or employ other methodologies should complete these actions within the same timeframe.
      .2 Data will be collected with the existing level of granularity throughout the entire year of 2025, and therefore the data reported at the beginning of 2026 will be based on this consistent level. Data will be collected and reported with the enhanced level of granularity from 1 January 2026 and beyond.
      .3 Ships delivered on or after 1 August 2025 should collect data at the enhanced level of granularity from the date of delivery and the data reported at the beginning of 2026 will be based on the Appendix IX in the Annex to resolution MEPC.385(81) as this provides consistent data collection and reporting for such ships on or after the entry into force date.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

NA.

3. Source/derivation of the proposed IACS Resolution

NA.

4. Summary of Changes intended for the revised Resolution:

NA.

5. Points of discussions or possible discussions

The panel deliberated on the suitable application date. The majority concurred on an application date of 7 October 2024, subsequent to MEPC 82. One member proposed 1 August 2025; however, given that the UI also accommodates early implementation from 1 January 2025, the date of 7 October 2024 was retained. Following the discussion at GPG level, the date of 1 November 2024 was agreed to have time to modify the UI before its implementation, if necessary based on the outcome of MEPC 82.

The panel acknowledged that according to IACs procedures, adopted IACS UIs are to be submitted to IMO as an annex to an information paper. However, the majority of the panel believes that for this particular case, it is more appropriate to submit the IACS UI (should it be adopted by GPG) as an annex to an action paper. This decision is based on several considerations:

- Firstly, while INF papers can be discussed and referred to working groups by the committee chair if deemed to contain information relevant to the work of the Committee, integrating the UI into an action paper would emphasize its significance as a call for action.

- Secondly, given the short deadline before the early application of the amendments, presenting the UI within an action paper will underscore the urgency of addressing and elucidating the practical implications tied to the amendments' implementation.

- Lastly, this approach underscores the panel's dedication to ensuring that the UI translates effectively into concrete measures within the IMO framework, demonstrating proactive engagement and commitment to regulatory clarity

6. Attachments if any

NA.

IACS

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Dec 2019

History Files (HF) and Technical Background (TB) documents for UIs concerning IMO Guidelines for Design, Construction and Operation of Passenger Submersible Craft (UI PASSUB)

Res. No.	Title	Current Rev.	HF/TB?
UI PASSUB1	Viewports in Passenger Submersible Craft	Del Dec 2019	No

IACS

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July 2025

History Files (HF) and Technical Background (TB) documents for UIs concerning SOLAS (UI SC)

Res. No.	Title	Current Rev.	HF/TB?
UI SC1	Main source of electrical power (Reg. II-2/41.1.3)	Rev.2 Feb 2021	HF
UI SC2	Main source of electrical power	Deleted (2003)	No
UI SC3	Emergency source of electrical power (Ch. II-1, Reg. 42.1.4 & 43.1.4)	Rev.1 May 1999	No
UI SC4	Emergency source of electrical power (Ch. II-1, Reg. 42.2.3.1 & 43.2.4.1)	Del Nov 2024	HF
UI SC5	Emergency source of electrical power in passenger ships (Ch. II-1, Reg. 42.2.3.1 only)	Del Nov 2024	HF
UI SC6	Emergency source of electrical power on Gas Carriers and Chemical Tankers (Ch. II-1, Reg. 43.6)	Rev.1 Mar 2019	HF
UI SC7	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.2)	1985	No
UI SC8	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.3.3)	1985	No
UI SC9	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.4.2)	1985	No
UI SC10	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.5.2)	Rev.3 Feb 2021	HF
UI SC11	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.5.3)	Rev.2 Nov 2024	HF
UI SC12	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.5.4)	1985	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC13	Precautions against shock, fire and other hazards of electrical origin (Ch. II-1, Reg. 45.6.1)	1985	No
UI SC14	Special requirements for machinery, boilers and electrical installations (Ch. II-1, Reg. 53.3)	1985	No
UI SC15	Definitions	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC16	Definitions (Reg. II-2/3.34)	Rev.2 Aug 2006	TB
UI SC17	Definitions – Control Stations (Reg. II-2/3.18)	Rev.3 Nov 2020	HF
UI SC18	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC19	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC20	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC21	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC22	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC23	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC24	Fire pumps, fire mains, hydrants and hoses	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC25	Fixed gas fire-extinguishing systems (FSS Code, Ch.5, 2.1.3.2)	Rev.2 Nov 2005	No
UI SC26		Deleted	No
UI SC27		Deleted	No
UI SC28		Deleted	No
UI SC29		Deleted	No
UI SC30	Fire-extinguishing arrangements in machinery spaces (Ch. II-2, Reg. 10.5.1 and 10.5.2)	Rev.3 Mar 2023	HF
UI SC31	Fire-extinguishing arrangements in machinery spaces	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC32	Fixed high expansion foam fire-extinguishing system (FSS Code, Ch.6, 2.2)	Del Nov 2022	HF
UI SC33	Special arrangements in machinery spaces	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC34	Automatic sprinkler, fire detection and fire alarm system (FSS Code, Ch.8, 2.5.2.3)	Del Dec 2020	HF
UI SC35	Fixed fire detection and fire alarm system (FSS Code, Ch.9, 2.5 and 2.5.1)	Rev.3 July 2013	HF
UI SC36	Arrangements for oil fuel, lubricating oil and other flammable oils	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC37	Arrangements for oil fuel, lubricating oil and other flammable oils	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC38	Arrangements for oil fuel, lubricating oil and other flammable oils	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC39	Ventilation systems in ships other than passenger ships carrying more than 36 passengers (Reg. II-2/8.2)	Rev.2 Nov 2005	No
UI SC40	Means of escape	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC41	Means of escape (Reg. II-2/13.4.1.3)	Rev.2 Nov 2005	No
UI SC42	Precaution against ignition of explosive petrol and air mixture in closed vehicle spaces, closed ro-ro spaces and special category spaces (Chapter II-2, Reg. 20.3.2.2)	Rev.3 Feb 2021	HF
UI SC43	Precaution against ignition of explosive petrol and air mixture in closed vehicle spaces, closed ro-ro spaces and special category spaces (Chapter II-2, Reg. 20.3.2.1 and 20.3.3)	Rev.3 Feb 2021	HF
UI SC44	Bulkheads within accommodation and service spaces	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC45	Fire integrity of bulkheads and decks (Reg. II-2/9.2.3 and 9.2.4)	Rev.1 Nov 2005	No
UI SC46	Protection of stairways and lift trunks in accommodation spaces, service spaces and control stations (Reg. II-2/9.2.3.4.1)	Rev.1 Dec 2005	No
UI SC47	Restricted use of combustible materials	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC48	Fire protection arrangements in cargo spaces (Reg. II-2/1.6.4 and 10.7.1.3)	Rev.1 Nov 2005	No
UI SC49	Fire protection arrangements in cargo spaces (Chapter II-2/10.7.2)	Rev.3 May 2021	HF
UI SC50	Special requirements for ships carrying dangerous goods	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC51	Special requirements for ships carrying dangerous goods	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC52	Special requirements for ships carrying dangerous goods (Reg. II-2/19.3.4.2)	Rev.1 Nov 2005	No
UI SC53	Special requirements for ships carrying dangerous goods (Chapter II-2, Regulation 54.2.5)	Cancelled at C27, 1993	No
UI SC54	Location and separation of spaces (Reg. II-2/4.5.1)	Rev.3 Nov 2005	No
UI SC55	Location and separation of spaces (Reg. II-2/4.5.2.2)	Rev.2 Nov 2005	No
UI SC56	Venting, purging, gas freeing and ventilation	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC57	Venting, purging, gas freeing and ventilation (Reg. II-2/4.5.3.4.1.3 and 4.5.3.4.1.4)	Rev.2 Feb 2021	HF
UI SC58	Venting, purging, gas freeing and ventilation (Reg. II-2/4.5.6.3)	Rev.2 Nov 2005	No
UI SC59	Cargo tank protection	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC60	Fixed deck foam systems (FSS Code, Ch.14, 2.2.2.1)	Del Nov 2022	HF
UI SC61	Fixed deck foam systems (FSS Code, Ch.14, 2.1.3)	Del Mar 2021	HF
UI SC62	Inert gas systems (FSS Code, Ch.15, 2.3.2.7 and 2.3.2.8)	Rev.2 Dec 2020	HF
UI SC63	Pre-discharge alarm of fixed gas fire extinguishing systems (FSS Code, Ch.5, 2.1.3.2)	Del Jan 2021	HF
UI SC64	Fire dampers in ventilation ducts (Reg. II-2/9.7.3.1)	Rev.2 June 2021	HF
UI SC65	Ventilation ducts for galley	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC66	Integrity of emergency generator space	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC67	Doors in fire-resisting corridor bulkheads of cargo ships	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC68	Cofferdams adjacent to slop tanks of combination carriers	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC69	Arrangement for pumping of slops in combination carriers in dry cargo mode	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC70	Cargo tank vent systems and selection of electrical equipment	Corr.1 Apr 2023	HF
UI SC71	Tank level gauging systems	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC72	In a ship engaged regularly in voyages of short duration (Ch. II-1, Reg. 42.2.7, 43.2.6.2[1981])	Rev.1 Nov 2005	No
UI SC73	Fire protection of weather decks (Reg. II-2/20.4 and 20.6)	Rev.2 Nov 2005	No
UI SC74	Fire protection arrangements in cargo spaces including special category spaces	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC75	Fire protection arrangements in cargo spaces (Reg. II-2/20.3.1.3)	Rev.1 Nov 2005	No
UI SC76	Engine bearing temperature monitors or equivalent	Rev.1 June 2025	HF
UI SC77	Cargo tanks overflow control system use of spill valves	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC78	Fire safety measures for tankers	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC79	Certified Safe Type Electrical Equipment for Ships Carrying Dangerous Goods	Rev.5 Feb 2021	HF
UI SC80	Fire-Extinguishing Arrangement for Paint Lockers	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC81	Drainage of enclosed spaces situated on the bulkhead deck (Ch. II-1 Reg. 35-1.2.6.1, Res. MSC.194(80)	Rev.1 Feb 2010	HF
UI SC82	Protection against noise (Ch. II-1, Reg. 36)	Deleted July 2014	No
UI SC83	Continuity of the Supply when Transformers Constitutes an Essential Part of the Electrical Supply System (Ch. II-1, Reg. 41.1.5)	1993	No
UI SC84	Purpose Built Container Space (Reg. II-2/19.2.2.2)	Rev.2 Nov 2005	No
UI SC85	Ro-Ro Space (Reg. II-2/19.2.2)	Rev.2 May 2021	HF
UI SC86	Weather Decks (Reg. II-2/19, Table 19.1)	Deleted Nov 2020	HF
UI SC87	Certification of Carriage of Solid Dangerous Bulk Cargoes (Reg. II-2/19.3 and 19.4)	Rev.2 Mar 2021	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC88	Fire Water Supply Capacity	Deleted Nov 2005 because of SOLAS 2000 Amendments	No
UI SC89	Ventilation of Cargo spaces (Reg. II-2/19.3.4)	Rev.5 Withdrawn Dec 2024	HF
UI SC90	Bilge Drainage (Reg. II-2/19.3.5)	Rev.1 Nov 2005	No
UI SC91	Personal Protection – Protective Clothing (Reg. II-2/19.3.6.1)	Corr.1 Nov 2020	HF
UI SC92	Personal Protection – Self-Contained Breathing Apparatus (Reg. II-2/19.3.6.2)	Rev.1 Nov 2005	No
UI SC93	Enclosure of stern tubes on cargo ships	Rev.2 Feb 2021	HF
UI SC94	Mechanical, hydraulic and electrical independency of steering gear control systems (Ch. II-1, Reg. 29)	Corr.1 Jan 2018	HF
UI SC95	Communication between Navigating Bridge and Machinery Space (Ch II-1, Reg. 37)	1994	No
UI SC96	Capacity of an emergency fire pump	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC97	Connection of a pump to fire main (Reg. II-2/10.2.2.3.3)	Rev.2 Nov 2005	No
UI SC98	Fire hose nozzles of a plastic type material (Reg. II-2/10.2.3.3)	Rev.1 Nov 2005	No
UI SC99	Flexible bellows of combustible materials (Reg. II-2/9.7.1.1)	Rev.2 Corr.1 Sep 2024	HF
UI SC100	Closing appliances of ventilation inlets and outlets (Reg. II-2/5.2.1.1)	Corr.1 Aug 2014	HF
UI SC101	Main vertical zones (Reg. II-2/9.2.2.1)	Rev.1 Nov 2005	No
UI SC102	Cold Service (Reg. II-2/5.3.1.1)	Rev.1 Nov 2005	No
UI SC103	Insulation of machinery space boundaries (Reg. II-2/19.3.8)	Rev.1 Nov 2005	No
UI SC104	Quick closing valve for emergency generator fuel tank	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC105	Relief valve in oil filling lines and safe positions for discharge of air and overflow pipes	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC106	Galley exhaust duct (Reg. II-2/9.7.5.2.1)	Rev.1 Nov 2005	No
UI SC107	Continuous ceiling (Reg. II-2/9.2.2.2.3)	Rev.1 Nov 2005	No
UI SC108	Galley exhaust duct (Reg. II-2/9.7.5.1)	Rev.1 Nov 2005	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC109	Open Top Container Holds – Water Supplies (Reg. II-2/19.3.1)	Rev.1 Nov 2005	No
UI SC110	Open Top Container Holds –Ventilation (Reg. II-2/19.3.4)	Rev.1 Nov 2005	No
UI SC111	Open Top Container Holds –Bilge Pumping (Reg. II-2/19.3.5)	Rev.1 Nov 2005	No
UI SC112	Pilot Transfer Arrangements	Deleted Jan 2002	No
UI SC113	Emergency Towing Arrangements on Tankers – Prototype Test (Res. MSC.35(63) 2.10)	1996	No
UI SC114	Emergency Fire Pump Access (Reg. II-2/10.2.2.3.2.1)	Rev.1 Nov 2005	No
UI SC115	Fire detection system with remotely and individually identifiable detectors (FSS Code, Ch.9, 2.4.1.1 and 2.5.1.1)	Deleted Oct 2015	No
UI SC116	Fire detection system with remotely and individually identifiable detectors	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC117	Fire detection system with remotely and individually identifiable detectors (FSS Code, Ch.9, 2.1.4 and 2.4.3.2)	Deleted Sep 2020	HF
UI SC118	Exhaust duct from galley ranges (Reg. II-2/9.7.5.1 and 9.7.5.2.1)	Rev.2 Jul 2015	HF
UI SC119	Balancing ducts (Reg. II-2/9.4.1.2 and 9.4.2)	Rev.1 Nov 2005	No
UI SC120	Access to forecastle spaces on tankers (Reg. II-2/4.5.2.1 and 4.5.2.2, IBC Code para. 3.2.3 and IGC Code para. 3.2.4)	Corr.2 Oct 2023	HF
UI SC121	Fire Pump Isolation Requirements (Reg. II-2/10.2.1.4.1)	Corr.1 Apr 2023	HF
UI SC122	Corrosion Prevention in Seawater Ballast Tanks (Ch.II-1, Reg. 3-2)	Corr.1 Oct 2008	TB
UI SC123	Machinery Installations – Service Tank Arrangements (Reg. II-1/26.11)	Rev.5 July 2023	HF
UI SC124	Emergency Source of Power in Passenger and Cargo Ships (Reg. II-1/42.3.4 and II-1/43.3.4)	Corr.1 Oct 2007	No
UI SC125	B and C Class Divisions (Reg. II-2/3.4 and 3.10)	Rev.3 Dec 2020	HF
UI SC126	Fire Protection Materials for Cargo Ships (SOLAS Reg. II-2/4.4.4, 5.3, 6.2.1 and 6.3.1)	Corr.1 Aug 2021	HF
UI SC127	Paints, varnishes and other finishes (Reg. II-2/6.2)	Corr.1 Jan 2023	TB
UI SC128	CO_2 Discharge Time (FSS Code, Ch. 5, 2.2.1.2, 2.2.1.6, 2.2.1.7)	Del Apr 2021	HF
UI SC129	Fire Detection in Unmanned Machinery Spaces (Reg. II-2/7.4)	Rev.2 Nov 2005	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC130	Fire Detection and Sprinkler Systems in Refrigerated Chambers and Similar Spaces (Reg. II-2/7.5.2 and Reg. II-2/10.6.1.1) (Reg. II-2/41-2.5 as contained in MSC.24(60), FSS Code, Ch.8, 2.1.1)	Rev.2 Nov 2005	No
UI SC131	Liquid Cargoes for which regular foam is not effective for Fire Fighting	Deleted (Nov 2005) because of SOLAS 2000 Amendments	No
UI SC132	Release Operation of the CO_2 System (FSS Code, Ch.5, 2.1.3.2 & 2.2.2) (as amended by MSC.339(91))	Rev.4 Nov 2013	HF
UI SC133	Oil Mist Detector on High Speed Engines – "equivalent device" (Chapter II-1, Reg. 47.2)	May 1998	No
UI SC134	Essential Services and Arrangements of Sources of Power, Supply, Control and Monitoring to the different Categories of Essential Services (SOLAS Reg. II-1/40 & 41)	Jun 2002	No
UI SC135	Escape Route or Low Location Lighting (LLL) (Chapter II-2, Reg. 28.1.10)	Deleted (May 2004)	No
UI SC136	Connecting means by which the main busbars of the main source of electrical power are normally connected (Chapter II-1, Reg. 41.5.1.3)	Rev.3 Nov 2005	No
UI SC137	Definition of High-Speed Craft (Chapter IX, Reg. 1.8)	Rev.1 Nov 2020	HF
UI SC138	Safe Access to Tanker Bows (Reg. II-1/3-3.2)	Corr.1 Feb 2023	No
UI SC139	Navigation Bridge Visibility (Chapter V, Reg. 22)	Deleted Dec 2011	No
UI SC140	Secondary Means of Venting Cargo Tanks (Reg. II-2/4.5.3.2.2 and 11.6.3.2)	Rev.4 Sep 2025	HF
UI SC141	Information on compliance with requirements for bulk carriers – "triangle" to be marked on a bulk carrier (Chapter XII, Reg. 8.3)	Deleted (Jul 1999)	No
UI SC142	Embarkation Ladders & Survival Craft Launching Falls (Chapter III, Reg. 11.7 & 16.6)	Deleted (Jan 2000)	No
UI SC143	Stowage of Marine Evacuation Systems (SOLAS Regulation III/15.1)	Rev.1 Feb 2010	HF
UI SC144	Maintenance, Thorough Examination, Operational Testing, Overhaul and Repair of Lifeboats, Rescue Boats and Fast Rescue Boats, Launching Appliances and Release Gear (Ch. III, Reg. 20.11)	Rev.3 Oct 2017	HF
UI SC145	Public Address System (LSA Code, para. 7.2.2)	1998	No
UI SC146	Fire hose couplings and nozzles (Reg. II-2/10.2.3)	Rev.2 June 2021	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC147	Watertight door closure	Rev.2 Feb 2021	HF
UI SC148	Ventilation by fan coil units and internal circulation fans (Reg. II-2, 5.2.1.2, II-2, 5.2.1.3 and 7.9.3)	Rev.2 Sep 2015	HF
UI SC149	Gas Measurement and Detection Chapter II- Portable instruments (Reg. II-2/4.5.7.1)	Rev.2 Feb 2012	HF
UI SC150	Location of the foam system equipment (FSS Code Ch.14, 2.1.2 and 2.3.1)	Rev.1 Nov 2005	No
UI SC151	Location of the main generating station with respect to the main switchboard and associated section boards (Chapter II-1, Reg. 41.3)	May 1999	No
UI SC152	Use of emergency generator in port (Chapter II-1, Reg. 42.1.4 and 43.1.4)	May 1999	No
UI SC153	Rudder Stock Diameter	Corr.1 Dec 2019	HF
UI SC154	Provision of Detailed Information on Specific Cargo Hold Flooding Scenarios (SOLAS XII/9.3)	Corr.1 Sep 2021	HF
UI SC155	Lightweight check in lieu of inclining test (Reg. II-1/22)	Del Aug 2022	HF
UI SC156	Doors in watertight bulkheads of cargo ships and passenger ships	Rev.3 July 2024	HF
UI SC157	Main Source of Electrical Power (Reg. II-1/41.5)	Rev.1 Feb 2005	TB
UI SC158	Horizontal fire zone concept (Reg. II-2/20.2.2.1)	Rev.1 Nov 2005	No
UI SC159	Equivalent Protection (Reg. II-2/10.7.2)	Corr.1 Sep 2021	HF
UI SC160	Method IIIC Construction (Reg. II-2/7.5.5.3)	Rev.1 Nov 2005	No
UI SC161	Timber deck cargo in the context of damage stability requirements (SOLAS Reg. II-1/5-1)	Rev.3 May 2022	HF
UI SC162	Emergency fire pumps in cargo ships – General (Reg. II-2/10.2.2.3.1.2)	Rev.1 Nov 2005	No
UI SC163	Emergency fire pumps in cargo ships – sea suction and sea valve (FSS Code, Ch.12, 2.2.1.1)	Rev.2 Sept 2009	HF
UI SC164	Emergency fire pumps in cargo ships – priming (FSS Code, Ch.12, 2.2.1.3)	Rev.1 Nov 2005	No
UI SC165	Electrical cables for the emergency fire pump (Reg. II-2/10.2.2.3.1.2)	Deleted Dec 2014	No
UI SC166	Waste Receptacles (SOLAS 2000 Amendments (MSC.99(73)), Reg.II-2/4.4.2)	Rev.1 Nov 2005	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC167	Electrical distribution boards (Reg. II-2/9.2.2.3.2.2(7), 9.2.2.4.2.2(5), 9.2.3.3.2.2(5) and 9.3.4.2.2.2(5))	Corr.1 Nov 2021	No
UI SC168	Hydrants for dangerous goods (SOLAS 2000 Amendments (MSC.99(73)), Reg.II-2/19.3.1.2)	Rev.1 Nov 2005	No
UI SC169	Foam systems positions of aft monitors (SOLAS 2000 Amendments (MSC.99(73)), Reg.II-2/10.8 and FSS Code Ch.14.2.3.2.3)	Rev.1 Nov 2021	No
UI SC170	Low pressure CO_2 systems (FSS Code Ch.5.2.2)	Del Aug 2021	HF
UI SC171	Interpretation of the term “First Survey”	Rev.2 Aug 2008	HF
UI SC172	Monitoring the concentration of hydrocarbon gases in cargo pump rooms on oil tankers (Chapter II-2, Reg 4.5.10.1.3 (Res MSC.99(73))	Rev.1 Nov 2005	No
UI SC173	Safety Devices in Venting Systems (Reg.II-2/4.5.3.3)	Jul 2003	No
UI SC174	A 60 Front Insulation of Tankers (Reg.II-2/9.2.4.2.5)	Rev.1 Aug 2006	TB
UI SC175	Combustible Gaskets in Ventilation Duct Connections (Reg.II-2/9.7.1.1)	Jul 2003	No
UI SC176	Fixed Local Application Fire Extinguishing System (Reg.II-2/10.5.6)	Rev.1 May 2004	No
UI SC177	Lubricating Oil and other Flammable Oil System Arrangements – Retroactive Application of Regulations II-2/15.3 and 15.4 of SOLAS (2001 Edition)	Jul 2003	No
UI SC178	Emergency Fire Pumps in Cargo Ships (FSS Code, Ch. 12, 2.2.1.3)	Rev.1 Apr 2011	HF
UI SC179	Dewatering of forward spaces of bulk carriers (Resolution MSC.188(79))	Rev.3 Feb 2021	HF
UI SC180	Hold, ballast and dry space water level detectors and performance standards for water level detectors on bulk carriers and single hold cargo ships other than bulk carriers (Res. MSC.188(79))	Rev.4 Feb 2021	HF
UI SC181	Bridge Design, Equipment Arrangement and Procedures (SOLAS Ch. V, Reg. 15)	Withdrawn pending further development	No
UI SC182	Bulk carriers not complying with SOLAS XII/9 as of 1 January 2004 (Ch. XII, Reg. 9)	Deleted (Apr 2020)	HF
UI SC183	Endorsement of Certificates with the Date of Completion of the Survey on which they are Based	Rev.1 Nov 2005	TB
UI SC184	Machinery Installations – Dead Ship Condition (SOLAS Reg. II-1/26.4)	Rev.1 Nov 2005	No

Res. No.	Title	Current Rev.	HF/TB?
UI SC185	Starting Arrangements for Emergency Generating Sets	Rev.1 Nov 2005	No
UI SC186	Acceptable voltage variations in voltage when the emergency loads are supplied from a battery via an electronic converter/inverter (Reg.II-1/42.3.2.1, 42.4, 43.3.2.1 & 43.4)	May 2004/Corr.1 Jan 2010	HF
UI SC187	Electric steering gear overload alarm (SOLAS Reg. II-1/30.3)	May 2004	No
UI SC188	Segregation of Cargo Oil Tanks (Reg.II-2/4.5.1.1)	Rev.3 July 2015	HF
UI SC189	High pressure oil fuel delivery lines on small engines (SOLAS Ch. II-2, reg. 15.2.9 and 15.2.12 (Res. MSC.31(63))	May 2004	No
UI SC190	Application of SOLAS Regulation II-1/3-6 (Res MSC.134(76)) and Technical Provisions on Permanent Means of Access (Res MSC.133(76))	Rev.2 Nov 2024	HF
UI SC191	Application of amended SOLAS regulation II-1/3-6 (resolution MSC.151(78)) and revised Technical provisions for means of access for inspections (resolution MSC.158(78))	Rev.9 Nov 2024	HF
UI SC192	Arrangement of galley ducts (SOLAS Reg. II-2/9.7.2.1)	Dec 2004	TB
UI SC193	Under Development		-
UI SC194	Installation of electrical and electronic appliances on the bridge and vicinity of the bridge	Rev.1 Feb 2021	HF
UI SC195	Performance Standards For Universal Automatic Identification Systems (AIS) (SOLAS Reg.V/18.2)	Deleted (Dec 2006) Re-categorised as Rec.93	TB
UI SC196	Document of compliance for the carriage of dangerous goods (DoC) (Reg.II-2/19.4)	Mar 2005	TB
UI SC197	Non-combustible cargoes (Reg.II-2/10.7.1.4)	Rev.2 Mar 2021	HF
UI SC198	Sections in local application fire extinguishing systems (Reg. II-2/10.5.6.3)	Corr.1 Sep 2022	HF
UI SC199	Fire fighting systems in cargo sampling lockers (Reg. II-2/10.6.3.2)	Jun 2005	TB
UI SC200	Container storage arrangement for equivalent fixed gas fire extinguishing systems (FSS Code, Ch.5, 2.5)	Corr.1 May 2022	TB
UI SC201	Location of paint lockers within cargo block (SOLAS reg. II-2/4.5.1.2 and 4.5.1.3, IBC Code reg. 3.2.1)	Corr.1 May 2022	TB
UI SC202	Under Development		-
UI SC203	Carriage requirements for shipborne navigational systems and equipment	Corr.1 May 2007	TB

Res. No.	Title	Current Rev.	HF/TB?
UI SC204	Storage of fire-extinguishing media forward the cargo holds (SOLAS reg. II-2/10.4.3. and FSS Code, Ch.5, 2.1.3.3)	Corr.1 May 2022	TB
UI SC205	Portable fire-fighting appliances in cargo holds loaded with vehicles with fuel in their tanks (Regulation II-2/20.6.2)	May 2006	TB
UI SC206	Under Development		TB
UI SC207	SOLAS XII/5 in terms of Structural Strength of Bulk Carriers in case of Accidental Hold Flooding	Corr.2 Jan 2020	HF
UI SC208	SOLAS XII/6.5.1 in terms of protection of cargo holds from loading/discharge equipment	Corr.2 Jun 2009	HF
UI SC209	SOLAS XII/6.4.3 in terms of redundancy of stiffening structural members for vessels not designed according to CSR	Rev.1 Dec 2019	HF
UI SC210	Double-side skin construction on bulk carriers (regulations XII/1.4 and XII/6.2)	June 2006	TB
UI SC211	Protection of fuel oil tanks and designation of fore peak spaces	Rev.1 Sep 2024	HF
UI SC212	Shipboard fittings and supporting hull structures associated with towing and mooring on conventional vessels	Rev.1 Nov 2023	HF
UI SC213	Arrangements for remotely located survival craft (SOLAS Reg. III/31.1.4, III/7.2.1.4, III/11.4, III/11.7, III/13.1.3, III/16.7 and LSA Code paragraph 4.1.3.2)	Rev.5 Sep 2021	HF
UI SC214	Portions of open decks utilized for the storage of gas bottles	Jul 2006	TB
UI SC215	Embarkation Ladder	Corr.1 Oct 2007	TB
UI SC216	FSS Code – Water-based fire-extinguishing systems	Withdrawn (Aug 2008)	TB
UI SC217	Nozzles installation for fixed water based local application fire-fighting systems for use in category A machinery spaces (MSC/Circ 913)	Corr.2 Aug 2022	HF
UI SC218	Fire Testing of Equivalent Water-Based Fire Extinguishing Systems (IMO MSC/Circ.1165, Appendix B, 4.5.1)	Rev.1 July 2022	TB
UI SC219	Fire Testing of Equivalent Water-Based Fire Extinguishing Systems (IMO MSC/Circ.1165, Appendix B, 4.5.4.1)	Rev.1 July 2022	TB
UI SC220	Special requirements for ro-ro passenger ships	Corr.2 Mar 2017	HF
UI SC221	Separation of Galley Exhaust Ducts from Spaces (Reg. II-2/9)	Deleted Oct 2017	TB

Res. No.	Title	Current Rev.	HF/TB?
UI SC222	Stripe coats and salt measurement	Withdrawn (Jul 2008) Incorporated into UI SC223	No
UI SC223	For Application of SOLAS Regulation II-1/3-2 Performance Standard for Protective Coatings (PSPC) for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin Spaces of Bulk Carriers, adopted by Resolution MSC.215(82)	Corr.1 Oct 2014	HF
UI SC224	Measurement of Distances	Aug 2008	TB
UI SC225	The occupied volume by flooded water of a flooded space in the SOLAS Chapter II-1 (Regulation 2(14))	Corr.1 Mar 2021	HF
UI SC226	IACS Unified Interpretations (UI) on the application of SOLAS regulations to conversions of Single-Hull Oil Tankers to Double-Hull Oil Tankers or Bulk Carriers	Rev.1 Dec 2012	HF
UI SC227	The dedicated seawater ballast tanks in SOLAS Chapter II-1 (Regulation 3-2)	Rev.2 Nov 2016	HF
UI SC228	Machinery shutoff arrangements – Oil mist detector arrangements	Dec 2008	TB
UI SC229	Under Development		-
UI SC230	Under Development		-
UI SC231	Under Development		-
UI SC232	Steam Boilers and Boiler Feed Systems	May 2009	TB
UI SC233	LSA Code – lifeboat exterior colour	Rev.1 Nov 2012	HF
UI SC234	Initial Statutory Surveys at New Construction	Deleted Jun 2016	HF
UI SC235	Navigation bridge visibility to ship's side	Corr.2 Jun 2013	HF
UI SC236	Not allocated		
UI SC237	Not allocated		
UI SC238	Not allocated		
UI SC239	Insulation with approved non-combustible materials (Reg. II-2/3.2.3)	June 2010	HF
UI SC240	Closing device for ventilation of battery rooms (SOLAS II-2/5.2.1.1)	Corr.1 Sept 2011	HF
UI SC241	Manually operated call points (SOLAS II-2/7.7)	Nov 2010	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC242	Arrangements for steering capability and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control	Rev.2 Jan 2020	HF
UI SC243	Access to controls for closing of ventilation of vehicle, special category and ro-ro spaces (SOLAS II-2/20.3.1.4.1)	Rev.1 May 2012	HF
UI SC244	Load testing of hooks for primary release of lifeboats and rescue boats	Corr.1 Nov 2015	HF
UI SC245	Suction and discharge piping of emergency fire pumps, which are run through the machinery space (SOLAS II-2/10.2.1.4.1)	Rev.1 Jan 2023	HF
UI SC246	Steering gear test with the vessel not at the deepest seagoing draught	Rev.1 Sep 2015	HF
UI SC247	Emergency exit hatches to open deck (SOLAS Reg. 11-2/13.1)	Sept 2011	HF
UI SC248	Greatest launching height for a free-fall lifeboat (LSA Code 1.1.4)	Rev.1 Apr 2015	HF
UI SC249	Implementation of SOLAS II-1, Regulation 3-5 and MSC.1/Circ.1379	Rev.2 Jan 2024	HF
UI SC250	Fire-Extinguishing Arrangements in Cargo Spaces (IMSBC Code, as amended)	Corr.2 Nov 2022	HF
UI SC251	Controls of emergency bilge suction valve in periodically unattended machinery spaces (SOLAS regulations II-1/48.3)	Oct 2011	HF
UI SC252	Controls for releasing carbon dioxide and activating the alarm in the protected space (FSS Code 5.2.2.2)	Oct 2011	HF
UI SC253	Fire resistance requirements for fibre-reinforced plastic (FRP) gratings used for safe access to tanker bows (IMO Res. MSC.62(67))	Rev.1 May 2016	HF
UI SC254	Fall Preventer Devices (MSC.1/Circ.1392 and Circ.1327)	Del Aug 2022	HF
UI SC255	Fuel pump arrangement required for ships to maintain normal operation of propulsion machinery when operating in emission control areas and non-restricted areas	Corr.1 Nov 2013	HF
UI SC256	Date of Delivery under SOLAS and MARPOL Conventions	June 2012	HF
UI SC257	Pilot Transfer Arrangements (SOLAS V/23 as amended by Resolution MSC.308(88))	Rev.1 Oct 2016	HF
UI SC258	For Application of Regulation 3-11, Part A-1, Chapter II-1 of the SOLAS Convention (Corrosion Protection of Cargo Oil Tanks of Crude Oil Tankers), adopted by Resolution MSC.289 (87) The Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks of Crude Oil Tankers	Jan 2013	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC259	For Application of SOLAS Regulation II-1/3-11 Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers (PSPC-COT), adopted by Resolution MSC.288(87)	Rev.1 Corr.2 Oct 2024	HF
UI SC260	Sample extraction smoke detection system (FSS Code / Chapter 10 / 2.4.1.2 as amended by MSC.292 (87))	Rev.1 Jun 2015	HF
UI SC261	Interpretation of performance standards for voyage data recorders (VDRs) (resolution MSC.333(90))	Rev.1 Apr 2022	HF
UI SC262	Fixed foam fire extinguishing systems, foam-generating capacity (FSS Code / Chapter 6 / 3.2.1.2 and 3.3.1.2 as amended by Res. MSC.327(90))	Rev.1 May 2015	HF
UI SC263	Gaskets in fixed gas fire-extinguishing systems (SOLAS II-2/10.4, IMO FSS Code Ch 5)	Deleted June 2014	HF
UI SC264	Non-combustible material as 'steel or equivalent' for ventilation ducts (SOLAS II-2, Reg. 9.7.1.1)	Corr.1 Dec 2023	HF
UI SC265	Code of safe practice for cargo stowage and securing – Annex 14	Deleted Nov 2023	HF
UI SC266	Revised guidelines for cargo securing manual and code of safe practice for cargo stowage and securing – scope of application (MSC.1/Circ.1352 and MSC.1/Circ.1353)	Deleted Feb 2024	HF
UI SC267	Implementation of the requirements relating to lifeboat release and retrieval systems (LSA Code Paragraph 4.4.7.6 as amended by resolution MSC.320(89))	Rev.2 Sept 2016	HF
UI SC268	Arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers (SOLAS Chapter II-2, Regulation 4.5.7.3.1)	Mar 2014	HF
UI SC269	Means of escape from the steering gear space in cargo ships	Rev.2 Nov 2024	HF
UI SC270	Fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck (Res. MSC.365(93), SOLAS II-2/10.2.1.3, II-2/10.2.2.4.1.2, II-2/10.7.3.2.3, II-2/19.3.1 and IMO FSS Code Ch. 12.2.2.1.1)	Rev.1 Dec 2015	HF
UI SC271	Additional indicating unit in the cargo control room in accordance with amended FSS Code Chapter 9.2.5.1.6	New Corr.1 June 2025	HF
UI SC272	Inert gas supply to double-hull space (SOLAS II-2/4.5.5.1)	Rev.1 Jul 2016	HF
UI SC273	Inclusion of mediums of the fire-fighting systems in lightweight (SOLAS II-1/2.21, SOLAS II-2/3.28) and lightship condition (IS Code 2008 Paragraph 2.23	Rev.1 May 2016	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC274	Hazardous area classification in respect of selection of electrical equipment, cables and wiring and positioning of openings and air intakes	Rev.1 Feb 2021	HF
UI SC275	Suitable number of spare air cylinders to be provided in connection with drills	Rev.1 Sep 2016	HF
UI SC276	Escape from machinery spaces on passenger ships	Rev.1 May 2024	HF
UI SC277	Escape from machinery spaces on cargo ships	Rev.1 May 2024	HF
UI SC278	Escape from accommodation spaces, service spaces and control stations on cargo ships	Jan 2016	HF
UI SC279	Annual testing of VDR, S-VDR, AIS and EPIRB	June 2016	HF
UI SC280	Angle of down-flooding (ϕf) / Angle at which an opening incapable of being closed weathertight (θv)	Rev.1 June 2022	HF
UI SC281	Single fall and hook system used for launching a lifeboat or rescue boat – Interpretation of the LSA Code as amended by MSC.320(89) and MSC.81(70) as amended by MSC.321(89)	Withdrawn June 2017	HF
UI SC282	Application of materials other than steel on engine, turbine and gearbox installations	Dec 2016	HF
UI SC283	Fire detection and alarms for boilers in unattended machinery spaces	Withdrawn Oct 2017	
UI SC284	Automatic shutdown of the inert gas system and its components parts	June 2018	HF
UI SC285	Operational status of valves to cargo tanks	June 2018	HF
UI SC286	Operational status of the inert gas system	June 2018	HF
UI SC287	Low pressure audible alarm system	June 2018	HF
UI SC288	Carriage of Dangerous Goods – Required Air Changes	Dec 2018	HF
UI SC289	Separation arrangements between inert gas piping and cargo tanks	Withdrawn July 2019	HF
UI SC290	Emergency source of electrical power on Gas Carriers and Chemical Tankers	Dec 2018	HF
UI SC291	Safe Type requirements for two-way portable radiotelephone apparatus for fire-fighter's communication	Jan 2020	HF
UI SC292	Ships intended to operate in low air temperature in Polar waters - Survival craft and rescue boat communications capabilities	Feb 2020	HF
UI SC293	Lifebuoy Arrangements for Means of Embarkation/Disembarkation (SOLAS Reg. II-1/3-9 and III/7)	Feb 2020	HF
UI SC294	Fire integrity of the division between engine room and urea or sodium hydroxide solution tank installation spaces	Feb 2020	HF

Res. No.	Title	Current Rev.	HF/TB?
UI SC295	Interpretation of Performance Standards for Float-free Emergency Position-indicating radio beacons (EPIRBs) Operating on 406 MHz (resolution MSC.471(101))	July 2021	HF
UI SC296	Noise level limit in workshops onboard ships	May 2022	HF
UI SC297	Amendment to stability/loading information in conjunction with the alterations of lightweight	Aug 2022	HF
UI SC298	Interpretations of various Performance Standards related to GMDSS radio installations	Corr.1 Nov 2023	HF
UI SC299	Watertight testing after fire testing of penetrations in watertight divisions in passenger ships	July 2023	HF
UI SC300	Containment of fire: details of fire insulation of duct penetrations	Aug 2023	HF
UI SC301	SOLAS Regulations II-2/9.7.2 and 9.7.5.1 – Separation of ducts from spaces	May 2024	HF
UI SC302	Interpretation of SOLAS regulation II-2/11.4.1 pertaining to crowns of machinery spaces of category A	May 2024	HF
UI SC303	Harmonization of Industrial Personnel Safety Certificate with SOLAS Safety Certificates	July 2024	HF
UI SC304	MSC.337(91) Code on noise levels onboard ships - calibration of sound instruments	Oct 2024	HF
UI SC305	Single essential propulsion components and their reliability	Dec 2024	HF
UI SC306	Valve piercing ship’s collision bulkhead	Nov 2024	HF
UI SC307	Hydrocarbon Gas Detection and Bilge High Level Alarms in Cargo Pump-Rooms	Nov 2024	HF
UI SC308	Ventilation Systems of Cargo Spaces	May 2025	HF
UI SC309	Fire-Extinguishing Media Restrictions	May 2025	HF
UI SC310	Unified Interpretations of SOLAS Regulation II-1/3-13.2.4 With Respect to a Factual Statement for Test and Thorough Examination of Non-Certified Lifting Appliances	Jul 2025	HFS

UI SC1 “Main source of electrical power”

Summary

In Rev.2 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Feb 2021)	15 February 2021	1 July 2022
Rev.1 (June 2002)	June 2002	1 January 2003
New (1974)	1974	-

- **Rev. 2 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206bIGb)

- **Rev.1 (June 2002)**

No history file or TB document available.

- **New (1974)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC1:

Annex 1. **TB for Rev.2 (Feb 2021)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (1974) and Rev.1 (June 2002).*

Technical Background (TB) document for UI SC1 (Rev.2 Feb 2021)

1. Scope and objectives

UI SC1 (Rev.1) does not reflect the agreed format for referencing the IEC standards. Rev.2 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) References to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC1 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60092-301	IEC 60092-301:1980

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC4 "Emergency source of electrical power"

Summary

UI SC4 is deleted under the consideration that the interpretation from 1985 is not reflecting later SOLAS amendments and may go beyond an interpretation of requirements in the regulations.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2024)	07 November 2024	-
New (1985)	No records	-

- **Del (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

UI SC4 and UI SC5 needs to be considered in combination. UI SC4 provides an interpretation of "internal communication equipment required in an emergency" in SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 that are common for passenger ships and cargo ships. UI SC5 provides an interpretation of the "internal communication equipment required in an emergency" that are additional to those listed in UI SC4 and applicable for passenger ships only.

SOLAS regulations II-1/42.2 and II-1/43.2 are addressing the capacity of the emergency source of power, requiring this to be sufficient to supply all those services that are essential for safety in an emergency. These regulations further list various services that the emergency source of power at least shall be capable of supplying simultaneously for a specified period of time. The regulations are accordingly not setting requirements to power supply arrangements for individual services required in an emergency, but to the capacity of the emergency source of power.

IACS UI SC4 and UI SC5 are from 1985. SOLAS has later been amended, introducing new regulations relating to different emergency conditions for passenger ships in Ch.II-2. What may have been a clear understanding of an emergency condition in 1985 in view of SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 may no longer be that clear. Further, the interpretations may become outdated once a regulation relating to internal communication equipment is introduced or amended in SOLAS. If there should be a need to clarify whether individual internal communication equipment is required in an emergency, this should rather be addressed in the regulation for that internal communication equipment. The Panel did not consider it prudent to maintain a summary of this as an interpretation on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 that relates to the capacity of the emergency source of power.

3 Surveyability review of UR and Auditability review of PR

None

4 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

5 History of Decisions Made:

In relation to periodic review of IACS resolutions, the Panel concluded that an update of UI SC5 was needed to reflect internal communication equipment required by SOLAS regulation II-2/23.5. There was no evidence that the original UI SC5 had been submitted to IMO. The Panel concluded to submit the updated UI SC5 as a proposal for a new interpretation to IMO.

The proposed interpretation was not agreed at SDC 10, mainly for the reason that the interpretation is incomplete when not considered in combination with UI SC4.

In the follow-up on PA 7.1 in SDC 10 – IACS Observer's Report, the Panel considered combining UI SC4 and UI SC5 into a proposal for a new interpretation to be submitted to SDC 11. During Panel discussions it was opined that the UI may go beyond an interpretation of requirements in the regulations, and that an interpretation on "internal communication equipment required in an emergency" may not be needed in the context of the actual requirement in the regulations which relates to required capacity of the emergency source of power. It was concluded by the majority to delete UI SC4 and UI SC5.

6 Other Resolutions Changes

- UI SC5 (deleted)

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal:	25 July 2024	(Ref: PM20906vNVj)
Panel Approval:	09 October 2024	(Ref: PM20906vIMk)
GPG Approval:	07 November 2024	(Ref: 24134dIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC4:

Annex 1. **TB for Del (Nov 2024)**

See separate TB document in Annex 1.

◄▲►

Note: There is no separate Technical Background (TB) document for New (1985).

Technical Background (TB) document for UI SC4 (Del Nov 2024)

1. Scope and objectives

UI SC4 provides an interpretation of "internal communication equipment required in an emergency" in SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 that are common for passenger ships and cargo ships.

2. Engineering background for technical basis and rationale

UI SC4 is deleted under the consideration that the interpretation from 1985 is not reflecting later SOLAS amendments and may go beyond an interpretation of requirements in the regulations.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

IACS identified the need to update IACS UI SC5 during maintenance of old IACS resolutions. UI SC5 provides an interpretation on SOLAS regulation II-1/42.2.3.1 regarding internal communication equipment required in and emergency additional to those listed in IACS UI SC4 that are common for both cargo and passenger ships. As there were no records on whether UI SC5 had been submitted to the IMO, IACS found it prudent to submit the revised UI SC5 as a new proposed interpretation to SDC 10. The new proposed interpretation was not agreed by the Sub-Committee. Following consideration of the comments and proposals by the Sub-Committee, IACS advised to the Sub-Committee that it would revise the proposed draft interpretation, as contained in the annex to document SDC 10/10, so as to address the issues raised and to present it to a future session of the Sub-Committee.

The existing IACS UI SC4 and UI SC5 are from 1985 and provide interpretations on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1. These SOLAS regulations are giving requirements to the capacity of the emergency generator to be sufficient to supply all emergency consumers essential for the safety in an emergency. IACS is of the understanding that these paragraphs are addressing the emergency generator and its capacity and does not intend to specify power supply requirements to individual consumers.

The power consumption of internal communication equipment is marginal compared to the total power consumption of all the emergency consumers. IACS cannot recall discussions on the load balance for emergency condition relating to inclusion of

various internal communication equipment. Industry practice is in general to supply all internal communication equipment required by the regulations from the emergency switchboard, possibly with an additional supply from the main switchboard, under the understanding that all internal communication equipment required by the regulations may be required in an emergency. IACS is thus questioning the need for these interpretations in view of the actual requirements in SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1.

UI SC4 and UI SC5 are from 1985. SOLAS has later been amended, introducing new regulations relating to different emergency conditions for passenger ships in Ch.II-2. What may have been a clear understanding of an emergency condition in 1985 in view of SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 may no longer be that unambiguous. Ensuring power supply to consumers in various emergency conditions may be achieved without recourse to the emergency source of power. Further, the interpretation may become outdated once a regulation relating to internal communication equipment is introduced or amended in SOLAS. If there should be a need to clarify whether individual internal communication equipment is required supplied from the emergency source of power, this should rather be dealt with in the regulation for that internal communication equipment. IACS does not consider it prudent to maintain a form of summary in an interpretation on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1.

IACS has concluded to delete UI SC4 and UI SC5. The interpretations will be converted into an IACS Recommendation, recognizing that the interpretations may be in use as guidance for various purposes by industry actors.

6. Attachments if any

None

UI SC5 "Emergency source of electrical power in passenger ships"

Summary

UI SC5 is deleted under the consideration that the interpretation from 1985 is not reflecting later SOLAS amendments and may go beyond an interpretation of requirements in the regulations.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2024)	07 November 2024	-
New (1985)	No records	-

- **Del (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

UI SC4 and UI SC5 needs to be considered in combination. UI SC4 provides an interpretation of "internal communication equipment required in an emergency" in SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 that are common for passenger ships and cargo ships. UI SC5 provides an interpretation of the "internal communication equipment required in an emergency" that are additional to those listed in UI SC4 and applicable for passenger ships only.

SOLAS regulations II-1/42.2 and II-1/43.2 are addressing the capacity of the emergency source of power, requiring this to be sufficient to supply all those services that are essential for safety in an emergency. These regulations further list various services that the emergency source of power at least shall be capable of supplying simultaneously for a specified period of time. The regulations are accordingly not setting requirements to power supply arrangements for individual services required in an emergency, but to the capacity of the emergency source of power.

IACS UI SC4 and UI SC5 are from 1985. SOLAS has later been amended, introducing new regulations relating to different emergency conditions for passenger ships in Ch.II-2. What may have been a clear understanding of an emergency condition in 1985 in view of SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 may no longer be that clear. Further, the interpretations may become outdated once a regulation relating to internal communication equipment is introduced or amended in SOLAS. If there should be a need to clarify whether individual internal communication equipment is required in an emergency, this should rather be addressed in the regulation for that internal communication equipment. The Panel did not consider it

prudent to maintain a summary of this as an interpretation on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 that relates to the capacity of the emergency source of power.

3 Surveyability review of UR and Auditability review of PR

None

4 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

5 History of Decisions Made:

In relation to periodic review of IACS resolutions, the Panel concluded that an update of UI SC5 was needed to reflect internal communication equipment required by SOLAS regulation II-2/23.5. There was no evidence that the original UI SC5 had been submitted to IMO. The Panel concluded to submit the updated UI SC5 as a proposal for a new interpretation to IMO.

The proposed interpretation was not agreed at SDC 10, mainly for the reason that the interpretation is incomplete when not considered in combination with UI SC4.

In the follow-up on PA 7.1 in SDC 10 – IACS Observer's Report, the Panel considered combining UI SC4 and UI SC5 into a proposal for a new interpretation to be submitted to SDC 11. During Panel discussions it was opined that the UI may go beyond an interpretation of requirements in the regulations, and that an interpretation on "internal communication equipment required in an emergency" may not be needed in the context of the actual requirement in the regulations which relates to required capacity of the emergency source of power. It was concluded by the majority to delete UI SC4 and UI SC5.

6 Other Resolutions Changes

- UI SC4 (deleted)

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal:	25 July 2024	(Ref: PM20906vNVj)
Panel Approval:	09 October 2024	(Ref: PM20906vIMk)
GPG Approval:	07 November 2024	(Ref: 24134dIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC5:

Annex 1. **TB for Del (Nov 2024)**

See separate TB document in Annex 1.

◄▲►

Note: There is no separate Technical Background (TB) document for New (1985).

Technical Background (TB) document for UI SC5 (Del Nov 2024)

1. Scope and objectives

UI SC5 provides an interpretation of the "internal communication equipment required in an emergency" that are additional to those listed in UI SC4 and applicable for passenger ships only.

2. Engineering background for technical basis and rationale

UI SC5 is deleted under the consideration that the interpretation from 1985 is not reflecting later SOLAS amendments and may go beyond an interpretation of requirements in the regulations.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

IACS identified the need to update IACS UI SC5 during maintenance of old IACS resolutions. UI SC5 provides an interpretation on SOLAS regulation II-1/42.2.3.1 regarding internal communication equipment required in and emergency additional to those listed in IACS UI SC4 that are common for both cargo and passenger ships. As there were no records on whether UI SC5 had been submitted to the IMO, IACS found it prudent to submit the revised UI SC5 as a new proposed interpretation to SDC 10. The new proposed interpretation was not agreed by the Sub-Committee. Following consideration of the comments and proposals by the Sub-Committee, IACS advised to the Sub-Committee that it would revise the proposed draft interpretation, as contained in the annex to document SDC 10/10, so as to address the issues raised and to present it to a future session of the Sub-Committee.

The existing IACS UI SC4 and UI SC5 are from 1985 and provide interpretations on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1. These SOLAS regulations are giving requirements to the capacity of the emergency generator to be sufficient to supply all emergency consumers essential for the safety in an emergency. IACS is of the understanding that these paragraphs are addressing the emergency generator and its capacity and does not intend to specify power supply requirements to individual consumers.

The power consumption of internal communication equipment is marginal compared to the total power consumption of all the emergency consumers. IACS cannot recall discussions on the load balance for emergency condition relating to inclusion of

various internal communication equipment. Industry practice is in general to supply all internal communication equipment required by the regulations from the emergency switchboard, possibly with an additional supply from the main switchboard, under the understanding that all internal communication equipment required by the regulations may be required in an emergency. IACS is thus questioning the need for these interpretations in view of the actual requirements in SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1.

UI SC4 and UI SC5 are from 1985. SOLAS has later been amended, introducing new regulations relating to different emergency conditions for passenger ships in Ch.II-2. What may have been a clear understanding of an emergency condition in 1985 in view of SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1 may no longer be that unambiguous. Ensuring power supply to consumers in various emergency conditions may be achieved without recourse to the emergency source of power. Further, the interpretation may become outdated once a regulation relating to internal communication equipment is introduced or amended in SOLAS. If there should be a need to clarify whether individual internal communication equipment is required supplied from the emergency source of power, this should rather be dealt with in the regulation for that internal communication equipment. IACS does not consider it prudent to maintain a form of summary in an interpretation on SOLAS regulations II-1/42.2.3.1 and II-1/43.2.4.1.

IACS has concluded to delete UI SC4 and UI SC5. The interpretations will be converted into an IACS Recommendation, recognizing that the interpretations may be in use as guidance for various purposes by industry actors.

6. Attachments if any

None

UI SC6 “Emergency source of electrical power on Gas Carriers and Chemical Tankers”

Summary

This is an existing document, and gives interpretation of SOLAS Chapter II-1, Regulation 43.6(as amended) so as to align with the revised IGC Code (MSC.370 (93)).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Mar 2019)	25 February 2019	on ships constructed on or after 1 July 1986 but before 1 July 2016
New (1985)	No records	-

- **Rev.1 (Mar 2019)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In the light of the revised IGC Code (MSC.370(93)), GPG tasked IACS panel members to review the applicable UIs. It was noted that interpretation as provided in UI SC6 remain applicable for ships constructed before 1 July 2016 complying with SOLAS Chapter II-1, Regulation 43.6. It was proposed by the panel members that existing UI SC6 is to be retained and remains applicable to ships constructed before 1 July 2016 and complying with MSC.5(48) as amended by resolutions MSC.17(58), MSC.30(61), MSC.32(63), MSC.59(67), MSC.103(73), MSC.177(79) and MSC.220(82).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93) and where necessary propose revision, deletion or amendment of the application statements.

.5 Other Resolutions Changes

- UI GC2
- UI GC9
- UI GC10
- REC.85
- REC.114

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: September 2015 (22nd Machinery Panel Meeting)
Panel Approval: 8 February 2019 (Ref: PM5901f)
GPG Approval: 25 February 2019 (Ref: 15042_IGzj)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC6:

Annex 1. **TB for Rev.1 (Mar 2019)**

See separate TB document in Annex 1

Note: There is no separate Technical Background (TB) document for New (1985).

Technical Background (TB) document for UI SC6 (Rev.1 Mar 2019)

1. Scope and objectives

The UI provides clarification of Interpretation of Chapter II-1, Regulation 43.6 of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974) as amended by Resolution MSC.1(XLV) with reference to the revised IGC Code (MSC 370(93)).

2. Engineering background for technical basis and rationale

SOLAS Chapter II-1, Regulation 43.6 reads:

“The emergency generator and its prime mover and any emergency accumulator battery shall be so designed and arranged as to ensure that they will function at full rated power when the ship is upright and when inclined at any angle of list up to 22.5˚ or when inclined up to 10˚ either in the fore or aft direction, or is in any combination of angles within those limits.”

In order to assess the operating capability & design requirements of the emergency source of power e.g emergency generator & its prime mover & any accumulator battery function at full rated power at prescribed angle of list & inclination at final equilibrium reached after flooding as per requirements.

3. Source / derivation of the proposed IACS Resolution

UI SC6 (1985) “Emergency source of electrical power in cargo ships”

4. Summary of Changes intended for the revised Resolution:

In order to provide clarification regarding its applicability, it is clarified that the UI is to be applied to:

a) Gas Carriers constructed on or after 1 July 1986 but before 1 July 2016 to which IGC Code (Res.MSC.5(48) as amended by resolutions MSC.17(58), MSC.30(61), MSC.32(63), MSC.59(67), MSC.103(73), MSC.177(79) and MSC.220(82)) is applicable; and

b) Chemical Tankers constructed on or after 1 July 1986 but before 1 July 2016 to which IBC Code (MSC.4(48) as amended) is applicable.

The title has also been changed from “Emergency source of electrical power on cargo ships” to “Emergency source of electrical power on Gas Carriers and Chemical Tankers” to clarify that the interpretations are applicable to Gas carriers and Chemical tankers only.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC10 “Precautions against shock, fire and other hazards of electrical origin”

Summary

In Rev.3 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Feb 2021)	15 February 2021	1 July 2022
Rev.2 (May 2001)	May 2001	1 July 2001
Rev.1 (1997)	1997	-
New (1985)	1985	-

- **Rev. 3 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206bIGb)

- **Rev.2 (May 2001)**

No history file or TB document available.

- **Rev.1 (1997)**

No history file or TB document available.

- **New (1985)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC10:

Annex 1. **TB for Rev. 3 (Feb 2021)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (1985), Rev.1 (1997) and Rev.2 (May 2001).*

Technical Background (TB) document for UI SC10 (Rev.3 Feb 2021)

1. Scope and objectives

UI SC10(Rev.2) does not reflect the agreed format for referencing the IEC standards. Rev.3 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) References to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC10 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60332-1	IEC 60332-1-2:2004+AMD1:2015
IEC 60332-3	IEC 60332-3-22:2018

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC11 "Precautions against shock, fire and other hazards of electrical origin"

Summary

This UI intends to provide interpretation for the expression "other high fire risk areas" in SOLAS II-1/Reg.45.5.3. This Rev.2 updates to state high fire risk areas in order to clarify certain areas.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2024)	10 November 2024	01 January 2026
Rev.1 (Feb 2021)	02 February 2021	1 July 2022
New (1985)	1985	-

- **Rev.2 (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Even though the Rev.1 of UI SC11 refers the SOLAS II-2/Reg.9, but the referred provision does not determine 'high fire risk areas'. The Working Group decided to update this IACS resolution to clarify the areas.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

The revision was developed in consultation with the Safety panel (PS23054).

6 Other Resolutions Changes:

UR E15 (Rev.3) will be amended based on the background of this resolution.

7 Any hinderance to MASS, including any other new technologies:

N/A

8 Dates:

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 17 January 2021	(Made by: PM20906_IMw)
Panel Approval	: 11 October 2024	(Ref: PM20906rIMn)
GPG Approval	: 10 November 2024	(Ref: 24134eIGc)

- **Rev.1 (Feb 2021)**

1 Origin of Change:

☑ Other (Periodical review to *reflect the latest IMO Resolutions*)

2 Main Reason for Change:

There was a need to update this UI to reflect the latest IMO Resolutions related to SOLAS Chapter II-2.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 25 February 2019 (Ref: PM5901gIMh)
Panel Approval: 9 November 2020 (Ref: PM20906_IMf)
GPG Approval: 2 February 2021 (Ref: 20206_IGd)

- **New (1985)**

History file for original version not available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC11:

Note: *There are no Technical Background (TB) document available for New (1985).*

Annex 1. **TB for Rev.1 (Feb 2021)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Nov 2024)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC11 (Rev.1 Feb 2021)

1. Scope and objectives

UI SC 11 (New 1985) does not reflect the latest IMO Resolutions, in particular, references to non-existing Regulations 26, 27, 44 and 58 of SOLAS Chapter II-2. UI SC11(Rev.1) corrected the references accordingly.

2. Engineering background for technical basis and rationale

A) Update to reflect latest IMO Resolutions

Amendments to SOLAS Chapter II-2 as per IMO Resolutions up to MSC.421(98) were reflected in UI SC11(Rev.1).

B) References to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

Regulation 9 of SOLAS Chapter II-2

4. Summary of Changes intended for the revised Resolution:

Reference to Regulations of SOLAS Chapter II-2 was corrected.

5. Points of discussions or possible discussions

It is agreed that further revision of this UI is required to clarify what exactly “high fire risk areas” means. Noting that SOLAS regulation II-2/9 sets forth “service spaces (high risk)” and “accommodation spaces of greater fire risk” separately, it is considered necessary that UI SC11 should be written in a more straightforward way for clearer understanding. In this context, UI GF17, which gives an interpretation on “other rooms with high fire risk” referred to in Paragraph 11.3.3 of the IGF Code Part A, can be considered as a basis to demonstrate a good example. This issue should be reviewed by the eighth session of the IMO SSE/SDC Sub-Committee and therefore Machinery Panel agreed on the next action to develop UI SC11(Rev.2) by Q3-2021 or Q4-2021.

6. Attachments if any

None

Technical Background (TB) document for UI SC11 (Rev.2 Nov 2024)

1. Scope and objectives

To clarify the 'high fire risk areas' in SOLAS II-1/Reg.45.5.3

2. Engineering background for technical basis and rationale

The UI SC11 (Rev.1) mentioned SOLAS II-2/Reg.9 with respect to 'high fire risk areas' of electrical cables and wiring arrangement. However, the referred SOLAS II-2/Reg.9 does not provide a determination of 'high fire risk areas'. The Safety panel scrutinized every space related to fire risks compared with the required fire integrity of Machinery spaces of category A, galleys and laundries, and then determined the high fire risk spaces.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

SDC 11 submission paper "IACS unified interpretation UI SC11 of SOLAS regulation II-1/45.5.3"

4. Summary of Changes intended for the revised Resolution:

UR E15 ("Electrical Services Required to be Operable Under Fire Conditions and Fire Resistant Cables") defines high fire risk areas through Notes a)

The Working Group has agreed that SOLAS II-1/Reg.45 and UR E15 have dealt with a similar issue as is electrical arrangements of cables and wiring against shock, fire and other hazards of electrical origin and fire conditions respectively.

The Working Group decides to update the UI SC11 by referring the Note a) of UR E15 instead of SOLAS II-2/Reg.9.

5. Points of discussions or possible discussions

When it comes to the IACS-IMO policy for directly referring the UR E15 in this UI SC11, after consulting with GPG chair, the Working Group decided to amend the UI SC11 in a way of referring UR E15.

After the above discussion between GPG chair and the Machinery panel, a detailed study was requested from the Safety panel in a viewpoint of this issue in connection with fire protection. The Safety panel has determined "high fire risk areas" based on the following understandings in the IMO SDC11 submission paper "IACS unified interpretation UI SC11 of SOLAS regulation II-1/45.5.3" as a result of further consideration.

6. Attachments if any

None.

Technical Background Document
UI SC16 (Rev.1 June 2005)

Definition of oil fuel units

Fuel oil transfer pumps are of intermittent use and are not directly for the preparation of oil fuel for delivery to a boiler or an engine. They may not consequently be considered as oil fuel units.

Submitted by WP/FP&S Chair
14/01/2005

Technical Background to Unified Interpretations FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1

The UIs, UI FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1, have been editorially revised simply to incorporate reference to MSC.1/Circ.1203.

Submitted by GPG Chairman
2 August 2006

UI SC17 “Definitions – Control Stations”

Summary

This UI provides explanations to the term “Control Stations” defined in SOLAS Reg.II-2/3.18. The text has been updated to make the language mandatory.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Nov 2020)	13 November 2020	-
Rev.2 (Nov 2005)	November 2005	-
Rev.1 (2001)	2001	-
New (1985)	1985	-

- **Rev.3 (Nov 2020)**

1 Origin of Change:

☑ Based on IMO Regulation

2 Main Reason for Change:

Use of mandatory text “*shall*” instead of “*should*”.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

As a part of the maintenance of IACS Resolutions and Recommendations which have not been updated for the last ten years, Safety Panel decided to update UI SC 17 to use a mandatory expression, and GPG endorsed it.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	30 September 2020	Made by: Safety Panel
Panel Approval:	28 October 2020 (Ref: PS19002jISb)	
GPG Approval:	13 November 2020 (Ref: 19001cIGb)	

- **Rev.2 (Nov 2020)**

No records available.

- **Rev.1 (2001)**

No records available.

- **New (1985)**

No records available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC17:

◄▼►

Note: There is no separate Technical Background (TB) document for New (1985), Rev.1 (2001), Rev.2 (Nov 2005) and Rev.3 (Nov 2020).

UI SC30 "Fire-extinguishing arrangements in machinery spaces"

Summary

UI SC30 is updated to take into account amendments adopted by MSC.409(97)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Mar 2023)	03 March 2023	-
Rev.2 (Nov. 2005)	November 2005	-
Rev.1 (June 2000)	June 2000	1 January 2001
New (May 1998)	May 1998	-

- **Rev.3 (Mar 2023)**

1 Origin of Change:

☐ Other (10th anniversary review)

2 Main Reason for Change:

UI SC30 needed to be updated to reflect changes introduced by resolution MSC.409(97).

Rev.3 is updated to include the text of SOLAS Regulation II-2/10.5.1.2.2 as adopted by MSC.409(97), which entered into force on 1 January 2020.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Amendments to UI SC30 to reflect the changes introduced by resolution MSC.409(97) were discussed and agreed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 15 November 2022	(Made by: Safety Panel member)
Panel Approval	: 13 February 2023	(Ref: PS19002za, PS22018n)
GPG Approval	: 03 March 2023	(Ref: 22119dIGb)

- **Rev.2 (Nov. 2005)**

No records are available

- **Rev.1 (June 2000)**

No records are available

- **New (May 1998)**

No records are available

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC30:

Note: No Technical Background documents are available for New (May 1998), Rev.1 (June 2000), Rev.2 (Nov. 2005) and Rev.3 (Mar 2023)

UI SC32 "Fixed high expansion foam fire-extinguishing system"

Summary

This UI provides a unified interpretation of the requirements for fixed high expansion foam fire-extinguishing system fitted in any other space other than a machinery space. UI has been deleted as the interpretation has been included in the FSS Code

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2022)	07 November 2022	-
Rev.2 (Nov 2005)	Nov 2005	-
Rev.1 (2001)	2001	-
New (1985)	1985	-

- **Del (Nov 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The content of this UI has been included in the FSS Code, Ch.6.1, as amended by Resolution MSC.327(90) adopted on 25 May 2012.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

During review of resolutions under correspondence subject PS19002h Safety Panel agreed on need to delete this UI.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 23 October 2019	(Made by Safety Panel)
Panel Approval	: 25 October 2022	(Ref: PS19002hISm)
GPG Approval	: 07 November 2022	(Ref: 19001aIGh)

- **Rev.2 (Nov 2005)**

No records are available

- **Rev.1 (2001)**

No records are available.

- **New (1985)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC32:

Annex 1. **TB for Del (Nov 2022)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents available for New (1985), Rev.1 (2001) and Rev.2 (Nov 2005).

Technical Background (TB) document for UI SC32 (Del Nov 2022)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

The content of this UI has been included in the FSS Code, Ch.6.1, as amended by Resolution MSC.327(90), adopted on 25 May 2012. Amendments to the Chapter 6 of the revised FSS Code defines all spaces to which this Chapter to be applied therefore removing the need to keep this UI. It can also be noted that reference to MSC/Circ.670 is in revised FSS Code, Ch. 6.3.1.2.

3. Source/derivation of the proposed IACS Resolution

FSS Code

4. Summary of Changes intended for the revised Resolution

Delete UI SC32.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC34 "Automatic sprinkler, fire detection and fire alarm system"

Summary

UI SC34 is deleted as definition of "*nominal area*" has since been specified in FSS/8, 2.5.2.3 as per MSC.339(91).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Dec 2020)	04 December 2020	-
Rev.1 (Nov 2005)	November 2005	-
New (1985)	1985	-

- **Del (Dec 2020)**

.1 Origin for Change:

☑ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

.2 Main Reasons for Change:

- Amendment to FSS Code (MSC.339(91)) incorporates UI SC 34's interpretation of "*nominal area*".

.3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

.4 History of Decisions Made:

None

.5 Other Resolutions Changes:

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal:	6 May 2019	Made by Safety Panel
Panel Approval:	18 November 2020	(Ref: PS19002fISc)
GPG Approval:	04 December 2020	(Ref: 19001dIGb)

- **Rev.1 (Nov. 2005)**

No HF&TB document available

- **New (1985)**

No HF&TB document available

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC34:

◄▼►

Note: There is no separate Technical Background (TB) document for New (1985), Rev.1 (Nov 2005) and Del (Dec 2020).

UI SC35 "Fixed fire detection and fire alarm system"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (July 2013)	22 July 2013	1 January 2014
Rev.2 (Sept 2009)	24 September 2009	1 July 2010
Rev.1 (Nov 2005)	17 November 2005	-
NEW (1985)	*No record*	-

• Rev.3 (July 2013)

.1 Origin for Change:

☒ Suggestion by IACS member

.2 Main Reason for Change:

Complaints were received from shipyards that the revision 2 of the UI was interpreted differently. The difference concerns interpretation of the expression "Fixed Fire Detection and Fire Alarm System". Some societies interpret the expression to include the alarm sounder system, whereas other societies keep this part out of the definition.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

It was agreed to set separate requirements to the power supply to the alarm sounder system in addition to review the existing interpretations, i.e. what is meant by continuity of power supply and requirement to a battery when this is used as the power supply, with the revised FSS Code.

The FSS Code Chapter 9 has been revised (MSC 91/3 Annex 2) and it was during the panels work decided to align the interpretation with the revised Code.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *April 2011*
Panel Approval: *21 June 2013 (By Machinery Panel)*
GPG Approval: *22 July 2013 (11088_IGh)*

- **Rev.2 (Sept 2009)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

It was felt that the UI in its present form was not exhaustive in respect to various designs that may be applied to meet para 2.2., Chapter 9, of the FSS Code. Therefore it was agreed to revise this document.

.3 History of Decisions Made:

Statutory Panel members after discussion within their Panel requested the Machinery Panel to consider deleting/revising the UI SC35 for the reasons given in .2 above. The Machinery Panel decided to revise the UI than to delete it.

.4 Other Resolutions Changes

N/A

.5 Any dissenting views

N/A

.6 Dates:

Original Proposal: *July 2006, made by Statutory Panel*
Machinery Panel Approval: *June 2009*
GPG Approval: *24 September 2009 (ref. 6174_IGf)*

- **Rev.1 (Nov 2005)**

No TB document available.

- **NEW (1985)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC35:

Annex 1. **TB for Rev.2 (Sept 2009)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.3 (July 2013)**

See separate TB document in Annex 2.

◄▼►

Note: *There are no separate Technical Background (TB) documents for the original resolution (1985) and Rev.1 (Nov 2005).*

Technical Background (TB) document

UI SC35, Rev.2 (Sept 2009)

FSS Code, Ch.9 2.2 Sources of power supply

There shall be not less than two sources of power supply for the electrical equipment used in operation of the fixed fire detection and fire alarm system, one of which shall be an emergency source. The supply should be provided by separate feeders reserved solely for that purpose. Such feeders shall run to an automatic change-over switch situated in or adjacent to the control panel of the fire detection system.

There is a majority view of the Statutory Panel that SC35 should not remain in its present form as it precludes designs that correctly reflect the intent of the FSS Code, Chapter 9 para 2.2, namely the use of batteries as one of the sources of power.

The power supplies for the fixed fire detection equipment shall be arranged such that a failure will not result in loss or degradation of the fixed fire detection and fire alarm system performance.

Where necessary, a source of stored energy is to be provided to ensure continuity of fire detection and alarm system when the automatic power supply changeover switch changes supply.

A battery may be used as one of the two sources of power and can be self-contained within the fire detection and alarm panel or situated in another location suitable to provide a supply in the event of an emergency. The capacity of the battery must be able to power the fire detection and alarm system for a period of 18 hours for cargo ships and 36 hours for passenger ships.

Submitted by Machinery Panel Chairman
12 September 2009
(Ref. Task PM6908)

Technical Background document for UI SC35 (Rev.3, July 2013)

1. Scope and objectives

The interpretation has as its objective to clarify what is required to obtain continuity of power supply to the fire alarm and detection system, battery requirements when a battery is arranged as the emergency supply and requirements to supply power to the alarm sounder system when it is external to the fire alarm and detection system.

2. Engineering background for technical basis and rationale

FSS code 2.5.1.1 The activation of any detector or manually operated call point shall initiate a visual and audible fire signal at the control panel and indicating units. If the signals have not received attention within 2 min an audible alarm shall be automatically sounded throughout the crew accommodation and service spaces, control stations and machinery spaces of category A. This alarm sounder system need not be an integral part of the detection system.

In fact in many cases the general emergency alarm system is used as the alarm sounder system. The general emergency alarm system power supply requirements are found in LSA Code 7.2.1.1 “The general emergency alarm system shall be powered from the ship' s main supply and the emergency source of electrical power required by regulation II-1/42 or II-1/43, as appropriate”.
It is reasonable to apply the same requirement to an external alarm sounder system to alert a fire.

3. Source / derivation of the proposed IACS Resolution

FSS Code
LSA Code

4. Summary of Changes intended for the revised Resolution:

The main changes are to apply the revised FSS Code, to amend the text regard battery supply to the revised FSS Code and to include the power supply requirements to an external alarm sounder system.

5. Points of discussions or possible discussions

One member commented that a flag state recently did not accept the power supply arrangement to the audible alarm sounder which was arranged in line with revision 3 of UI SC35 as the audible alarm stopped temporarily during blackout, in spite of being acceptable for the GA according to the LSA code.
On vessels where the emergency source of power is a battery, SOLAS requires a capacity of 18 hours operation of the fire detection and fire alarm system on cargo vessels and 36 hours for passenger vessels (SOLAS Ch. II-1 Reg. 42 and 43). The panel consider that 30 minutes operation as required in FSS 9.2.2.3 shall be within this period (18 or 36 hours as applicable).

6. Attachments if any

None

UI SC42 “Precaution against ignition of explosive petrol and air mixture in closed vehicle spaces, closed ro-ro spaces and special category spaces”

Summary

In Rev.3 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Feb 2021)	15 February 2021	1 July 2022
Rev.2 (Dec 2007)	27 December 2007	1 July 2008
Rev.1 (Nov 2005)	No record	1 July 2006
New (1985)	No record	-

- **Rev. 3 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206bIGb)

- **Rev.2 (Dec 2007)**

No history file or TB document available.

- **Rev.1 (Nov 2005)**

No history file or TB document available.

- **New (1985)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC42:

Annex 1. **TB for Rev.2 (Dec 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.3 (Feb 2021)**

See separate TB document in Annex 2.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (1985) and Rev.1 (Nov 2005).*

Technical Background

UIs SC42, Rev.2 and SC43, Rev.2 (December 2007)

Unified Interpretation of SOLAS Chapter II-2, Regulation 20.3.2.1, 20.3.2.2. and 20.3.3

PM5908 - Revision of UI SC42 and SC43 in light of SOLAS amendments to Chapter II-2

It has become necessary to revise the SC42 and SC43 in light of the extensive amendments made to the SOLAS Chapter II-2 and the implementation of the updated IEC 60092-502 (1999).

Previous UI's make reference to certain SOLAS section numbers which are no longer applicable after the amendments to Chapter II-2. However the purpose of the UIs remain unchanged; that is:

- SC42 is to interpret the requirement "electrical equipment shall be of a type so enclosed and protected as to prevent the escape of sparks…."

- SC43 is to interpret the requirement "electrical equipment shall be of a type approved for use in explosive petrol and air mixtures" and "electrical equipment shall be a type suitable for use in explosive petrol and air mixtures…".

These requirements still exist in the amended SOLAS, II-2. Therefore, it is necessary to make reference to correct SOLAS section numbers in which these requirements are found.

In the SC42, references to the surface have been deleted, because the interpretation is only related to the construction of equipment that "prevent the escape of sparks".

The revised UI SC 42 and SC 43 have been agreed unanimously by Machinery Panel members.

Submitted by Machinery Panel Chairman
22 November 2007

Permanent Secretariat note (January 2008):
- Revised documents approved by GPG 27 December 2007 (ref. 5029cIGd) with an implementation date of 1 July 2008.
- Rev.2 of UIs SC42 and SC43 will be forwarded to IMO FP53.

Technical Background (TB) document for UI SC42 (Rev.3 Feb 2021)

1. Scope and objectives

UI SC42 (Rev.2) does not reflect the agreed format for referencing the IEC standards. Rev.3 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) References to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC42 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60079	IEC 60079-10-1:2015
IEC 60079 Part 14	IEC 60079-10-14:2013

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC43 “Precaution against ignition of explosive petrol and air mixture in closed vehicle spaces, closed ro-ro spaces and special category spaces”

Summary

In Rev.3 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Feb 2021)	15 February 2021	1 July 2022
Rev.2 (Dec 2007)	27 December 2007	1 July 2008
Rev.1 (Nov 2005)	November 2005	1 July 2006
New (1985)	1985	-

- **Rev.3 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206bIGb)

- **Rev.2 (Dec 2007)**

No history file available.

- **Rev.1 (Nov 2005)**

No history file or TB document available.

- **New (1985)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC43:

Annex 1. **TB for Rev.2 (Dec 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.3 (Feb 2021)**

See separate TB document in Annex 2.

◄▲►

Note: There are no separate Technical Background (TB) documents available for New (1985) and Rev.1 (Nov 2005).

Technical Background

UIs SC42, Rev.2 and SC43, Rev.2 (December 2007)

Unified Interpretation of SOLAS Chapter II-2, Regulation 20.3.2.1, 20.3.2.2. and 20.3.3

PM5908 - Revision of UI SC42 and SC43 in light of SOLAS amendments to Chapter II-2

It has become necessary to revise the SC42 and SC43 in light of the extensive amendments made to the SOLAS Chapter II-2 and the implementation of the updated IEC 60092-502 (1999).

Previous UI's make reference to certain SOLAS section numbers which are no longer applicable after the amendments to Chapter II-2. However the purpose of the UIs remain unchanged; that is:

- SC42 is to interpret the requirement "electrical equipment shall be of a type so enclosed and protected as to prevent the escape of sparks…."

- SC43 is to interpret the requirement "electrical equipment shall be of a type approved for use in explosive petrol and air mixtures" and "electrical equipment shall be a type suitable for use in explosive petrol and air mixtures…".

These requirements still exist in the amended SOLAS, II-2. Therefore, it is necessary to make reference to correct SOLAS section numbers in which these requirements are found.

In the SC42, references to the surface have been deleted, because the interpretation is only related to the construction of equipment that "prevent the escape of sparks".

The revised UI SC 42 and SC 43 have been agreed unanimously by Machinery Panel members.

Submitted by Machinery Panel Chairman
22 November 2007

Permanent Secretariat note (January 2008):
- Revised documents approved by GPG 27 December 2007 (ref. 5029cIGd) with an implementation date of 1 July 2008.
- Rev.2 of UIs SC42 and SC43 will be forwarded to IMO FP53.

Technical Background (TB) document for UI SC43 (Rev.3 Feb 2021)

1. Scope and objectives

UI SC43 (Rev.2) does not reflect the agreed format for referencing the IEC standards. Rev.3 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC43 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60079	IEC 60079-10-1:2015
IEC 60079 Part 14	IEC 60079-14:2013

5. Points of discussions or possible discussions

None

6. Attachments if any

None.

UI SC49 “Fire protection arrangements in cargo spaces”

Summary

This UI provides a unified interpretation of the requirements of SOLAS regulation II-2/10.7.2. This revision updates the SOLAS text being interpreted by the UI in line with the latest SOLAS amended texts.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (May 2021)	18 May 2021	1 July 2022
Corr.1 (Mar 2010)	15 March 2010	-
Rev.2 (Feb 2010)	19 February 2010	1 July 2010
Rev.1 (Nov 2005)	17 November 2005	-
New (1985)	1985	-

- **Rev.3 (May 2021)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

The SOLAS regulation’s text referenced in the UI was not up to date.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

During the periodic maintenance of IACS Instruments which have not been updated for the last ten years, the Safety panel agreed to correct the inaccurate/outdated referenced SOLAS text.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: January 2021 (Made by: Safety Panel)
Panel Approval: 29 April 2021 (Ref: 19001lPSb)
GPG Approval: 18 May 2021 (Ref: 19001lIGe)

- **Rev.2, Corr.1 (Mar 2010)**

.1 Origin for Change:

❒ Suggestion by IACS member

.2 Main Reasons for Change:

Editorial modification proposed by the member for better understanding of the UI.

.3 History of Decisions Made:

The numbering of the paragraphs is modified (Paragraph .3 in Rev.2 is modified to paragraph 2 in the new version). The member proposed this editorial modification to GPG and GPG agreed to the amendment.

Statutory Panel decided to amend History File by including the conclusions made at FP 56, as below (Ref: SP13010_PCq dated 18 July 2013).

IACS submission to FP 56 (FP 56/9/13) paragraphs 3 and 4 states as follows:

"3 IACS has thoroughly reviewed the subject and would like to invite the Sub-Committee to note:

.1 SOLAS regulation I/3(a), which states: "The present regulations, unless expressly provided otherwise, do not apply to cargo ships of less than 500 gross tonnage";

.2 SOLAS regulation II-2/1.1.2.2, which states: "For the purpose of this chapter, the expression all ships means ships, irrespective of type, constructed before, on or after 1 July 2002";

.3 SOLAS regulation II-2/1.5.1, which states: "Unless expressly provided otherwise, requirements not referring to a specific ship type shall apply to ships of all types"; and

.4 SOLAS regulation II-2/19.2.1, which states: "Cargo ships of less than 500 gross tonnage shall comply with this regulation [19]".

4 In the light of above, IACS remains of the view that:

.1 SOLAS chapter II-2 does not expressly provide otherwise with respect to cargo ship size;

.2 since SOLAS regulation II-2/19 does not specify any requirements for fire protection arrangements in cargo holds, the provisions of SOLAS regulation II-2/10.7.2 are not invoked by SOLAS regulation II-2/19.2.1;

.3 SOLAS regulation II-2/10.7.2 does not apply to cargo ships of less than 500 gross tonnage; and

.4 therefore, IACS UI SC 49, including paragraph 2 thereof, remains correct."

Noting paragraph 9.27 of FP 56/23, whereby the Sub-Committee, having considered FP 56/9/13, decided that the application of SOLAS regulation II-2/10.7.2 concerning the equipment of ships with a fixed gas fire-extinguishing systems for the carriage of dangerous goods for ships below 500 gross tonnage should be left to the discretion of the Administrations, the Statutory Panel concluded that Rev.2, Corr.1 remains valid.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *12 March 2010*
GPG Approval: *15 March 2010 (Ref. 10001bIGd)*

- **Rev.2 (Feb 2010)**

.1 Origin for Change:

❒ Request by non-IACS entity (BIMCO)
❒ Based on IMO Regulation (SOLAS regulation II-2/10.7.2)

.2 Main Reasons for Change:

IACS was approached by BIMCO on the subject UI. The Statutory Panel considered that the existing UI should be revised to make it clearer taking into account that:

1) it is necessary to bear in mind that SOLAS I/3.a.ii states that "The present regulations, unless expressly provided otherwise, do not apply to cargo ships of less than 500 gross tonnage" when reading SOLAS II-2/1.1 ("Unless expressly provided otherwise, this chapter shall apply to ships constructed on or after 1 July 2002");
2) SOLAS II-2/10.7.2 indicates "as appropriate" with respect to size of ships; and
3) MSC/Circ.858 pertains to issuance of the DOC and should not be used as a basis

to require compliance with 10.7.2.

.3 History of Decisions Made:

The question raised by BIMCO was forwarded to the Statutory Panel for consideration. After discussion, the Panel decided to revise UI SC49 without Form A.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *28 July 2009, made by BIMCO*
Panel Approval: *February 2010, made by Statutory Panel*
GPG Approval: *19 February 2010 (Ref. 10001bIGb)*

- **Rev.1 (Nov. 2005)**

No TB document available.

- **New (1985)**

No TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (Feb 2010)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.3 (May 2021)**

See separate TB document in Annex 2.

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Note: *There are no separate Technical Background (TB) documents for New (1985), Rev.1 (Nov 2005) and Rev.2 Corr.1 (Mar 2010).*

Technical Background for UI SC49 Rev.2, Feb 2010

1. Scope and objectives

To clarify the scope of application of SOLAS Reg. II-2/10.7.2.

2. Engineering background for technical basis and rationale

The requirement of fix fire-extinguishing systems as specified in SOLAS Reg. II-2/10.7.2(ex SOLAS Reg. II-2/53.1.3) was, firstly, introduced by the 1981 Amendments and enforced on and after 1 September 1984.
Through 2000 SOLAS Amendment the whole of chapter II-2 was replaced completely, where requirement in Reg. II-2/53.1.3 was re-cast in Reg. II-2/10.7.2 as it stands today. The 2000 Amendment was enforced on 1 July 2002.
Further clarification is provided in MSC/Circ. 858 relating to ships keel-laid before 1 July 2002. It concludes that the dangerous good rules (II-2/54) and the requirement of a fixed fire extinguishing system in the cargo holds (II-2/53.1.3) are applicable to the types and tonnage of vessels and their keel-laying dates as stated in MSC/Circ. 858.
In light of the above, it's considered that UI SC49 needs revision in the following aspects:

1. restricting the application of SOLAS II-2/10.7.2 to cargo ships of 500 gt and over;
2. indicating the age of the cargo ship of 500 gt and over, and
3. addressing the application to passenger ships constructed on or after 1 September 1984 (as per MSC.1(45)) and cargo ships of less than 500 gross tons constructed on or after 1 February 1992 (as per MSC.13(57).

3. Source / derivation of the proposed IACS Resolution

MSC/Circ. 858

4. Summary of Changes intended for the revised Resolution:

The original interpretation in UI SC49 was to be amended as follows:

"Fixed fire-extinguishing systems for cargo spaces specified in Regulation II-2/10.7.2 (Regulation II-2/53.1.3 for ships constructed before 1 July 2002) are required for the following ships engaged in the carriage of dangerous goods:
.1 Passenger ships constructed on or after 1 September 1984; and
.2 Cargo ships of 500 gross tonnage and upwards constructed on or after 1 September 1984.
.3 Cargo ships of less than 500 gross tonnage are not subject to Regulation II-2/10.7.2 (ex. Regulation II-2/53.1.3) even when such ships are engaged in the carriage of dangerous goods and documents of compliance are issued to such ships according to Regulation II-2/19.4 (ex. Regulation II-2/54.3).

5. Points of discussions or possible discussions

None

Technical Background (TB) document for UI SC49 (Rev.3 May 2021)

1. Scope and objectives

To clarify the intent and application of SOLAS Reg. II-2/10.7.2.

2. Engineering background for technical basis and rationale

NA

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg. II-2/10.7.2.

4. Summary of Changes intended for the revised Resolution:

The text of SOLAS Reg. II-2/10.7.2. referenced in the UI was updated to reflect the current SOLAS text.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC57 “Venting, purging, gas freeing and ventilation”

Summary

In Rev.2 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Feb 2021)	15 February 2021	1 July 2022
Rev.1 (Nov 2005)	November 2005	-
New (1985)	1985	-

- **Rev.2 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

In case where the number of amendments is large:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

In case where the number of amendments is small:

regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **Rev.1 (Nov 2005)**

No history file or TB document available.

- **New (1985)**

No history or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC57:

Annex 1. **TB for Rev.2 (Feb 2021)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (1985) and Rev.1 (Nov 2005).*

Technical Background (TB) document for UI SC 57 (Rev 2 Feb 2021)

1. Scope and objectives

UI SC57(Rev.1) does not reflect the agreed format for referencing the IEC standards. Rev.2 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B1) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

B2) Format for references to IMO instruments (where the number of amendments is small)

Format:
regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC57 has been updated to specify the revision/version of the IEC standards and MSC Circulars as follows:

IEC standards	**Replaced by**
IEC 60092-502	IEC 60092-502:1999
MSC Circulars	**Replaced by**
MSC/Circ.1120	MSC/Circ.1120 as amended by MSC.1/Circ.1436 and MSC.1/Circ.1510

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC60 "Fixed deck foam systems"

Summary

This UI provides a unified interpretation of the requirements for number and capacity of the applicators for all tankers. It has been deleted as the interpretation have been included in the FSS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2022)	07 November 2022	-
Rev.1 (Nov 2005)	Nov 2005	-
Corr.1 (2001)	2001	-
New (1985)	1985	-

- **Del (Nov 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

FSS Code was amended by Resolution MSC.339(91) and reference to all tankers was added to the paragraph 2.3.3.1 of the revised Ch 14.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

During review of resolutions under correspondence subject PS19002h Safety Panel agreed on need to delete this UI.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 23 October 2019	(Made by Safety Panel)
Panel Approval	: 25 October 2022	(Ref: PS19002hISm)
GPG Approval	: 07 November 2022	(Ref: 19001aIGh)

- **Rev.1 (Nov 2005)**

No records are available

- **Corr.1 (2001)**

No records are available.

- **New (1985)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC60:

Annex 1. **TB for Del (Nov 2022)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents available for New (1985), Corr.1 (2001) and Rev.1 (Nov 2005).

Technical Background (TB) document for UI SC60 (Del Nov 2022)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

FSS Code was amended by Resolution MSC.339(91) and reference to all tankers was added to the paragraph 2.3.3.1 of the revised Ch.14 ("At least four foam applicators shall be provided on all tankers").

3. Source/derivation of the proposed IACS Resolution

FSS Code

4. Summary of Changes intended for the revised Resolution

Delete UI SC60.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC61 “Fixed deck foam systems”

Summary

This UI is proposed for deletion as the majority of the contents have been included in a mandatory IMO instrument (the FSS Code).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Mar 2021)	17 March 2021	Not applicable
Rev.2 (Nov 2005)	November 2005	Not known
Rev.1 (1994)	1994	Not known
New (1985)	1985	Not known

- **Del (Mar 2021)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

The contents of the UI have been included in the FSS Code (Ch.14, 2.1.3) and the UI is no longer required.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The UI was proposed for deletion by an IACS members as part of the review of IACS documents over 10 years old.

The original proposal was made to the Panel by correspondence on 25 October 2019.

After much discussion about the requirement for “one-man” operation the Panel agreed to delete the UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable

7 Dates:

Original Proposal:	25 October 2019 (Made by: IACS member)
Panel Approval:	1 March 2021 (Ref: 19001aPSb)
GPG Approval:	17 March 2021 (Ref: 19001aIGf)

- **Rev.2 (Nov 2005)**

No information available

- **Rev.1 (1994)**

No information available

- **New (1985)**

No information available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Deleted (Mar 2021)**

See separate TB document in Annex 1.

◄▼►

***Note**: There is no technical background document available for New (1985), Rev.1 (1994) and Rev.2 (Nov 2005).*

Technical Background (TB) document for UI SC61 (Del Mar 2021)

1. Scope and objectives

The UI was reviewed for continued applicability and accuracy as part of the review of all IACS documents over 10 years old.

2. Engineering background for technical basis and rationale

UI SC61 was developed for SOLAS 1981 Amend. II-2/61.10 and also used for 2002 FSS Code Ch.14. para. 2.1.3 which was separated from SOLAS.

The requirements were as follows:
"Operation of a deck foam system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main."

The FSS Code Ch.14 was completely revised by 2012 Amendments to FSS Code, and the para. 2.1.3 was amended as follows:

"2.1.3 Operation of a deck foam system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main. Where the deck foam system is supplied by a common line from the fire main, additional foam concentrate shall be provided for operation of two nozzles for the same period of time required for the foam system. The simultaneous use of the minimum required jets of water shall be possible on deck over the full length of the ship, in the accommodation, service spaces, control stations and machinery spaces."

UI SC61 states:

"A common line for fire main and deck foam line can only be accepted provided it can be demonstrated that the hose nozzles can be effectively controlled by one person when supplied from the common line at a pressure needed for operation of the monitors. Additional foam concentrate is to be provided for operation of 2 hose nozzles for the same period of time required for the foam system.

The simultaneous use of the minimum required jets of water should be possible on deck over the full length of the ship, in the accommodation, service spaces, control stations and machinery spaces."

The amended 2.1.3 above partly reflects the interpretations in UI SC61, which infers that there was a deliberate exclusion of the interpretation for demonstrating that the hose nozzles can be effectively controlled by one person when supplied from the common line at a pressure needed for operation of the monitors in the UI.

There is no requirement in SOLAS in respect to effective control. Therefore, IACS believes it is reasonable to delete this requirement (control by one person) in UI SC61.

3. Source / derivation of the proposed IACS Resolution

See section 2

4. Summary of Changes intended for the revised Resolution:

UI is proposed for deletion.

5. Points of discussions or possible discussions

Although the majority of the UI has been included in the FSS Code, the requirement for “one-man” operation was not. After discussion it was agreed that as there is no requirements in SOLAS or any other IMO instrument retaining such a requirement would not be an interpretation it would be a requirement. Such a requirement could not be justified so the UI was agreed for deletion.

6. Attachments if any

None.

UI SC62 Inert gas systems

Summary

In Rev.2 of this Resolution, references to the FSS Code were corrected, and the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Dec 2020)	11 December 2020	1 January 2022
Rev.1 (Nov 2005)	November 2005	-
New (1985)	1985	-

- **Rev.1 (Dec 2020)**

1 Origin of Change:

☑ Other (Periodical review to *reflect the latest IMO Resolutions*)

2 Main Reason for Change:

There was a need to update this UI to reflect the latest IMO Resolutions related to the FSS Code.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	09 November 2020 (Ref: PM20906_IMf)
GPG Approval:	11 December 2020 (Ref: 20206_IGb)

- **Rev.1 (Nov 2005)**

History file for original version not available

- **New (1985)**

History file for original version not available

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (Dec 2020)**

See separate TB document in Annex 1.

Note:

There are no Technical Background (TB) documents available for the New (1985) and Rev.1 (Nov 2005).

Technical Background (TB) document for UI SC62 (Rev.2 Dec 2020)

1. Scope and objectives

UI SC 62 (Rev.1) does not reflect the latest IMO Resolutions, in particular, references to non-existing Paragraphs 2.3.2.7 and 2.3.2.8 of Chapter 15 of the FSS Code. UI SC62(Rev.2) corrected the references accordingly.

2. Engineering background for technical basis and rationale

A) Update to reflect latest IMO Resolutions

Amendments to the FSS Code as per IMO Resolutions up to MSC.410(97) were reflected in UI SC11(Rev.1).

B) Format for references to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

Chapter 15 of the FSS Code

4. Summary of Changes intended for the revised Resolution:

References to the FSS Code Chapter 15 was corrected.

5. Points of discussions or possible discussions

It was agreed that the interpretation as per UI SC 62 (Rev.1) is technically valid for Paragraphs 2.2.3.2.7 and 2.2.3.2.8 of the FSS Code Chapter 15 of the FSS Code.

6. Attachments if any

None

UI SC63 “Pre-discharge alarm of fixed gas fire extinguishing system (FSS Code, Ch. 5.2.1.3.2)“

Summary

This UI provides a unified interpretation of the requirements of the pre-discharge alarm of fixed gas fire extinguishing system in FSS Code, Ch. 5.2.1.3.2.

This UI was deleted through the periodic review of IACS Resolutions.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Jan 2021)	12 January 2021	-
Rev.2 (Nov 2005)	November 2005	-
Rev.1 (2001)	2001	-
New (1985)	1985	-

- **Del (Jan 2021)**

1 Origin of Change:

☐ Suggestion by IACS member (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The content of this UI has been consolidated into FSS Code, Ch. 5.2.1.3.2, amended by Resolution MSC.206(81), adopted on 18 May 2006.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel unanimously agreed that the UI should be deleted as its contents have been included into the FSS Code.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal:	5 May 2019 (Made by*:* IACS member)
Panel Approval:	4 December 2020 (Ref: PS19002gISd)
GPG Approval:	12 January 2021 (Ref: 19001fIGc)

- **Rev.2 (Nov 2005)**

No HF document available

- **Rev.1 (2001)**

No HF document available

- **New (1985)**

No HF document available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC63:

Annex 1. **TB for Del (Jan 2021)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents for New (1985), Rev.1 (2001) and Rev.2 (Nov 2005).

Technical Background (TB) document for UI SC63 (Del, Jan 2021)

1. Scope and objectives

The task was initiated to delete UI SC63 since it was found that:

- The existing UI details “The pre-discharge alarm shall be automatically activated, e.g. by opening of release cabinet door. An automatic time-delay device shall ensure that the alarm operates for at least 20sec. before the medium is released.” The content of this UI has been consolidated into FSS Code, Ch. 5.2.1.3.2, amended by Resolution MSC.206(81), adopted on 18 May, 2016.

2. Engineering background for technical basis and rationale

The Panel majority agreed that the Nov 2005 version of UI SC63 should be deleted because the content of this UI has been consolidated into FSS Code, Ch. 5.2.1.3.2, amended by Resolution MSC.206(81), adopted on 18 May, 2016.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

- Delete UI SC63.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC64 “Fire dampers in ventilation ducts”

Summary

This UI provides a clarification of SOLAS II-2/9.7.3.1. It was updated to reflect amendments to SOLAS which were introduced by Resolution MSC.365(93).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (June 2021)	15 June 2021	1 July 2022
Rev.1 (Nov 2005)	November 2005	-
New (1985)	1985	-

- **Rev.2 (June 2021)**

1 Origin of Change:

☐ Based on IMO Regulation *SOLAS Chapter II-2*

2 Main Reason for Change:

SOLAS II-2/9.7 has been amended through MSC.365(93) which has entered into force on 01/01/2016, and has reorganized the requirements referenced in the UI.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Noting that the reference regulation has been amended, the Panel agreed to update the interpretation.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 10 December 2020 (Made by: Safety Panel)

Panel Approval: 28 May 2021 (Ref: PS19002lISk)
GPG Approval: 15 June 2021 (Ref: 19001nIGb)

- **Rev.1 (Nov 2005)**

No history available

- **New (1985)**

No history available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (June 2021)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document for New (1986) and Rev.1 (Nov 2005).

Technical Background (TB) document for UI SC64 (Rev.2 June 2021)

1. Scope and objectives

This UI aims at clarifying when fire dampers are required on ventilation ducts.

2. Engineering background for technical basis and rationale

Same as original UI.

3. Source / derivation of the proposed IACS Resolution

This interpretation makes clear that fire dampers are not required on ventilation ducts with a cross-sectional area lower than 0.075m², unless required otherwise, e.g. because the duct is crossing “A” class boundaries isolating accommodation spaces, service spaces or control stations from machinery spaces of category “A”, galleys, vehicle spaces, ro-ro spaces or special category spaces.

4. Summary of Changes intended for the revised Resolution:

Update of the reference requirements in SOLAS II-2/9 as amended.

5. Points of discussions or possible discussions

Some members considered that the regulations were clear and that the UI could be deleted.

There was some discussion on which parts of SOLAS II-2/9.7 should be included in the interpretation. Those which were mentioned were:

- 9.7.1.2 which states the testing requirements for fire dampers.
- 9.7.1.3 which requires them to be accessible.
- 9.7.2 which is the general heading for the arrangement of ducts.
- 9.7.2.1 which requires a fire damper to be fitted when the galley duct is shared with that from another space on smaller ships.
- 9.7.2.2 and 9.7.2.3 which prohibit ducts passing through other spaces unless the requirements under 9.7.2.4 are met.
- 9.7.2.4 which has two options for compliance.
- 9.7.2.4.1.3 which requires fitting an automatic fire damper.
- 9.7.2.4.2.1 which requires ducts to be constructed of steel with a thickness depending on the size and for it to be suitably supported and stiffened.
- 9.7.2.4.2.2 which requires the duct to be insulated for its length.
- 9.7.2.6 which requires an automatic fire damper when a duct crosses a main vertical zone division.
- 9.7.4.4 which requires an automatic fire damper to be fitted when the duct serves more than one ‘tween-deck accommodation space, service space or control station on passenger ships carrying more than 36 passengers.

- 9.3.3 which provides requirements for the operation of fire dampers.

However, it was agreed to only refer to regulations 9.7.2.2 and 9.7.2.3 and 9.7.2.4.2.1 and 9.7.2.4.2.2 to cover the situations when dampers were and were not required on ducts or pipes with a free sectional area of 0.075m^2 or less.

There was also some discussion about including mention of ducts or pipes with a free sectional area of more than 0.075m^2, but this idea was not supported as the requirements in 9.7.3.1 were clear for that size duct/pipe.

6. Attachments if any

None

UI SC70 "Cargo tank vent systems and selection of electrical equipment"

Summary

In Corr.1 of this Resolution, editorial errors included when the clean version of Rev.4 of this UI was produced have been corrected.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Apr 2023)	24 April 2023	-
Rev.4 (Feb 2021)	15 February 2021	1 July 2022
Rev.3 (Oct 2010)	28 October 2010	1 January 2012
Rev.2 (Nov 2005)	November 2005	-
Rev.1 (May 2001)	May 2001	1 July 2001
New (1985)	1985	-

- **Corr.1 (Apr 2023)**

1 Origin of Change:

☑ Other (correction of editorial errors included when the clean version of Rev.4 of this UI was produced)

2 Main Reason for Change:

Editorial errors (i.e. the interpretation on SOLAS II-2/11.6.2 was inadvertently deleted when the clean version of Rev.4 of this UI was produced) have been corrected.

To take this opportunity, the following expression has been removed in accordance with the format requirement as per IACS Procedures Volume 1: *amended by IMO resolutions up to MSC.421(98)*

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 6 August 2022	(Ref: PM20906uIMa)
Panel Approval	: 28 December 2022	(Ref: PM20906uIMb)
GPG Approval	: 24 April 2023	(Ref: 20206_IGq)

- **Rev.4 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **Rev.3 (Oct 2010)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

To align the cargo tank vent location arrangements between SOLAS and the IEC standard. Also the original document contained unified interpretations for two SOLAS rules, when moving from Rev 1 to Rev 2 the second SOLAS reference was accidentally omitted as well as the quoted text for the SOLAS Rule which was inadvertently deleted.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Form A was agreed in the Machinery Panel and approved by the GPG. It was agreed to carry out the task by correspondence.

.5 Other Resolutions Changes:

IACS UR F44

.6 Dates:

Original Proposal:	16 January 2007 Made by the Machinery Panel
Panel Approval:	23 August 2010
GPG Approval:	28 October 2010 (Ref: 7518_IGe)

- **Rev.2 (Nov 2005)**

No history file or TB document available.

- **Rev.1 (May 2001)**

WP/EL submitted a revised text of SC 70 for approval in its Report to GPG 50.
No TB document available.

- **New (1985)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC70:

Annex 1. **TB for Rev.3 (Oct 2010)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.4 (Feb 2021)**

See separate TB document in Annex 2.

Note: *There are no separate Technical Background (TB) documents available for New (1985) and Rev.1 (May 2001), Rev.2 (Nov 2005) and Corr.1 (Apr 2023).*

Technical Background for UI SC70 Rev.3, Oct 2010

1. Scope and objectives

To align the cargo tank vent location arrangements between SOLAS and the IEC standard. Also the original document contained unified interpretations for two SOLAS rules. When moving from Rev 1 to Rev 2 the second SOLAS reference was accidentally omitted as well as the quoted text for the SOLAS Rule was inadvertently deleted. The objective of this revision is to reinstate the proposed change from Rev1 to Rev2 where the SOLAS reference changed. It is also proposed that the text immediately following the second SOLAS reference was deleted by error as the subsequent interpretation relates to this text.

2. Engineering background for technical basis and rationale

The changes to UI SC70 are to align the cargo tank vent location arrangements between SOLAS and the IEC standard. However, an anomaly arises with the specification of the Zone 2 distance. The SOLAS requirement is that the vent distance should be a total of at least 5m from the nearest air intakes. However, the IEC document specifies a Zone 1 of 3m and a Zone 2 of 1.5m which totals 4.5m. In this instance the IACS machinery panel have deferred to the SOLAS requirement and have specified the Zone 2 distance to be 2m. This special case has been identified within the UI.

3. Source/derivation of the proposed IACS Resolution

IACS UI SC70 (Rev.2 Nov 2005)
SOLAS
IEC 60092-502

4. Summary of Changes intended for the revised Resolution:

IACS has agreed to accept the IEC standard 60092-502 with regard to the installation of electrical equipment in tankers. The standard introduces a zoning concept for hazardous areas and has new requirements to the electrical installations in line with generic principles laid down in the IEC 60079-series of standards for electrical installations in hazardous areas. The zonal concept gives permission to the use of electrical motors and other electrical equipment in Cargo Pump Room and similar hazardous spaces. This is agreed to be in line with the IACS opinion. It is also agreed that the electrical installation should be limited as far as practical as stated.

It should be made clear that this increased distance for Zone 2 is only related to the location of cargo tank vents, for all other cases the IEC distance of 1.5m remains.

The title of the UI SC70 was also changed to clearly reflect its contents.

Also:
i) Add second SOLAS reference to Reg. II-2/4.5.3.4.1.
ii) Remove the strikethrough on the text following the second SOLAS reference.

"Text:
Not less than 10m measured horizontally from the nearest air intakes and openings to enclosed spaces containing a source of ignition and from deck machinery and equipment which may constitute an ignition hazard."

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC70 (Rev.4 Feb 2021)

1. Scope and objectives

UI SC70(Rev.3) does not reflect the agreed format for referencing the IEC standards. Rev.4 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC70 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60092-502	IEC60092-502:1999

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC76 "Engine bearing temperature monitors or equivalent"

Summary

This document presents IACS unified interpretation SC 76/Rev.1 relating to the engine bearing temperature monitors mentioned in SOLAS regulation II-1/47.2, with a view to facilitating consistent implementation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2025)	24 June 2025	01 January 2027
Original version	1985	1985

- **Rev.1 (May 2025)**

1 Origin of Change:

✓ Suggestion by IACS member

2 Main Reason for Change:

IACS deems that the term "engine bearing temperature monitors or equivalent devices" in SOLAS regulation II-1/47.2 does not properly reflects the current design, since not only the monitoring systems with direct measurement of the bearing temperature are implemented by the engine manufacturers, but also the monitoring systems based on the temperature measurement of the oil outlet, including the splash oil temperature monitoring systems.

3 Surveyability review of UR and Auditability review of PR

None.

4 Human Element issues assessment

None.

5 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

CIMAC.

6 History of Decisions Made:

The task was initiated as a follow-up to the revisions of URM35 and URM36. These revisions were proposed to amend the Unified Interpretation (UI) SC76 to align with the updated wording in URM35 and URM36.

The Panel is focused on developing a new revision Unified Interpretation (UI) related to engine bearing temperature monitors or equivalent devices. This is crucial for ensuring the safety and reliability of engine operations.

7 Other Resolutions Changes:

UR M10.

8 Any hinderance to MASS, including any other new technologies:

None.

9 Dates:

Original Proposal	: 18 January 2019	(Made by: PM18908cIMa)
Panel Approval	: 05 October 2023	(Ref: PM18908cIMz)
GPG Approval	: 24 June 2025	(Ref: 25084aIGc)

- **New (1985)**

No history file is available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC76:

Annex 1. **TB for Rev.1 (June 2025)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) documents available for New (1985).

Technical Background (TB) document for UI SC76 (Rev.1 June 2025)

1. Scope and objectives

The task was initiated as a follow-up to the revisions of URM35 and URM36. These revisions were proposed to amend the Unified Interpretation (UI) SC76 to align with the updated wording in URM35 and URM36.

The Panel is focused on developing a revision Unified Interpretation (UI) related to engine bearing temperature monitors or equivalent devices. This is crucial for ensuring the safety and reliability of engine operations.

2. Engineering background for technical basis and rationale

The Machinery Panel (MP) requested the International Council on Combustion Engines (CIMAC) to provide relevant data. As CIMAC's input was essential for making informed decisions regarding the amendments.

Based on the feedback provided by CIMAC, the MP discussed whether to amend the SOLAS Regulation II-1/47.2 or to develop a new UI (revision of UI SC76). The decision made to revise UI SC76.

The decision is made, for necessary revision of UI SC 76 that will be implemented in UR M10 to ensure they are up-to-date with the latest safety standards and technological advancements.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

SOLAS Ch.II-1, Regulation 47.2

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

Current Design Reflection: The term "engine bearing temperature monitors or equivalent devices" in SOLAS regulation II-1/47.2 is considered outdated by IACS. Modern engine designs incorporate various monitoring systems, not limited to direct bearing temperature measurement. These include:

- Oil Outlet Temperature Monitoring: Systems that measure the temperature of the oil exiting the bearing, providing an indirect but effective means of monitoring bearing health.
- Splash Oil Temperature Monitoring: Systems that monitor the temperature of the oil splashed onto the bearings, which can also indicate bearing conditions.

Bearing Types: The term "engine bearing" in SOLAS regulation II-1/47.2 needs clarification due to the different types of bearings used in various engine designs:

- Trunk Piston Engines: Typically have main bearings and connecting rod bearings.
- Crosshead Engines: Include main bearings, crosshead bearings, and crankpin bearings.

Monitoring Requirements: It should be specified which bearings require temperature monitoring to ensure comprehensive safety and compliance.

IACS adopt a revised unified interpretation (UI SC 76/Rev.1) of SOLAS regulation II-1/47.2. This revision aims to:

- Align with Modern Practices: Ensure the terminology and requirements reflect current monitoring technologies and practices.
- Enhance Clarity: Provide clear guidelines on which bearings need to be monitored and the acceptable types of monitoring system.

6. Attachments if any

None.

UI SC79 "Certified Safe Type Electrical Equipment for Ships Carrying Dangerous Goods"

Summary

In Rev.5 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.5 (Feb 2021)	15 February 2021	1 July 2022
Rev.4 (Oct 2015)	October 2015	1 January 2017
Rev.3 (Aug 2006)	August 2006	-
Rev.2 (Sept 2005)	September 2005	1 April 2006
Rev.1 (May 2004)	May 2004	1 January 2005
New (1993)	1993	-

- **Rev. 5 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS/MARPOL/the XXX Code, as amended by resolutions MSC/MEPC.xx(xx), (...) and MSC/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **Rev.4 (Oct 2015)**

.1 Origin for Change:

☑ Suggestion by an IACS Member

.2 Main Reason for Change:

To clarify the application of UI SC79 to ships carrying dangerous solid cargoes in bulk, when the cargo is considered dangerous also for the capacity to develop flammable gases.

It resulted during the discussion that flammable liquid should be addressed rather than solid cargoes.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Suggestion from a Machinery Panel Member was discussed during the 12th meeting, by correspondence within Machinery Panel and an agreement has been reached during the 22nd meeting.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 12 February 2009, made by a Member
Panel Approval: 22nd Machinery Panel Meeting

GPG Approval: *14 October 2015 (Ref: 12150_IGb)*

- **Rev.3 (Aug 2006)**

.1 Origin for Change:

No records available.

.2 Main Reason for Change:

The UI have been editorially revised simply to incorporate reference to MSC.1/Circ.1203

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

No records available.

.4 History of Decisions Made:

No records available.

.5 Other Resolutions Changes

Also, UI FTP 4 Rev.1, SC 16 Rev.2, SC 174 Rev.1 and SC 197 Rev.1 have been editorially revised for the same reason.

.6 Dates:

GPG Approval: *Ref: 5142bIGb*

- **Rev.2 (Sept 2005)**

.1 Origin for Change:

No records available.

.2 Main Reason for Change:

To amend a UI SC79 of SOLAS Reg. II-2/19.3.2 with a special note concerning pipe tunnels.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

No records available.

.4 History of Decisions Made:

It was found that in revising the above SC79 to reference IEC 60092-506 the pipe tunnels category was omitted. The 'original' SC79, Table 3 considered pipe tunnels

with equipment, such as flanges, valves, pumps, etc. serving Zone 1-B areas as Zone 2 areas.
We currently have container ships, carrying dangerous goods, having a pipe tunnel and whilst we can use the original SC79 as guidance this does not appear to be satisfactory.
It was decided to amend the UI SC 79 with categorizing of pipe tunnels referring to clause 7 and item B of table B1 of IEC 60092-506 standard.

.5 Other Resolutions Changes

No records available.

.6 Dates:

No records available.

- **Rev.1 (May 2004)**

No records available.

- **New (1993)**

No records available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC79:

Annex 1. **TB for Rev.4 (Oct 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.5 (Feb 2021)**

See separate TB document in Annex 2.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (1993) and Rev.1 (May 2004), Rev.2 (Sept 2005) and Rev.3 (Aug 2006).*

Technical Background (TB) document for UI SC79 (Rev.4, Oct 2015)

1 Scope and objectives

To clarify the application of SC79 to ships carrying dangerous solid cargoes in bulk, when the cargo is considered dangerous for the capacity to develop flammable gases.

2 Engineering background for technical basis and rationale

Some solid cargos, e.g. Sulphur or Coal, are defined as dangerous cargoes since are flammable or may develop flammable gases (typically methane for the case of Coal).

For these cargoes, the SOLAS Reg. II-2/19.3.5 does not require the installation of a separate bilge pumping system (such requirement is only for large quantities of flammable or toxic liquids), and therefore the bilge pump in the machinery space is also used for the cargo area. In such a case, the bilge pipe has an open-end in hazardous area, and the internal part of the pipe would be a Zone 1 hazardous area, including its part extending into the machinery space.
Therefore, being the machinery space an enclosed space containing such pipes with equipment such as flanges, valves, pumps, should be regarded as an extended hazardous area (Zone 2), but it is actually impossible to make the machinery space suitable for classification as Zone 2 hazardous area, by mean of installation of certified safe type equipment complying with SOLAS Reg. II-2/19.3.2 only.

However, also considering the small amount of gas developed from solid cargo which might leak into the machinery space through flanges, valves and pumps, and the high rate of ventilation normally available in the machinery space, it is proposed that the usual arrangement be considered acceptable; thus the proposed amendment to UI SC 79 allowing to regard the machinery space as a safe area and not a Zone 2 Hazardous area.

During the Revision of UI SC79 a Member Society proposed to discuss the alternative of providing a minimum six (6) supply air changes per hour and fail alarm of ventilation system with redundancy of supply fan instead of overpressure of 25 Pa and overpressure loss alarm. In fact, in accordance with IEC 60092-506 clause 7 (referred by MSC.1/Circ.1203), enclosed spaces (e.g. pipe tunnels, bilge pump rooms, etc.) having opening to Zone 1 may be regarded as safe area if maintained a minimum overpressure of at least 25 Pa to the adjacent hazardous space and, in the event of the loss of overpressure, visible and audible alarm is to be activated.

The Panel agreed that the IEC standard is not suitable to prevent a flammable liquid leakage between spaces (the required overpressure is of only 2.5 mmWC) and therefore the UI, addressing flammable liquid leakage from equipment such as flanges, valves, pumps, has been amended of consequence, removing the overpressure option and replacing with ventilation.

It has been discussed inside the Panel whether pipes with an open end in cargo zone are to be considered openings or sources of release and how they should be classified. The discussion addressed also the adequate capacity of ventilation and the case of failure of mechanical ventilation in enclosed spaces.
The results of these discussions are reflected in the revised UI.

3 Source / derivation of the proposed IACS Resolution

SOLAS Reg. II-2/19.3.2

4 Summary of Changes intended for the revised Resolution

Interpretation 3 of the UI SC 79 has been amended to address bilge pipes serving cargo area where flammable liquids are carried, and passing through enclosed spaces. When such bilge pipes are fitted with equipment such as flanges, valves, pumps, the traversed spaces are to be classified extended hazardous area, unless they are provided with mechanical ventilation system with a minimum capacity of six air changes per hour.

If the space is provided with redundant mechanical ventilation, equipment may be either certified for Zone 2 or interlocked so as to prevent inadvertent operation when the ventilation is not operational.

If the space is provided with NON-redundant mechanical ventilation, essential equipment such as bilge and ballast systems are to be certified for Zone 2, while other equipment may be either certified for Zone 2 or shall be automatically disconnected following loss of ventilation.

5 Points of discussions or possible discussions

During the revision of the UI a Member Society has highlighted that SOLAS Reg. II-2/19.3.2 does not apply to products classified as MHB (Material Hazardous only in Bulk) and it has been suggested to develop a UR to make the content of UI SC 79 also applicable to MHB; a final decision on this matter was not taken.

6 Attachments if any

None

Technical Background (TB) document for UI SC79 (Rev.5 Feb 2021)

1. Scope and objectives

UI SC79(Rev.4) does not reflect the agreed format for referencing the IEC standards. Rev.5 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC79 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60092-506	IEC60092-506:2003

5. Points of discussions or possible discussions

None

6. Attachments if any

None.

UI SC81 "Drainage of enclosed spaces situated on the bulkhead deck"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2010)	19 February 2010	1 July 2010
NEW (1993)	*No record*	-

- **Rev.1 (Feb 2010)**

.1 Origin for Change:

☑ Based on IMO Regulation *(SOLAS Chapter II-1, Reg. 35-1.2.6.1)*

.2 Main Reason for Change:

Reg.II-1/ 21.1.6.1(SOLAS 89/90 Amendments) has been moved to Reg. II-1/35-1.2.6.1(SOLAS 05 amendments).

.3 History of Decisions Made:

In consequence of the enforcement of MSC.194(80) where SOLAS Reg.II-1/ 21.1.6.1(SOLAS 89/90 Amendments) has been moved to Reg. II-1/35-1.2.6.1(SOLAS 05 amendments) and in light of the revisions to the 66 ICLL under the 1988 LL Protocol which provide consistency with SOLAS (i.e. the submergence of the space being drained with respect to 5 deg inclination has been replaced by the submergence of the freeboard deck at side), UI SC81 has been updated accordingly.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *22 July 2009, made by Statutory Panel*
Panel Approval: *January 2010*
GPG Approval: *19 February 2010 (ref. 10001_IGe)*

- **NEW (1993)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC81:

Annex 1. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) document for the original resolution (1993).*

Technical Background for UI SC81 Rev.1, Feb 2010

1. Scope and objectives

In consequence of the enforcement of MSC.194(80) where SOLAS Reg.II-1/ 21.1.6.1(SOLAS 89/90 Amendments) has been moved to Reg. II-1/35-1.2.6.1(SOLAS 05 amendments) and in light of the revisions to the 66 ICLL under the 1988 LL Protocol which provide consistency with SOLAS (i.e. the submergence of the space being drained with respect to 5 deg inclination has been replaced by the submergence of the freeboard deck at side), UI SC81 has been updated accordingly.

2. Engineering background for technical basis and rationale

The intention with SOLAS Regulation II-1/35-1.2.6.2 is assumed to be to avoid water flowing inboard through overboard drainage openings in case of the ship's deck edge submerging at a heel angle of 5 degrees or less. Therefore only inboard drainage of enclosed cargo spaces situated on the bulkhead deck of a passenger ship and on the freeboard deck of a cargo ship is accepted for ships where the deck edge will be submerged when the ship heels 5 degrees or less.

For ships where the deck edge will only be submerged when the ship heels more than 5 degrees, II-1/35-1.2.6.1 applies and drainage of such enclosed cargo spaces overboard is allowed.

Based on the assumed intention with II-1/35-1.2.6.2, inboard drainage of enclosed cargo spaces in accordance with II-1/35-1.2.6.2 should be accepted also for ships where the deck edge will only be submerged when the ship heels more than 5 degrees.

3. Source / derivation of the proposed IACS Resolution

IACS Statutory Panel agreed to the revision of UI SC81.

4. Summary of Changes intended for the revised Resolution:

The old UI SC81 was updated.

5. Points of discussions or possible discussions

For requirements of drainage of enclosed cargo spaces, SOLAS Reg.II-1/35-1.2.6.1 and ICLL Reg. 22 should be followed.

6. Attachments if any

N.A.

UI SC85 “Ro-Ro Space”

Summary

SOLAS regulation II-2/19.2.2.3. makes a reference to Ro-Ro ships and Ro-Ro spaces. This UI offers clarity to the definitions of ro-ro spaces. The Rev.2 version updates the UI to the new format and corrects the SOLAS references.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (May 2021)	18 May 2021	1 July 2022
Rev.1 (Nov 2005)	November 2005	-
New (1993)	1993	-

- **Rev.2 (May 2021)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

The UI’s text has not been updated since last version. During periodic review of IACS instruments, this UI was identified for review and refinement.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

During the periodic maintenance of IACS Instruments which have not been updated for the last ten years, the Safety panel agreed to review this UI and update it as required.

SOLAS Reg. II-2/3 (Definitions) includes the following definitions:

“35 Open ro-ro spaces are those ro-ro spaces that are either open at both ends or have an opening at one end, and are provided with adequate natural ventilation effective over their entire length through permanent openings distributed in the side plating or deckhead or from above, having a total area of at least 10% of the total area of the space sides.”

“36 Open vehicle spaces are those vehicle spaces which are either open at both ends, or have an opening at one end and are provided with adequate natural ventilation

effective over their entire length through permanent openings distributed in the side plating or deckhead or from above, having a total area of at least 10% of the total area of the space sides."

"41 Ro-ro spaces are spaces not normally subdivided in any way and normally extending to either a substantial length or the entire length of the ship in which motor vehicles with fuel in their tanks for their own propulsion and/or goods (packaged or in bulk, in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles) can be loaded and unloaded normally in a horizontal direction."

"42 Ro-ro passenger ship means a passenger ship with ro-ro spaces or special category spaces."

"46 Special category spaces are those enclosed vehicle spaces above and below the bulkhead deck, into and from which vehicles can be driven and to which passengers have access. Special category spaces may be accommodated on more than one deck provided that the total overall clear height for vehicles does not exceed 10 m."

"56 Vehicle carrier means a cargo ship which only carries cargo in ro-ro spaces or vehicle spaces, and which is designed for the carriage of unoccupied motor vehicles without cargo, as cargo."

There were two schools of thought regarding this UI within the panel, with some preferring to delete the UI because it has been added into SOLAS Reg. II-2/3. Upon further consideration, it was noted that since the definition in SOLAS Reg. II-2/3 was added, while the other definitions were maintained (as extracted above), this UI provided clarity to the definitions and their application.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	January 2021 (Made by: Safety Panel)
Panel Approval:	29 April 2021 (Ref: 19001lPSb)
GPG Approval:	18 May 2021 (Ref: 19001lIGe)

- **Rev.1 (Nov 2005)**

No records available

- **New (1993)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (May 2021)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for New (1993) and Rev.1 (Nov 2005).*

Technical Background (TB) document for UI SC85 (Rev.2 May 2021)

1. Scope and objectives

To clarify the application of the definitions of Ro-Ro spaces in SOLAS Reg. II-2/19.2.2.3.

2. Engineering background for technical basis and rationale

NA

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg. II-2/19.2.2.

4. Summary of Changes intended for the revised Resolution:

The text of SOLAS Reg. II-2/19.2.2. incorporated in the text of the UI.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC86 "Weather Decks"

Summary

The original UI provides interpretation on how to consider ro-ro spaces exposed to weather for the purposes of SOLAS Reg.II-2/19 on the carriage of dangerous goods on board of ships.

The definition is now included in SOLAS so the UI was deleted.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2020)	13 November 2020	-
Rev.1 (Nov 2005)	November 2005	-
New (1993)	1993	-

- **Del (Nov 2020)**

UI SC86 (Rev.1) was deleted on 13 November 2020.

1 Origin of Change:

☑ Based on IMO Regulation

2 Main Reason for Change:

Definition of "*Weather Decks*" added to SOLAS Reg.II-2/3 "*Definitions*" by IMO Resolution MSC.99(73) "*ADOPTION OF AMENDMENTS TO THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1974, AS AMENDED*".

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

As a part of the maintenance of IACS Resolutions and Recommendations which have not been updated for the last ten years, Safety Panel decided to delete UI SC86, as the definition of the term "weather deck" has been established as SOLAS II-2/Reg. 3-50. GPG endorsed the deletion.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	30 September 2020	Made by: Safety Panel
Panel Approval:	28 October 2020 (Ref: PS19002jISb)	
GPG Approval:	13 November 2020 (Ref: 19001cIGb)	

- **Rev.1 (Nov 2005)**

No records available.

- **New (1993)**

No records available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC86:

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Note: There is no separate Technical Background (TB) document for New (1993), Rev.1 (2005 Nov) and Del (Nov 2020).

UI SC 87 "Certification of Carriage of Solid Dangerous Bulk Cargoes (Reg. II-2/19.3 and 19.4)"

Summary

This UI provides the interpretation of requirements to SOLAS Regs. II-2/19.3 and 19.4 relating to Certification for carriage of solid dangerous bulk cargoes. It has been revised to refer to the IMSBC Code rather than the BC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Mar 2021)	24 March 2021	-
Rev.1 (Nov 2005)	November 2005	-
New (1993)	1993	-

- **Rev.2 (Mar 2021)**

1 Origin of Change:

☑ Based on the change of relevant IMO Code's name ("BC Code" changed to "IMSBC Code")

2 Main Reason for Change:

The 'International Maritime Solid Bulk Cargoes (IMSBC) Code' has been adopted by Resolution MSC.268(85) and the amendments to chapters VI and VII of the International Convention for the Safety of Life at Sea (SOLAS) 1974 was adopted by resolution MSC.269(85) to make the provisions of the International Maritime Solid Bulk Cargoes (IMSBC) Code mandatory under the Convention.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on periodic review of IACS Resolution by Safety Panel, the reference of 'Code of Safe Practice for Solid Bulk Cargoes (BC Code)' in SOLAS has been replaced by 'International Maritime Solid Bulk Cargoes (IMSBC) Code' which was made mandatory under the Convention.

Therefore, the cross reference of "BC Code" in the UI replaced and corrected by "IMSBC Code". The Safety Panel agreed to update the reference in the UI.

It was decided in GPG that an implementation date for the revised UI is not necessary as the interpretation has been in force since November 2005 and the revision does not include substantive changes to the interpretation.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable

7 Dates:

Original Proposal: December 2020 (Made by: Safety Panel)
Panel Approval: 19 February 2021 (Ref: 19001kPSa)
GPG Approval: 24 March 2021 (Ref: 19001kIGc)

- **Rev.1 (Nov 2005)**

No records available

- **New (1993)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC87:

Annex 1. **TB for Rev.2 (Mar 2021)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents for New (1993) and Rev.1 (Nov 2005).*

Technical Background (TB) document for UI SC87 (Rev.2 Mar 2021)

1. Scope and objectives

Review of the Unified interpretation SC 87 Rev.1 (Dec 2005)

2. Engineering background for technical basis and rationale

This UI was developed to provide the special requirements and document of compliance of the Certification of Carriage of Solid Dangerous Bulk Cargoes of SOLAS regulation II-2/19.3 and 19.4 while carriage of dangerous goods.

The reference of 'Code of Safe Practice for Solid Bulk Cargoes (BC Code)' in SOLAS has been replaced by 'International Maritime Solid Bulk Cargoes (IMSBC) Code' by SOLAS amendments Resolution MSC 269 (85) adopted on 4 December 2008.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution

Updated cross references of code

5. Points of discussions or possible discussions

Safety panel unanimously agreed UI SC87 Rev.2 for changes of reference of the BC Code to IMSBC Code.

6. Attachments if any

None

UI SC89 "Ventilation of Cargo Spaces"

Summary

This UI provides interpretation of IMSBC Code and SOLAS II-2/19.3.4 requirements for ventilation of cargo spaces in relation to SOLAS II-2/5.2.1.1.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawn (Dec 2024)	13 December 2024	-
Rev.5 (May 2024)	09 May 2024	1 January 2025
Rev.4 (June 2018)	25 June 2018	1 January 2019
Rev.3 (Feb 2011)	21 February 2011	1 January 2012
Rev.2 (Nov 2005)	17 November 2005	--
Rev.1 (1996)	No Record	--
New	No Record	--

- **Rev.5 (May 2024)**

Note) UI SC89 Revision 5 approved on 9 May 2024 was withdrawn on 13 December 2024 prior to coming into force on 1 January 2025.

1 Origin of Change:

☒ Suggestion by IACS member
☒ Based on IMO Resolution MSC.539(107): IMSBC Code – Appendix 1 – Individual Schedules of Solid Bulk Cargoes

2 Main Reason for Change:

A revision to the UI was needed as the cargo DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%) for which mechanical surface ventilation shall be available at all times had been introduced in the IMSBC Code (MSC.539(107) - Amendment 07-23).
While other cargoes which have been listed in UI SC 89 Rev.4 require continuous ventilation, the cargo requires that mechanical surface ventilation shall be available at all times. Therefore, ventilation requirement for the cargo was listed in the UI separately from other cargoes.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

The proposal to amend the UI was initiated by an IACS member. Through correspondence, the Panel worked out and unanimously agreed to a final draft amendment to UI SC89.

UI SC89 was submitted to CCC 10 (CCC 10/INF.3). In the plenary discussion, the concern was raised that the UI could be understood to mean that all listed cargoes are categorised as dangerous goods due to the reference to SOLAS II-2/19.3.4. CCC 10 decided to forward the document to E&T 41. At E&T, possible improvements in the wording were discussed, e.g. better reflection of the requirements of the IMSBC Code (mechanical ventilation should be available all times and not continuous ventilation), but concerns that the inclusion of DRI (D) is incorrect could not be refuted.

Based on these comments, IACS decided that it would be best to withdraw UI SC89 Revision 5 and restore Revision 4, which has been in use since 1 January 2018.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 15 November 2023	(Made by Panel Member)
Panel Approval	: 8 February 2024	(Ref: PS23059_ISd)
GPG Approval	: 9 May 2024	(Ref: 24038_IGb)
Withdrawal		
Panel Approval	: 8 November 2024	(Ref: PS23059_ISo)
GPG Approval	: 13 December 2024	(Ref: 24038_IGe)

- **Rev.4 (June 2018)**

1 Origin of Change:

☐ Suggestion by IACS member
☐ Based on IMO Resolutions MSC.354(92) and MSC.426(98): IMSBC Code – Appendix 1 – Individual Schedules of Solid Bulk Cargoes

2 Main Reason for Change:

A revision to the UI was needed as the cargo ALUMINIUM SMELTING / REMELTING BY-PRODUCTS, PROCESSED also requires continuous mechanical ventilation as per the other cargoes listed in this UI.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The proposal to amend the UI was initiated by an IACS member. Through correspondence, the Panel worked out and unanimously agreed to a final draft amendment to UI SC89 for GPG consideration.

Due to the simple nature of the change, a technical background document is not considered necessary for this revision.

There is no technical input posted on the TC Forum or expressed by WG participants other than IACS Societies.

5 Other Resolutions Changes:

None

6 Dates:

Original proposal:	13 December 2017	Made by: Safety panel
Panel Approval:	19 May 2018	(Ref: PS17010y)
GPG Approval:	25 June 2018	(Ref: 18047_IGf)

- **Revision No.3 (Feb 2011)**

1 Origin of Change:

☐ Suggestion by IACS member
☐ Based on IMO Regulation: SOLAS Reg. II-2/19.3.4; IMSBC Code Reg. 1.7.29.1; IMSBC Code Reg. 3.5.4

2 Main Reason for Change:

The need of revision was envisaged due to the new IMSBC code and its entries.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The proposal of amended was initiated by an IACS member. Through correspondence, the Panel worked out and unanimously agreed to a final draft amendment to UI SC 89 for GPG consideration.

There is no technical input posted on the TC Forum or expressed by WG participants other than IACS Societies.

5 Other Resolutions Changes:

None

6 Dates:

Original proposal:	17 March 2010	Made by: Statutory panel
Panel Approval:	14 January 2011	
GPG Approval:	21 February 2011	(Ref. 11008_IGc)

- **Revision No.2 (Nov 2005)**

No HF/TB document available.

- **Revision No.1 (1996)**

No HF/TB document available.

- **New (No Record)**

No HF/TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC89:

Annex 1. **TB for Rev.3 (Feb 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.5 (May 2024)**

See separate TB document in Annex 2.

Note:

1) There are no separate Technical Background (TB) documents for UI SC89 New, Rev.1 (1996), Rev.2 (Nov 2005) and Rev.4 (June 2018).

Technical Background (TB) document for UI SC 89 (Revision 3, Feb 2011)

1. Scope and objectives

Revision of UI SC89 was envisaged due to the new IMSBC code and its entries. The Statutory Panel agreed to a complete make-over to avoid repetition of the requirements in the IMSBC code and to make the context clearer.

2. Engineering background for technical basis and rationale

1) IMSBC Code defines the entries requiring continuous mechanical ventilation;
2) IMSBC Code/1.7.29.1 defines "continuous ventilation" to mean "ventilation that is operating at all times";
3) IMSBC Code/3.5.4 requires "Such openings shall comply with the requirements of the Load Line Convention as amended for openings not fitted with means of closure";
4) The provisions mentioned above in the IMSBC Code do not prohibit ventilators from being fitted with a means of closure;
5) The closing means of ventilation system as required by SOLAS Reg. II-2/5.2.1.1 must be fitted for fire protection purposes;
6) The Minimum height to vent opening is to be in accordance with ICLL/19.3, depending on the location of the ventilator (4.5m for Position 1 and 2.3m for Position 2)

Based on above rational, it's concluded that where the IMSBC Code requires continuous ventilation, this does not prohibit ventilators from being fitted with a means of closure as required for fire protection purposes under SOLAS II-2/5.2.1.1 provided the minimum height to the ventilator opening is to be in accordance with ICLL/19.3 (4.5 m for Position 1 and 2.3 m for Position 2).

3. Source/derivation of the proposed IACS Resolution

- IMSBC Code
- ICLL

4. Summary of Changes intended for the revised Resolution:

The requirements for continuous mechanical ventilation are amended as follows:

"where the IMSBC Code requires continuous ventilation, this does not prohibit ventilators from being fitted with a means of closure as required for fire protection purposes under SOLAS II-2/5.2.1.1 provided the minimum height to the ventilator opening is to be in accordance with ICLL/19.3 (4.5m for Position 1 and 2.3m for Position 2)"

The list of cargoes requiring continuous mechanical ventilation is updated.

5. Points of discussions or possible discussions

Due to the following observations:

1) IMSBC Code entry states that continuous ventilation is not required for seedcake containing solvent extraction as power ventilation should be used with caution due to the likelihood of self heating;

2) "Aluminium Smelting By-Products or Aluminium Remelting By-Products UN 3170" according to the IMSBC Code require "continuous ventilation", too;

3) It was pointed by one member that Ferrophosphorus is not applied to "continuous mechanical ventilation" which is required to Class 4.3 cargoes that may evolve hydrogen in contact with moisture or water. Although the wording of ventilation requirement for Ferrophosphorus is different to the other cargoes, it is still a requirement of continuous ventilation,

the list of cargoes requiring continuous mechanical ventilation is updated as following:

- Aluminium ferrosilicon powder UN 1395
- Aluminium silicon powder, uncoated UN 1398
- Ferrophosphorus
- Ferrosilicon (25% $\leqslant$ Silicon $\leqslant$ 30% or $\geqslant$ 90%silicon)
- Ferrosilicon UN 1408 (30% $\leqslant$ Silicon< 90%)
- Zinc ashes UN1435

- Aluminium Smelting By-Products or Aluminium Remelting By-Products UN 3170

This revision is not intended to expand the original intent of SC 89 to spaces containing package goods while noting there does not appear to be any reason to restrict the application to spaces carrying BC Code cargoes.

6. Attachments if any

None

Technical Background (TB) document for UI SC 89 (Rev.5, May 2024)

1. Scope and objectives

Revision of UI SC89 was envisaged due to the new IMSBC Code and its entries. The Safety Panel agreed that the UI applied to DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%).

2. Engineering background for technical basis and rationale

Individual schedule of DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%) in the IMSBC Code (Amendment 07-23) requires that the mechanical surface ventilation shall be available at all times.

IMSBC Code/1.7.29.1 defines "continuous ventilation" to mean "ventilation that is operating at all times".

In this connection, the requirements that mechanical surface ventilation shall be available at all times mean continuous ventilation as specified in 3.5 of IMSBC Code.

Therefore, this interpretation can apply to DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%).

While other cargoes which have been listed in UI SC 89 Rev.4 require continuous ventilation, the cargo requires that mechanical surface ventilation shall be available at all times. Therefore, ventilation requirement for the cargo was listed in the UI separately from other cargoes.

3. Source/derivation of the proposed IACS Resolution

IMSBC Code

4. Summary of Changes intended for the revised Resolution:

The UI are amended to add the ventilation requirements for DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%).

5. Points of discussions or possible discussions

None

6. Attachments if any

None

SC 91 “Personal protection -protective clothing”

Summary

This Original Resolution provides interpretation of requirements to SOLAS Ch-II-2/19.3.6.1 regulation prepared by Statutory Panel.

Corr.1 updates cross reference of BC code to IMSBC Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Nov 2020)	12 November 2020	-
Rev.1 (Dec 2005)	No records	-
New (1993)	No records	-

- **Corr.1 (Nov 2020)**

The resolution in its present form (Rev.1) is proposed for editorial change.

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The ‘International Maritime Solid Bulk Cargoes (IMSBC) Code’ has been adopted in SOLAS by Resolution MSC 268 (85) and references of ‘Code of Safe Practice for Solid Bulk Cargoes (BC Code)’ in SOLAS has been replaced by ‘International Maritime Solid Bulk Cargoes (IMSBC) Code’ by SOLAS amendments Resolution MSC 269 (85) adopted on 4 December 2008.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on periodic review of IACS Resolution by Safety Panel, noting that the reference of ‘Code of Safe Practice for Solid Bulk Cargoes (BC Code)’ in SOLAS has been replaced by ‘International Maritime Solid Bulk Cargoes (IMSBC) Code’, the cross reference of BC code in UI replaced by IMSBC Code, the Safety Panel agreed to update the reference in the UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable

7 Dates:

Original Proposal:	29 August 2020	Made by: Safety Panel
Panel Approval:	22 October 2020 (Ref: PS19002h)	
GPG Approval:	12 November 2020 (Ref: 19001aIGb)	

Rev.1 (Dec 2005)

No HF/TB document available.

New (1993)

No HF/TB document available.

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Corr.1 (Nov 2020)**

See separate TB document in Annex 1.

◄▲►

Note:

There are no separate Technical Background (TB) for UI SC91 New (1993) and Rev.1 (Dec 2005).

Technical Background (TB) document for SC91 (Corr.1 Nov 2020)

1. Scope and objectives

Review of the Unified interpretation SC 91 (Rev.1 Dec 2005)

2. Engineering background for technical basis and rationale

This UI was developed to provide clarification on personnel protective requirements of SOLAS regulation Ch-II-2/19.3.6.1 while carriage of dangerous goods.

The reference of 'Code of Safe Practice for Solid Bulk Cargoes (BC Code)' in SOLAS has been replaced by 'International Maritime Solid Bulk Cargoes (IMSBC) Code' by SOLAS amendments Resolution MSC 269 (85) adopted on 4 December 2008.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Updated cross references of code.

5. Points of discussions or possible discussions

Safety panel unanimously agreed UI SC91 Corr.1 for changes of reference of the BC Code to IMSBC Code.

6. Attachments if any

None

UI SC93 “Enclosure of stern tubes on cargo ships”

Summary

Chapter II-1 of SOLAS has been amended by MSC.421(98) adopted on 15 June 2017 and this affects the references for UI SC93.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Feb 2021)	24 February 2021	1 July 2021
Rev.1 (Feb 2010)	19 February 2010	1 July 2010
New (1994)	-	-

- **Rev.2 (Feb 2021)**

1 Origin of Change:

☑ Based on IMO Regulation *(SOLAS Chapter II-1, Reg. 12.11)*

2 Main Reason for Change:

Chapter II-1 of SOLAS has been amended by MSC.421(98) adopted on 15 June 2017 and this affects the references for UI SC93.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Revision is part of the review of Resolutions and Recommendations which have not been updated for the last ten years - GPG 85 FUA 9 (PS19002_).

The content of Reg.12.10 now appears to be contained within Reg.12.11. UI SC93 is consequently amended with correct reference to SOLAS.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 30 December 2020 (made by Statutory Panel)
Panel Approval: 5 February 2021 (Ref: PS19002qISb)
GPG Approval: 24 February 2021 (Ref: 19001jIGb)

- **Rev.1 (Feb 2010)**

.1 Origin for Change:

☑ Based on IMO Regulation *(SOLAS Chapter II-1, Reg. 12.10)*

.2 Main Reason for Change:

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82) and this affects the references for and content of UI SC93.

.3 History of Decisions Made:

The content of original Reg.11.9 now appears to be contained within Reg.12.10 with introduction of requirements of stern gland to passenger ships. UI SC93 is consequently amended with correct reference to SOLAS and to be applicable to cargo ships only.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *22 July 2009, made by Statutory Panel*
Panel Approval: *January 2010*
GPG Approval: *19 February 2010 (ref. 10001_IGe)*

- **New (1994)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC93:

Annex 1. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Feb 2021)**

See separate TB document in Annex 2.

◄▼►

Note: *There is no separate Technical Background (TB) document for the New (1994).*

Technical Background for UI SC93 Rev.1, Feb 2010

1. Scope and objectives

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82) and this affects the references for and content of UI SC93. UI SC93 is to be amended to reflect the SOLAS Ch.II-1 Reg.12.10 made by MSC.194(80) and MSC.216(82).

2. Engineering background for technical basis and rationale

The content of original SOLAS Chapter II-1 Reg.11.9 now appears to be contained within Reg.12.10 with introduction of requirements of stern gland to passenger ships. UI SC93 is consequently amended with correct reference to SOLAS and to be applicable to cargo ships only.

3. Source / derivation of the proposed IACS Resolution

IACS Statutory Panel agreed to the amendment to UI SC93.

4. Summary of Changes intended for the revised Resolution:

Compared to the old draft UI, the phrase of “In cargo ships” was added at the beginning of the text of interpretation, which made the UI applicable to cargo ships only.

5. Points of discussions or possible discussions

Amendments were considered necessary to make UI SC93 with correct reference to SOLAS regulation and appropriate application.

6. Attachments if any

N.A.

Technical Background (TB) document for UI SC93 (Rev.2 Feb 2021)

1. Scope and objectives

No change from Rev.1.

2. Engineering background for technical basis and rationale

No change from Rev.1.

3. Source / derivation of the proposed IACS Resolution

Resolution MSC.421(98) and Resolution MSC.429(98).

4. Summary of Changes intended for the revised Resolution:

Chapter II-1 of SOLAS has been amended by MSC.421(98) adopted on 15 June 2017 and this affects the references for UI SC93. The content of Reg.12.10 now appears to be contained within Reg.12.11. UI SC93 is consequently amended with correct reference to SOLAS. Further the term “aft peak” was replaced with “afterpeak” to align with MSC.429(98) wording.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC94 "Mechanical, hydraulic and electrical independency of steering gear control systems"[1,2]

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2018)	10 January 2018	-
Rev.2 (June 2016)	21 June 2016	1 July 2017
Rev.1 (Feb 2010)	17 February 2010	1 July 2011
NEW (1994)	*No record*	-

- **Corr.1 (Jan 2018)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Machinery panel realized that there is a small editorial mistake in UI SC94 Rev.2 Example 2 (figure), where the dashed line should be extended to take over both switches in front of "feed back unit 1"

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Dashed line was extended to take over both switches in front of "feed back unit 1" in UI SC94 Rev.2 Example 2 (figure).

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 07 November 2017, made by Machinery Panel
Panel Approval: 07 November 2017 (Ref: PM11919)
GPG Approval: 10 January 2018 (Ref: 12222_IGj)

[1] Title changed for Rev.1. - Original title: *"Mechanical and electrical independency of electric steering control systems for steering gears"*

[2] Title changed for Rev.2. - Rev.1 title: *"Mechanical, hydraulic and electrical independency ~~and failure detection and response~~ of steering control systems"*

- **Rev.2 (June 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Following development of the new UR E25 'Failure detection and response of all types of steering control systems', the interpretation in Section 4 'Failure Detection and Response of Control Systems' has become obsolete.

The IEC 60092-904:1987 standard referenced at the end of Section 1 has been withdrawn in 2013 without replacement. Hence the reference needs to be removed.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Machinery Panel members agreed at the 22nd Panel meeting (Sept 2015) to delete Section 4 of UI SC94. The title has been adapted to reflect this change.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: November 2015, made by Machinery Panel
Panel Approval: 12 May 2016 (Ref: PM11919)
GPG Approval: 21 June 2016 (Ref: 12222_IGf)

- **Rev.1 (Feb 2010)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Accidents and near misses have been experienced by several ships due to uncontrolled rudder movements. Failure in the electrical/electronic control system can lead to uncontrolled rudder movements for both follow-up and non follow-up steering control systems. The monitoring of the electrical/electronic control system and the action taken by this system when faults are detected will reduce the probability of uncontrolled rudder movements.

.3 History of Decisions Made:

Machinery Panel members after discussion within the Panel agreed to consider the revision of the UI SC94 for the reasons given in item 2 above.

.4 Other Resolutions Changes

None.

.5 Any dissenting views

None

.6 Dates:

Original Proposal: February 2005, made by Machinery Panel
Machinery Panel Approval: *December 2009*
GPG Approval: *17 February 2010 (ref. 10008_IGb)*

- **NEW (1994)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC94:

Annex 1. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.2 (June 2016)**

See separate TB document in Annex 2.

◄▲►

Note: *There is no separate Technical Background (TB) document for the original resolution (May 1998) and Corr.1 (Jan 2018).*

Technical Background for UI SC94, Rev.1 (Feb 2010)

Machinery Panel Task No. PM5802 *"To revise SC94 - Mechanical and electrical independency of Electric steering control systems for steering gears"*

Accidents and near misses have been experienced by several ships due to uncontrolled rudder movements. Failure in the electrical/electronic control system can lead to uncontrolled rudder movements for both follow-up and non follow-up steering control systems. The monitoring of the electrical/electronic control system and the action taken by this system when faults are detected will reduce the probability of uncontrolled rudder movements.

It is important to clarify the difference between steering control and steering gear control, the former controls how you steer the ship i.e. send commands from the navigating bridge, the latter is the actual control system to control the movement of the rudder.

Paragraphs 3 Supply and 4 Installation were removed from the UI as these were considered a duplication of the SOLAS requirements and therefore not required.

Figure 1 within the Annex shows a detailed example for a dual non follow-up/single follow-up control system. Figure 2 shows a dual non-follow-up/ dual follow-up control system. The steering control system comprises of the wiring and equipment required to control the steering gear power actuating system.

Failure Modes

Various failure modes were considered, including, power supply failure, order signal failure, feedback signal failure, control system failure and hydraulic locking. Hydraulic locking includes all situations where two hydraulic systems oppose each other in such a way that it may lead to loss of steering. It can either be caused by pressure in the two hydraulic systems working against each other or by hydraulic "by-pass" where the systems puncture each other and cause pressure drop on both sides or makes it impossible to build up pressure. Hydraulic locking arrangements are already covered in detail in UR M42. The detection of the various failures is a complex matter and could potentially require additional wiring/equipment. It is also likely that this additional monitoring equipment could provide additional failure modes.

The most probable failure modes include power supply failure and loop failures within the command and feedback circuits. Where loop failures normally include short circuits, broken connections and earth faults. Therefore, these types of failures should be detected as a minimum requirement.

An alternative method has also been proposed in which, depending upon the rudder characteristic, it is possible to detect a control system failure with the identification of critical deviations between the rudder order and rudder position. The basis of this type of system would be to check that the rudder movement always followed the set value and secondly, check that the rudder reached its set position within tolerances and within a safe time limit.

Reaction to Failure Modes

Upon detection of a steering gear control failure, various options have been considered.

1. Freeze the rudder in its current position
2. Return rudder to neutral condition or other known position
3. Do nothing and wait for operator interaction

Freezing the rudder in its current position may or may not be the correct action to take as the rudder may be in the wrong position and could cause confusion to the operator. In reality, when the feedback circuit fails, the hydraulic actuators will keep driving the rudder until it reaches its maximum angle at its end stop where the limit switches will be activated disengaging the hydraulic actuators. There are also other kinds of failures which will bring the rudder to full steering angle, up to mechanical stops, irrespective of which control system is active.

The second option of returning the rudder to a neutral mid position or some other known position would require either additional circuitry or a secondary control system as the primary control/feedback system is faulty and cannot be used to identify the mid- appropriate position.

During any control system failure the steering gear shall reside in the least critical of any new positions e.g. it should not result in multiple uncontrolled movements of the steering gear. By far the least critical condition would be to provide a visual and audible alarm in a manned position indicating a control system failure and rely upon manual intervention to change over to either a secondary control system or non follow-up control. This option also provides the least amount of confusion to the operator.

Failure Analysis

The requirement of completing a failure analysis was also considered. The performance and operation of conventional steering gear is simple, predictable well established and addressed in SOLAS and UR M42. For conventional types of steering gear, there is no precedent that would require application of an additional and specific detailed failure analysis. The benefit of completing additional analysis is not clear as the analysis of failures was done during the development of the SOLAS and IACS requirements and is documented.

Alternative Steering Devices

The possibility of adding requirements for “Alternative Steering Devices” to UR M42 was also considered. "Alternative steering devices" in way of podded drives may unnecessarily complicate the UR M42 beyond the real intention of SOLAS. Podded drives are simultaneously propulsion and steering devices, even one-podded ships have been adopted by some classes on the base of a FMEA in the past. Full independency is hard to achieve for such drives due to the partly common control and governing systems. Conclusion back from this procedure to common steering gears would just cause confusion for the regular cases of conventional steering gears, which are still the vast majority. Therefore it is proposed to exclude "alternative steering gear devices" from unified requirement M42 totally.

Annex

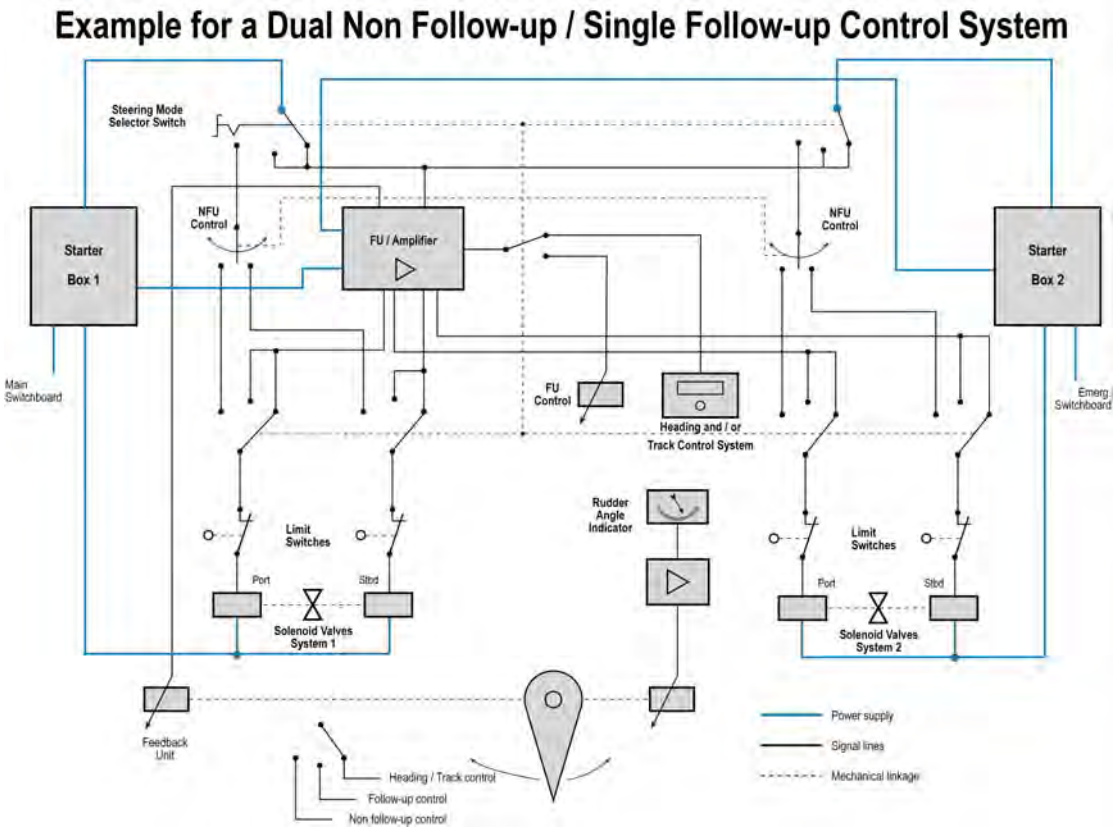

Figure 1

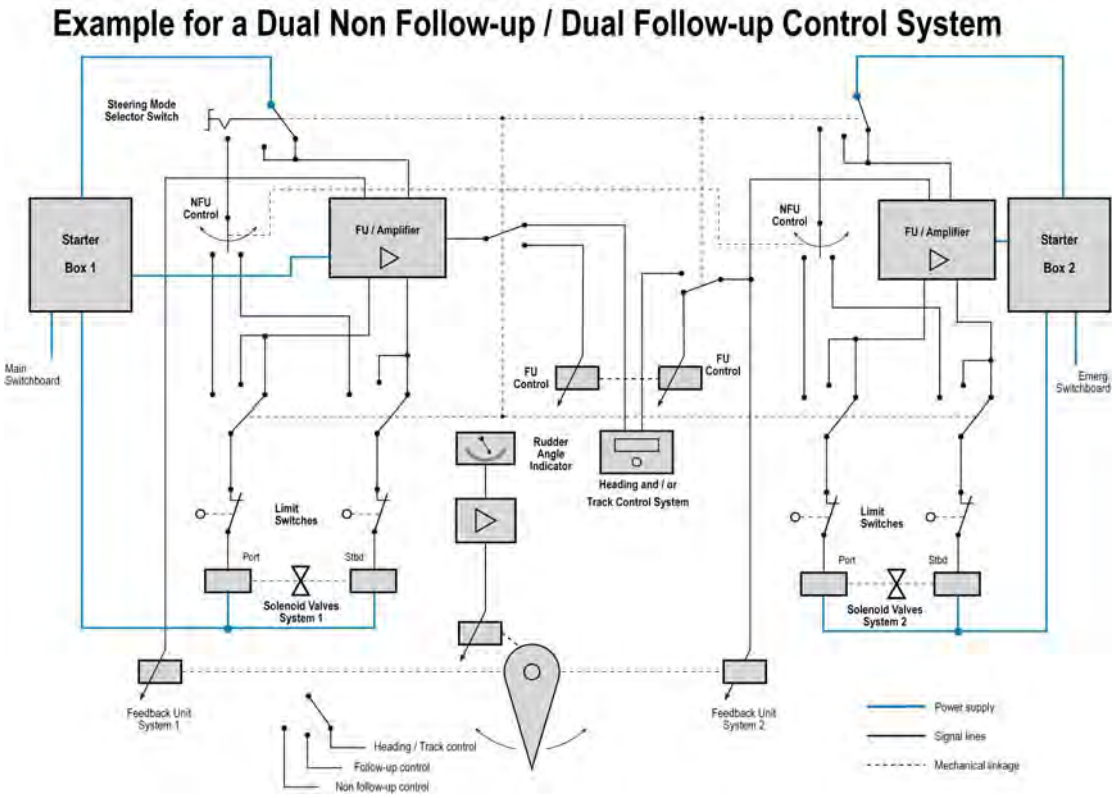

Figure 2

Technical Background (TB) document for UI SC94 (Rev.2 June 2016)

1. Scope and objectives

Following development of the new UR E25 ‘Failure detection and response of all types of steering control systems’ under Machinery Panel task PM11919, the interpretation in Section 4 ‘Failure Detection and Response of Control Systems’ has become obsolete.

2. Engineering background for technical basis and rationale

Alignment with new UR E25, see also HF&TB for PM11919.

3. Source / derivation of the proposed IACS Resolution

N/A

4. Summary of Changes intended for the revised Resolution:

a. Removal of Section 4 as failure detection and response is now addressed in UR E25 ‘Failure detection and response of all types of steering control systems’. Accordingly, ‘and failure detection and response’ is deleted from the title of UI SC94.

b. The reference to IEC 60092-904:1987 at the end of Section 1 is deleted since the standard was withdrawn in 2013 without replacement.

c. Use of the term ‘steering control system’ alongside ‘steering gear control system’ is considered confusing, especially since there are only two instances of ‘steering control system’ in the UI – in section 2 and in the title. In order to get rid of any confusion in terms, ‘steering control system’ in the title is replaced with ‘steering gear control system’ and ‘steering control system’ in Section 2 is deleted.

5. Points of discussions or possible discussions

N/A

6. Attachments if any

N/A

UI SC99 "Flexible bellows of combustible materials"

Summary

This UI serves to interpret the wording "short ducts, not generally exceeding 2 m in length" in SOLAS Reg. II-2/9.7.1.1 in connection with flexible bellows of combustible materials. Corrigendum 1 takes into account resolution MSC.365(93).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2024)	20 September 2024	-
Rev.2 (Aug 2014)	26 August 2014	1 January 2015
Rev.1 (Nov 2005)	17 November 2005	-
NEW (1994)	*No records*	-

- **Corr.1 (Sep 2024)**

1 Origin of Change:

☒ Based on IACS Requirement *(10-years periodic review of IACS resolutions Specify)*

2 Main Reason for Change:

By resolution MSC.365(93) the text "except flexible bellows of short length not exceeding 600 mm used for connecting fans to the ducting in air-conditioning rooms" has been included in SOLAS and therefore this UI is only relevant for ships *contracted for construction on or after 1 January 2015 and constructed before 1 January 2016*.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Panel agreed to prepare this corrigendum for Note 1.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 12 June 2024	(Safety Panel)
Panel Approval	: 09 August 2024	(Ref: PS24043aISc)
GPG Approval	: 20 September 2024	(Ref: 24121_IGc)

- **Rev.2 (Aug 2014)**

.1 Origin of Change:

☒ IACS Observer's recommendation (in report on MSC 93)

.2 Main Reason for Change:

To update the UI in light of approved text of MSC.1/Circ.1480.

.3 List of non-IACS Member classification societies contributing through the

TC Forum and/or participating in IACS Working Group:
None

.4 History of Decisions Made:

IACS Observer to MSC 93 recommended (recommendation 1.2) that UI SC99 should be reviewed in light of the approval of MSC.1/Circ. 1480. The revised version of the UI was unanimously agreed by the Safety Panel. GPG agreed to the revision with an implementation date of 1 January 2015.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal:	9 June 2014	Made by: Safety Panel
GPG Approval:	26 August 2014	(Ref: 13217_IGg)

- **Rev.1 (Nov 2005)**

No TB document available

- **New (1994)**

No TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC99:

Annex 1. **TB for Rev.2 (Aug 2014)**

See separate TB document in Annex 1.

***Note**: There are no separate Technical Background (TB) documents developed for New (1994), Rev.1 (Nov 2005) and Corr.1 (Sep 2024).*

Technical Background (TB) document for UI SC99 Rev.2 (Aug 2014)

1. Scope and objectives

To update the UI in light of approved text of MSC.1/Circ.1480.

2. Engineering background for technical basis and rationale

In relation to SOLAS Chapter II-2, Regulation 9.7.1.1 "Ventilation ducts shall be of steel or equivalent material, regarding connection from fans to the ducting in air conditioning rooms, IACS considered flexible bellows of non-combustible materials were an appropriate and proper means to protect the ventilation duct more effectively than steel, considering the vibration generated by the machinery and developed IACS UI SC99 in 1994.

While the interpretation had been carried out by the IACS members in a safe manner, IACS considered it would be more appropriate if it had been approved by the IMO and submitted the UI SC99 via SSE 1/17/5 to SSE 1 for consideration. As a result, IMO agreed flexible bellows of combustible materials could be used in such a way as specified in IACS UI SC99, but only on the condition that the length of the bellows did not exceed 600mm. This is reflected in MSC.1/Circ.1480.

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/9.7.1.1& MSC.1/Circ.1480.

4. Summary of Changes intended for the revised Resolution:

Refer to Section 2.

5. Points of discussions or possible discussions

Refer to Section 2.

6. Attachments if any

None

UI SC100 “Closing appliances of ventilation inlets and outlets”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Aug 2014)	08 August 2014	-
Rev.2 (Nov 2005)	17 November 2005	-
Rev.1 (2001)	*No records*	-
NEW (1994)	*No records*	-

- **Corr.1 (Aug 2014)**

.1 Origin for Change:

☑ Suggestion by IACS Safety Panel

.2 Main Reason for Change:

Editorial improvements to UI SC100.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Safety Panel proposed following amendments to the UI:

- Reference to SOLAS II-2/5.2.2.1 should be changed to SOLAS II-2/5.2.1.1
- The statement "The controls are to be easily accessible as well as prominently and permanently marked and indicate whether the shut off is open or closed" in the UI should be deleted, as this seems repetitive in light of II-2/5.2.1.1 ("The means of closing shall be easily accessible as well as prominently and permanently marked and shall indicate whether the shut-off is open or closed.")

GPG agreed with the above amendments.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 17 July 2014 by: IACS Safety Panel
GPG Approval: 08 August 2014 (Ref. 14126_IGb)

- **Rev.2 (Nov 2005)**

Refer to the UL version of the IACS Blue Book for the details of the revision. No TB document is available.

- **Rev. 1 (2001)**

Refer to the UL version of the IACS Blue Book for the details of the revision. No TB document is available.

- **New (1994)**

Refer to the UL version of the IACS Blue Book for the details of the original resolution. No TB document is available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC100:

Note:

There are no separate Technical Background (TB) documents for UI SC100 New (1994), Rev.1 (2001), Rev.2 (Nov 2005) and Corr.1 (Aug 2014).

UI SC 117 “Fire detection system with remotely and individually identifiable detectors”

Summary

This Original Resolution provides interpretation of requirements to FSS Code, Ch. 9, 2.1.4 and 2.4.3.2. It is now deleted.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Sep 2020)	18 September 2020	-
Rev.2 (Nov 2005)	November 2005	-
Rev.1 (2001)	2001	-
New (1996)	1996	-

- **Del (Sep 2020)**

UI SC 117(Rev.2) was deleted on 18 September 2020

1 Origin of Change:

Select a relevant option and delete the rest.

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

Amendment to FSS Code (MSC.311(88)) incorporated interpretations from the resolution

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Noting that the content of the UI is redundant, Safety Panel unanimously agreed to delete the UI

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable

7 Dates:

Original Proposal:	29 April 2019 (Made by: Safety Panel)
Panel Approval:	3 September 2020 (Ref: 20151_PSa)
GPG Approval:	18 September 2020 (Ref: 20151_IGb)

- **Rev.2 (Nov 2005)**

No records available

- **Rev.1 (2001)**

No records available

- **New (1996)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for deletion (Sep 2020)**

See separate TB document in Annex 1.

◄▲►

Note: There is no separate Technical Background (TB) document available for New (1996), Rev.1 (2001) & Rev.2 (Nov 2005).

Technical Background (TB) document for SC 117 Del (Sep 2020)

1. Scope and objectives

Review of the Unified interpretation SC 117 Rev.2.

2. Engineering background for technical basis and rationale

The requirements regarding arrangement for ‘Zone address identification capability’ was specified in the FSS Code. However, definitions of terms ‘Zone address identification capability’ & ‘Loop’ was not specified in the FSS Code. This UI was developed to provide clarification regarding these terms and application of requirement for fire detection system with ‘Zone address identification capability’.

Subsequent to amendment of the FSS Code chapter 9 by Resolution MSC.311(88), the term ‘Zone address identification capability’ has been replaced by ‘Individually identifiable’ and the term ‘Loop’ has been replaced by ‘Section’. Also, the definitions of these terms have been included in the revised FSS Code.

SSE 3 did not agree with IACS’ arguments presented in SSE 3/12/14 and, in particular, that individually identifiable systems taking into account IACS UI SC117 could continue be accepted. In light of this conclusion, it was agreed that SC117 should be deleted and that a revision to Chapter 9 of FSS Code would be needed to deal with the more onerous fault isolation requirements on individually identifiable systems than on section identifiable systems. In this regard, a new output to consider appropriate amendments to the FSS Code was presented in MSC 98/20/4 and agreed by MSC 98.

3. Source / derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Deletion of the Resolution

5. Points of discussions or possible discussions

Safety Panel unanimously agreed t to delete UI SC117 Rev.2 based on the outcome of SSE 3.

6. Attachments if any

Copy of UI SC117 Rev.2

UI SC118 "Exhaust duct from galley ranges"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (July 2015)	27 July 2015	-
Rev.1 (Nov 2005)	17 Nov 2005	-
New (1996)	*No record*	-

- **Rev.2 (July 2015)**

.1 Origin for Change:

☑ Suggestion by IACS Safety Panel

.2 Main Reason for Change:

SOLAS Chapter II-2 Reg. 9.7 has been amended by MSC.365(93) and this affects the references for, and content of, UI SC118.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel. Members agreed to retain and amend UI SC118 taking into account the SOLAS amendments by MSC.365(93).

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval: 1 July 2015 (Ref: SP14017c)
GPG Approval: 27 July 2015 (Ref: 15118_IGb)

- **Rev.1 (Nov 2005)**

No records available

- **New (1996)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC118:

Annex 1. **TB for Rev.2 (July 2015)**

See separate TB document in Annex 1.

Note: *There are no Technical Background (TB) documents available for New (1996) and Rev.1 (Nov 2005).*

◄▲►

Technical Background document for UI SC118 (Rev.2, July 2015)

1. Scope and objectives

Existing IACS UI SC118 is no longer applicable after the release of IMO Res. MSC.365(93) which includes amendments to SOLAS Ch. II-2, Reg. 9.7, coming into force on 1 January 2016. However this UI is to be retained and amended for existing ships use.

2. Engineering background for technical basis and rationale

Safety Panel discussed IMO Res. MSC.365(93) which includes amendments to SOLAS Ch. II-2, Reg. 9.7, coming into force on 1 January 2016. Specifically, considering the following two requirements:

1) SOLAS Ch. II-2, Reg. 9.7.5.2: “When passing through accommodation spaces or spaces containing combustible materials, the exhaust ducts from galley ranges shall be equipped with an automatically and remotely operated fire damper located in the lower end of the duct at the junction between the duct and the galley range hood and, in addition, a remotely operated fire damper in the upper end of the duct close to the outlet of the duct”.

2) SOLAS Ch. II-2, Reg. 9.7.1.2: “The following arrangements shall be tested in accordance with the Fire Test Procedures Code: fire dampers, including their relevant means of operation, however, the testing is not required for dampers located at the lower end of the duct in exhaust ducts for galley ranges, which must be of steel and capable of stopping the draught in the duct”.

The above issue, raises a conflict with existing IACS UI SC118.

The panel discussed the possibility of exempting testing requirements for fire dampers at both the lower and upper end of galley exhaust ducts. However, this understanding was not agreed upon by the majority, and it was concluded that the text of the regulation was clear in this regard.

The panel considered whether UI SC118 should be deleted in light of the new SOLAS amendments coming into effect. However, it was agreed by the panel that the existing IACS UI should be retained for existing ships, and therefore amended to reflect this conclusion.

3. Source / derivation of the proposed IACS Resolution

IMO Resolution MSC.365(93)

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC120 "Access to forecastle spaces on tankers"

Summary

UI SC120 provides acceptance criteria equivalent to those foreseen in SOLAS regulation II-2/4.5.2.2, paragraph 3.2.3 of the IBC Code, and paragraph 3.2.4 of the 1983 IGC Code, on the basis of which the location of access door to forward spaces in position facing the cargo area may be accepted.

In this corrigendum, the note 2 was modified to correctly capture the understanding that IACS UI SC 120 (Rev.2) applies to oil tankers and chemical tankers, and to gas carriers constructed on or after 1 July 1986 but before 1 July 2016.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Oct 2023)	10 October 2023	-
Corr.1 (Jan 2023)	10 January 2023	-
Rev.2 (Aug 2006)	August 2006	1 January 2007
Rev.1 (Nov 2005)	November 2005	-
New (1996)	1996	-

- **Corr.2 (Oct 2023)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Corr.1 to IACS UI SC 120 (Rev.2) intends to limit the application of UI SC 120 (Rev.2) to gas carriers subject to the 1983 IGC Code, without an intention to exclude oil tankers and chemical tankers from its application. The note 2 newly added by Corr.1 to IACS UI SC 120 (Rev.2), however, may deviate from such an intent and give the impression that the UI may not apply to oil tankers and chemical tankers but only applies to gas carriers subject to the 1983 IGC Code.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

An IACS safety panel member pointed out a confusion caused by the note 2 in Corr.1 to IACS UI SC 120 (Rev.2). Safety Panel agreed to modify the note 2 by issuing

Corr.2 to correctly capture the understanding that IACS UI SC 120 (Rev.2) applies to oil tankers and chemical tankers, and to gas carriers constructed on or after 1 July 1986 but before 1 July 2016.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 29 June 2023	(Made by Safety Panel)
Panel Approval	: 25 September 2023	(Ref: PS19002yISj)
GPG Approval	: 10 October 2023	(Ref: 19001zIGd)

- **Corr.1 (Jan 2023)**

1 Origin of Change:

☑ Other *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

Existing paragraph 3.2.4 of the IGC Code was replaced with new paragraphs 3.2.4.1 to 3.2.4.3 and the interpretation given in this UI is included in the new paragraph 3.2.4.4. of IGC Code amended by resolution MSC. 370(93). The Panel discussed the need to include the reference to paragraph 3.2.4 of IGC Code in this UI. The Panel agreed that the text should be included but clarified that it was the text from resolution MSC.5(48) and an additional note was added limiting the application of the interpretation to gas ships constructed on or after 1 July 1986 but before 1 July 2016.

In keeping with recent IACS decisions the year of the IEC standard was added to the interpretation.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

During review of resolutions under correspondence subject PS19002_ Safety Panel agreed on need to update this UI.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 23 October 2019	(Made by Safety Panel)
Panel Approval	: 30 November 2022	(Ref: PS19002yISd)
GPG Approval	: 10 January 2023	(Ref: 19001zIGb)

- **Rev.2 (Aug 2006)**

Refer to Part B Annex 1 for TB file.

- **Rev.1 (Nov 2005)**

No records are available.

- **New (1996)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC120:

Annex 1. **TB for Rev.2 (Aug 2006)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.1 (Jan 2023)**

See separate TB document in Annex 2.

Note: There are no separate Technical Background (TB) documents available for New (1996), Rev.1 (Nov 2005) and Corr.2 to Rev. 2 (Oct 2023).

Technical Background (TB) document for UI SC120 (Rev.2 Aug 2006)

SC 120 has been revised as follows:

- addition of the reference to SOLAS regulation II-2/4.5.2.2 to emphasize that the UI describes arrangements different to those explained in such a regulation but which are equally acceptable as alternative to the requirements set out in regulation II-2/4.5.2.2 (also referenced to in the UI);

- addition of the reference to paragraphs 3.2.3 of the IBC Code and 3.2.4 of the IGC Code to make the UI (originally developed for Oil Tankers) applicable also to Chem and Gas Carriers;

- updating of the numbering of the IEC publication; and

- inclusion of the implementation date.

In the course of the discussion on this revision, the Statutory Panel concurred that UI SC 120 allows the location of access door to forward spaces in position facing the cargo area provided such doors are not within the hazardous area as defined by IEC 60092-502.

The Panel also agreed that the UI should be forwarded to IMO S-C FP under a suitable cover letter.

Submitted by Statutory Panel Chair
10 August 2006

Permanent Secretariat Note (31 August 2006):

GPG and Council approval , 29 August 2006, 6121aIGc.

Copy of FP51 submission to IMO is attached to this TB.

FP 51/9
[DATE]
Original:
ENGLISH

SUB-COMMITTEE ON FIRE PROTECTION
51st SESSION
Agenda Item 9

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Submitted by the International Association of Classification Societies (IACS)

SUMMARY	
Executive summary:	This paper advises on Rev. 2 of the IACS Unified Interpretation UI SC 120 to be implemented by IACS Members
Action to be taken:	Paragraph 6
Related documents:	SOLAS 74 as amended, IBC Code, IGC Code

Background

1. SOLAS regulations II-2/4.5.2.1 reads: "5.*2.1 Except as permitted in paragraph 5.2.2, access doors, air inlets and openings to accommodation spaces, service spaces, control stations and machinery spaces shall not face the cargo area. They shall be located on the transverse bulkhead not facing the cargo area or on the outboard side of the superstructure or deckhouse at a distance of at least 4% of the length of the ship but not less than 3 m from the end of the superstructure or deckhouse facing the cargo area. This distance need not exceed 5 m.*"

2. Arrangements differing from the requirements set out in the regulation mentioned under 1. above may be permitted by the Administration based on SOLAS regulation II-2/4.5.2.2.

3. Unified Interpretation SC 120 has been originally developed to establish acceptance criteria equivalent to those foreseen in regulation II-2/4.5.2.2 on the basis of which the location of access door to forward spaces in position facing the cargo area may be accepted.

4. Considering that IEC publications are referenced as recognised standards in both the IBC and IGC Codes, as amended by resolutions MSC.176(79) and MSC.177(79) respectively, Unified Interpretation SC 120 has been also revised to make it applicable also to tankers subject to such Codes.

5. Revision 2 of UI SC 120, given at Annex, will be applied by IACS members from 1 January 2007 when acting as recognized organizations, authorized by flag State Administrations to act on their behalf, unless advised otherwise.

Action requested of the Sub-Committee

6. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

*****

ANNEX

UI SC 120 rev. 2 to be added

Technical Background (TB) document for UI SC120 (Corr.1 Jan 2023)

1. Scope and objectives

Reviewed since more than 10 years since last revision.

2. Engineering background for technical basis and rationale

Existing paragraph 3.2.4 of the IGC Code was replaced with new paragraphs 3.2.4.1 to 3.2.4.3 and the interpretation given in this UI is included in the new paragraph 3.2.4.4. of IGC Code amended by resolution MSC.370(93). The Panel discussed the need to include the reference to paragraph 3.2.4 of IGC Code in this UI. The Panel agreed that the text should be included but clarified that it was the text from resolution MSC.5(48) and an additional note was added limiting the application of the interpretation to gas ships constructed on or after 1 July 1986 but before 1 July 2016.

In keeping with recent IACS decisions the year of the IEC standard was added to the interpretation.

3. Source/derivation of the proposed IACS Resolution

SOLAS, IBC Code and IGC Code

4. Summary of Changes intended for the revised Resolution:

Reference to IGC Code paragraph 3.2.4 is amended to refer to resolution MSC.5(48). The year of the IEC standard (1999) is added. New note 3 is added to clarify application to gas ships.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC121 "Fire Pump Isolation Requirements"

Summary

UI SC121 provides interpretation for fire pump isolation requirements when fire main is routed through a category A machinery space. This corrigenda has replaced the wording "constructed" with "contracted for construction" in the application statement.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Apr 2023)	14 April 2023	-
Rev.2 (Jan 2023)	19 January 2023	01 July 2023
Rev.1 (Nov 2005)	November 2005	-
New (1997)	1997	-

- **Corr.1 (Apr 2023)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Edited to provide a uniform implementation.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

It was decided to correct "*constructed on or after…*" into "contracted for construction" in Note 1, aligning it with application terms of IACS requirements which are normally orientated on the date of the building contract, rather than the date of vessel's keel laying often used in SOLAS.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 28 March 2023	(Made by a GPG Member)
Panel Approval	: -	
GPG Approval	: 14 April 2023	(Ref.: 22119cIGe)

- **Rev.2 (Jan 2023)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

Edited to provide a more clear understanding of the text.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Statutory Panel requested to GPG that proposed corrections are minor to give a more clear understanding of the UI.

5 Other Resolutions Changes:

Not applicable

6 Any hinderance to MASS, including any other new technologies:

Not applicable

7 Dates:

Original Proposal	: 17 June 2022	(Made by Safety Panel Chair)
Panel Approval	: 28 December 2023	(Ref: PS22018f)
GPG Approval	: 19 January 2023	(Ref: 22119cPSa)

- **Rev.1 (Nov 2005)**

No records are available

- **New (1997)**

No records are available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC121:

Annex 1. **TB for Rev.2 (Jan 2023)**

See separate TB document in Annex 1.

Note: There are no separate Technical Background (TB) documents available for New (1997), Rev.1 (Nov 2005) and Corr.1 (Apr 2023).

Requirements (SOLAS II-2/10.2.1.4.1), Rev.2

1. Scope and objectives

This UI was reviewed at its ten-year anniversary and a minor amendment to the text was made.

2. Engineering background for technical basis and rationale

The text of the UI was edited to include reference to the SOLAS regulation highlighting the fact that SOLAS II-2 10.2.1.4.1 gives conditions where an insolation valve is not required for fire main piping which meet the criteria given

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

The UI has been amended as follows. Any part of the fire main routed through a category A machinery space, except for short lengths of suction or discharge piping complying with SOLAS II-2/10.2.1.4.1, must be fitted with isolating valves outside of the space. The arrangements of the fire mains must allow for fire water from the fire pumps or emergency fire pump to reach all hydrants outside of the isolated space. Isolation requirements of SOLAS Reg. II-2/10.2.1.4.1 are not applicable to the piping from fire pumps located in other spaces other than category A machinery spaces.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background

UI SC122 Rev.1 (August 2008)

"Corrosion Prevention in Seawater Ballast Tanks"

UI SC122 has been updated to confirm its applicability after the entering into force of the revised SOLAS Ch.II-1/3-2 as contained in resolution MSC.216(82).

Permanent Secretariat note (August 2008):

UI SC122 (Rev.1) was approved by GPG on 4 August 2008 (ref. 8621_IGc).

UI SC123 "Machinery Installations - Service Tank Arrangements"

Summary

In this revision (i.e. Rev.5), a footnote has been introduced to include examples of equivalent arrangements (1.2 & 2.2) for sake of clarity.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.5 (July 2023)	24 July 2023	1 July 2024
Corr.1 (Feb 2022)	18 February 2022	-
Rev.4 (Withdrawn)	23 November 2019	-
Rev.4 (Nov 2018)	26 November 2018	1 January 2020
Rev.3 (Dec 2005)	December 2005	1 July 2006
Rev.2 (June 2002)	June 2002	1 January 2003
Rev.1 (Apr 1998)	April 1998	-
New (1998)	1998	-

- **Rev.5 (July 2023)**

1 Origin of Change:

☑ Other (*an update of the UI is required*)

2 Main Reason for Change:

IACS submission to SDC8 (SDC 8/10/8) had introduced concept of "FTA (fuel oils that require heating to achieve required injection viscosity)/ FTB (fuel oils that do not require heating to achieve injection viscosity)" as an alternative to "HFO/MDO".

Noting the benefits of FTA/FTB approach (i.e., addressing the crux of the safety issue, future-proofing requirement in case of use of new fuels (biofuels etc), addressing different characteristics of MDO), machinery panel agreed to add a footnote in the UI showing equivalent arrangements (examples 1.2 & 2.2) in order to clarify that any fuel oil which requires post service tank heating to achieve the required injection viscosity is not to be regarded as MDO in the context of these examples.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

Revision 4 of this UI was not agreed by the IMO and was withdrawn. IACS proposed alternative revisions to MSC.1/Circ.1572/Rev.1 in paper SDC 8/10/8. However, these were not well received and Machinery Panel agreed instead to include a new footnote to introduce the "FTA/FTB" concept as an alternative to "HFO/MDO". Footnote 1 was added to paragraphs 1.2 and 2.2 of the UI accordingly.

5 Other Resolutions Changes

None.

6 Dates:

Original proposal:	06 July 2022	SDC 8 Observer report Rec.6.3
Panel approval:	15 June 2023	(Ref: PM20908bIMd)
GPG approval:	24 July 2023	(Ref: 20140pIGj)

- **Corr.1 (Feb 2022)**

1 Origin of Change:

☑ Other (Correction of an editorial error included in the reinstated version of Rev.3 of this UI)

2 Main Reason for Change:

The expression "HFO" included in the second tank as per Example 1.2 (Equivalent arrangement) of the reinstated version of Rev.3 of this UI should be corrected to "MDO" according to the original version of Rev.3 of this UI and MSC.1/Circ.1572/Rev.1 (See below).

The original version of UI SC123(Rev.3)	MSC.1/Circ.1572/Rev.1 (Annex, Section 4.2)
1.2 **Equivalent arrangement** HFO Serv. TK Capacity for at least 8 h Main Eng. + Aux. Eng. + Aux. Boiler MDO Serv. TK Capacity for at least 8 h Main Eng. + Aux. Eng. + Aux. Boiler	*1.2 Equivalent arrangement* HFO Serv. TK Capacity for at least 8 h Main Eng. + Aux. Eng. + Aux. Boiler MDO Serv. TK Capacity for at least 8 h Main Eng. + Aux. Eng. + Aux. Boiler

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

Machinery Panel confirmed that the expression "HFO" found in the second tank as per Example 1.2 (Equivalent arrangement) would be an editorial error occurred during

development of the underline version of Rev.4 of this UI (i.e. in Rev.4, the expression to be strikethrough should have been "MDO").

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 07 December 2021	(by Machinery Panel PM20908aIMa)
Panel Approval	: 26 January 2022	(Ref: PM20908aIMc)
GPG Approval	: 18 February 2022	(Ref: 22014_IGb)

- **Rev.4 (Withdrawn)**

Rev.4 of this UI is withdrawn prior to coming into force on 1 January 2020 and Rev.3 of this UI is reinstated. (Ref: 18091eIGr)

- **Rev.4 (Nov 2018)**

1 Origin of Change:

☑ Other (*an update of the UI is required*)

2 Main Reason for Change:

To review typical fuel oil service tank arrangements for newbuild and retrofitted vessels trading in ECA zones using low sulphur and residual grade fuels.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Form A was submitted to GPG on 20 March 2015.

5 Other Resolutions Changes

None

6 Dates:

Original proposal: 23 December 2014 Made by Machinery Panel
Panel approval: 23 October 2018 (Ref: PM14916_IMza)
GPG approval: 26 November 2018 (Ref: 15057_IGd)

- **Rev.3 (Dec 2005)**

Refer to TB document in Part B Annex 1

- **Rev.2 (June 2002)**

No records available

- **Rev.1 (Apr 1998)**

No records available

- **New (1998)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC123:

Annex 1. **TB for Rev.3 (Dec 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.4 (Nov 2018)**

See separate TB document in Annex 2.

Note: There are no separate Technical Background (TB) documents available for New (1998), Rev.1 (Apr 1998), Rev.2 (June 2002) and Corr.1 (Feb 2022) and Rev.5 (July 2023).

TB for UI SC123(Rev.3, Dec 2005)

7 Dec 2005

You may recall that in reviewing the IACS Observer's report on DE 48, and in particular Agenda Item 21 *Considerations of IACS Unified Interpretations,* the Statutory Panel expressed the opinion that UI SC123 should be resubmitted to DE 49 and tasked the Machinery Panel to look into this matter, considering also that the relevant cover letter should contain clear and robust justifications in supporting the need for this UI.

As a reply to the above, the Machinery Panel prepared a draft submission that has been deeply reviewed by the Statutory Panel as shown in the attached file (changes introduced can be detected by using Word "track changes" option).

Please be informed that I've illustrated the modifications carried out on the draft to the Machinery Panel Chairman who concurred that, although quite extensive, they are not of substantive nature.

Regarding the revised text of the UI prepared by the Machinery Panel, also attached for GPG consideration, I advise you that, with the concurrency of Mr Petersen, I've introduced the following modifications:
1. addition of the indication "Rev, 3 - December 2005",
2. new paragraph 3. is highlighted You may note that this paragraph has been added by the Machinery Panel as reply to concerns raised at DE on the IACS submission containing the original text of the UI; and
3. addition of square brackets surrounding the implementation date (note 2). I've been informed by Mr Petersen that the Machinery Panel did not specifically discuss the possible implementation date for the revised UI but we, Mr. Petersen and I, are not sure whether there is the need for it.

Finally, you may note that the deadline for submission to DE 49 (non bulky documents) is 16 December.

Yours Sincerely
Claudio Abbate
Chairman, Statutory Panel

IACS submission to DE 49 is attached.

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT
49th session
Agenda item 11

DE 49/11/XX
xx December 2005
Origina:l ENGLISH

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Unified Interpretation SC 123

Submitted by the International Association of Classification Societies (IACS)

SUMMARY	
Executive Summary:	This document provides IACS comments on the actions taken by the Sub-Committee at its 48th session on IACS UI SC 123 on fuel oil service tank arrangements.
Action to be taken:	Paragraph 7
Related documents:	DE 48/21/4, DE 48/25 paragraphs 21.18 to 21.20, MSC/Circ. 1176

Introduction

1 The Sub-Committee at its forty-eighth session approved draft unified interpretation to SOLAS Regulation II-1/26.11 based on the IACS unified interpretation SC 123 (Annex 13 of the DE 48/25). The Maritime Safety Committee, at its 80th Session, approved this unified interpretation as contained in MSC/Circ. 1176.

2 It is noted that the paragraph 2.2 of IACS UI SC123 has not been included as a part of the text of the approved interpretation mentioned in the above.

IACS comments

3 IACS recommend that the paragraph 2.2 of the Unified Interpretation SC 123, as shown at Annex, be incorporated in the interpretation to SOLAS regulation II-1/26.11 contained in MSC/Circ. 1176 for the reasons as described in 4 and 5 below.

4 The unified interpretation to SOLAS regulation II-1/26.11 in MSC/Circ. 1176 addresses those ships using only one type of fuel oil (i.e., HFO) for main, auxiliary engines, and boilers. However, it is necessary that it is expanded to also cover arrangements of those ships having machinery capable of running with two types of fuels.

In fact, the regulation requires the service tank arrangement to:

1. be comprised of two fuel oil service tanks for each type of fuel used for propulsion and vital systems, or an equivalent arrangement; and
2. be of a capacity of at least 8 h at maximum continuous rating of the propulsion plant and normal operating load at sea of the generator plant.

IACS considers that the equivalent arrangement need not necessarily require two tanks per each type of fuel used.

5 IACS considers that, based on the reasons given below, there is always a sufficient quantity of fuel to supply the main engines, auxiliary engines and auxiliary boilers for at least 8 hours when any single tank is lost or contaminated as per the equivalent arrangement indicated in paragraph 2.2 of Unified Interpretation SC 123 as explained hereinafter. This meets the intent of SOLAS and therefore offers a sound reason for acceptance of the equivalent arrangement as shown in paragraph 2.2 of Unified Interpretation SC 123, which is repeated below.

Equivalent arrangement

Tank A	Tank B	Tank C
HFO Serv. TK Capacity for at least 8 h Main Eng. + Aux. Boiler	MDO Serv. TK Capacity for at least the higher of: • 4 h Main Eng. + Aux. Eng. + Aux. Boiler, or • 8 h Aux. Eng. + Aux Boiler	MDO Serv. TK Capacity for at least the higher of: • 4 h Main Eng. + Aux. Eng. + Aux. Boiler, or • 8 h Aux. Eng. + Aux Boiler

a) If tank A were lost or contaminated, tanks B and C combined would provide fuel sufficient to run the main engines, auxiliary engines and auxiliary boiler for a period of at least 8 hours.

b) If tank B were lost or contaminated, tank A would provide fuel sufficient to run the main engines and auxiliary boilers for at least 8 hours, and tank C would provide fuel sufficient to run the auxiliary engines, as well as the auxiliary boilers, for at least 8 hours.

c) If tank C were lost or contaminated, tank A would provide fuel sufficient to run the main engines and auxiliary boilers for at least 8 hours, and tank B would provide fuel sufficient to run the auxiliary engines, as well as the auxiliary boilers, for at least 8 hours.

6 Consequently, IACS believes that service tank arrangements specified in paragraph 2.2 of the Unified Interpretation SC123, with condition stated in paragraph 3. of the same, are also considered to be acceptable equivalents as they meet the intent of SOLAS.

Action requested for Sub-Committee

7. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

*****

Technical Background (TB) document for UI SC123 (Rev.4 Nov 2018)

Scope and objectives

Revise UI SC123 Machinery Installations – Service Tank Arrangements in line with the adoption of low sulphur fuels (0.1% sulphur content) for propulsion. The revision presents examples for equivalent service tank arrangements for low sulphur and residual grade fuels also taking into consideration fuel switchover and clearly defining fuel types.

2 Engineering background for technical basis and rationale

The requirement to use 0.1% sulphur limit for fuel oil consumed within the ECA regions requires tank arrangements which satisfy the safety objectives of SOLAS Regulation II-1/26.11.

Recognizing the underlying SOLAS safety objective, of maintaining an appropriate amount and quality of fuel readily available for propulsion machinery and generator plant, the existing definitions of equivalency in IACS UI SC123 needed to be revised to recognise the use of low sulphur fuels.

Distillate fuel oil having minimal sulphur content (maximum of 0.1%) and having low viscosity allows for direct injection to engines without further conditioning. In contrast, residual grades are expected to be stored under elevated temperatures in service tanks and further heated to the correct viscosity prior to injection to engines.

Emergency conditions necessitating rapid switchover between low viscosity distillates and higher temperature, higher viscosity residual grades may result in hazards which may adversely affect the propulsion and/or the generator plant.

During revision of IACS UI SC123, the following have been considered:

- typical fuel oil service tank arrangements for newbuilds and retrofitted vessels trading in ECA zones using low sulphur and residual grade fuels,
- external technical guidance
- the potential hazards resulting from emergency changeover of fuel oil of one grade to another.
- The need to ensure a fast change-over from one fuel to another, in case of emergency.

3 Source / derivation of the proposed IACS UI

The text of the UI is directly derived from the background given in 2 above.

Considering that the temperature gradient in the fuel is to be limited, as advised by manufacturers, to 2 °C/minute to avoid the risk of seizure in fuel injection equipment, 1 hour time, for completing the change-over from a RM-grade heated fuel to a DM-grade fuel that should not be heated and vice-versa, was considered a reasonable

compromise between the need to maintain or quickly restore ship propulsion and the need to avoid damages to equipment during the fuel changeover.

4 Summary of Changes intended for the revised Resolution

None

5 Points of discussions or possible discussions

The text of the UI has been unanimously agreed upon by the Machinery Panel.
One Member proposed to replace the definitions of the fuels listed in the paragraph "Type of Fuel" with the following table in order to simplify and clarify better the definitions:

Type of fuel	Sulphur content	Heating required to achieve proper injection viscosity for combustion	Viscosity
Residual Marine Fuel (RMF)	> 0.1%	Yes	-
Distillate Marine Fuel (DMF)	> 0.1%	No	-
Low Sulphur Residual Marine Fuel (LSRMF)	≤ 0.1%	Yes	-
Low Sulphur Distillate Marine Fuel (LSDMF)	≤ 0.1%	No	≥ 1.4 cSt at 40°C

The proposal was not accepted by the qualified majority.

6 Attachments if any

None

UI SC125 "B and C Class Divisions"

Summary

UI SC125 has been updated to amend out of date references.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Dec 2020)	21 December 2020	-
Corr.1 (Jan 2010)	January 2010	-
Rev.2 (Nov 2005)	17 November 2005	-
Rev.1 (July 2004)	5 July 2004	-
NEW (May 1998)	8 May 1998	1 January 1999

- **Rev.3 (Dec 2020)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

During periodic review of IACS Resolution by Safety Panel, IACS member find FTP references of the UI need to be updated.

3 List of non-IACS Member classification societies participating in IACS Working Group:

None

4 History of Decisions Made:

Based on Periodic review of IACS Resolution by Safety Panel, noting that part 1, part 2, part 3 and part 5 referenced by the UI is second class directory under the Annex 1 of FTP Code, the Safety Panel agreed to update the references in the UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable.

7 Dates:

Original Proposal: May 2019 (Ref: PS19002_)
Panel Approval: 17 November 2020 (Ref: PS19002kISb)
GPG Approval: 21 December 2020 (Ref: 19001eIGd)

- **Corr.1 (Jan 2010)**

1 Origin of Change:

☐ Other (IACS Permanent Representative to IMO)

2 Main Reason for Change:

During a review of all IACS UIs and their status with regard to submission to IMO, the IACS Permanent Representative to IMO noticed that the regulations to which the UI referred to are SOLAS II-2/2.4 and II-2/2.10, which don't actually exist.

3 History of Decisions Made:

After investigation Permsec concluded that this was a typo and that the references should be to SOLAS II-2/3.4 and II-2/3.10. Therefore a corrected version of UI SC125 with the regulation number corrected accordingly was prepared.

4 Other Resolutions Changes:

N/A

6 Any dissenting views

N/A

7 Dates:

Corrected file circulated to members: 5 January 2010 (Ref. 8657_IAd)

- **Rev.2 (Nov 2005)**

Outcome of WP/FP&S task no.41 – change to reference regulation in accordance with SOLAS 2000 amendments.

No TB document available.

- **Rev.1 (July 2004)**

No TB document available - addition of 'Contracted for Construction' footnote.

- **New (May 1998)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC125:

Note: There are no separate Technical Background (TB) documents for the original resolution (May 1998), Rev.1 (July 2004), Rev.2 (Nov 2005), Corr.1 (Jan 2010) and Rev.3 (Dec 2020).

UI SC126 “Fire Protection Materials for Cargo Ships (SOLAS regulations II-2/4.4.4, 5.3, 6.2.1 and 6.3.1)”

Summary

This UI provides a unified interpretation of the requirements of SOLAS regulations II-2/4.4.4, 5.3, 6.2.1 and 6.3.1.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Aug 2021)	11 August 2021	-
Rev.2 (Nov 2005)	-	1 January 2006
Rev.1 (June 2000)	-	-
New (May 1998)	-	-

- **Rev.2 Corr.1 (Aug 2021)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

A wrong reference has been found on the UI: References of SOLAS Reg.II-2/5.2 instead of II-2/5.3.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

During the maintenance of IACS Resolutions which have not been updated for the last ten years, the Safety panel has agreed to correct the wrong reference. Other incorrect references were amended to bring the UI into agreement with Annex 4 of the IMO 2010 FTP Code.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: 23 December 2020 (Made by: Safety Panel)
Panel Approval: 29 June 2021 (Ref: PS19002oISk)
GPG Approval: 11 August 2021(Ref: 21114_IGg)

- **Rev.2 (Nov 2005)**

No HF file and refer Part B Annex 1 for the TB

- **Rev.1 (June 2000)**

No records available

- **New (May 1998)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (Nov 2005)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for New (1998), Rev.1 (2000) and Rev.2 Corr.1 (2021).*

Technical Background

UI SC 126 (Rev.2, Nov 2005)

Objective

The original text of the UI was revised in order to better clarify that it is not specifically required that the surface of bulkheads and decks within accommodation spaces shall meet the requirement of SOLAS regulation II-2/6.2 (low emission of smoke and toxic gases when exposed to fire) unless it is exposed and covered with paints, varnishes or other finishes.

Submitted by Statutory Panel Chairman
6 Nov 2005

Permsec's Note:

The revised UI SC 126 (Rev.2) together with UI SC 127 (Rev.2) were submitted to IMO FP 50 on 4 November 2005 (5091d). The IACS submission paper is attached to this TB for records.

Attached.

FP 50/…..
[DATE]
Original: ENGLISH

SUB-COMMITTEE ON FIRE PROTECTION
50th SESSION
Agenda Item 11

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Clarification on the application of interpretations to SOLAS regulations II-2/5.3 and 6.2 as contained in MSC/Circ. 1120

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive summary:	This document contains IACS' view point on the application to cargo ships of interpretations to SOLAS regulations II-2/5.3 and 6.2 as contained in MSC/Circ. 1120 . This documents also forwards IACS UI SC 127.
Action to be taken:	Paragraph 12.
Related documents:	SOLAS 74 as amended, Fire Test Procedures Code, MSC 75/19/2, MSC/Circ. 1120

Background

1. SOLAS Regulation II-2/5.3 regulates the use of combustible materials onboard ships. This regulation contains requirements on the fire characteristics that finishing materials shall possess (such as low flame-spread and maximum calorific value) as well as requirements on the total volume of combustible material allowed for facings mouldings, decoration and veneers within accommodation spaces.

2. In particular, SOLAS regulation II-2/5.3.2.4.2 states "*The following surfaces shall have low flame-spread characteristics in accordance with the Fire Test Procedures Code:*
3.2.4.1 In passenger ships:
.1 ***exposed surfaces*** *in corridors and stairway enclosures and of bulkhead and ceiling linings in accommodation and service spaces (except saunas) and control stations; and*
……
3.2.4.2 In cargo ships:
.1 ***exposed surfaces*** *in corridors and stairway enclosures and of ceilings in accommodation and service spaces (except saunas) and control stations; and*
.2 surfaces and grounds in concealed or inaccessible spaces in accommodation and service spaces and control stations."

3. SOLAS Regulation II-2/6.2 reads "*Paints, varnishes and other finishes used on* ***exposed interior surfaces*** *shall not be capable of producing excessive quantities of smoke and toxic products, this being determined in accordance with the Fire Test Procedures Code.*"

4. It is noted that the wording used in this regulation for identifying the surfaces (exposed interior surfaces covered with paints, varnishes and other finishes) that are required to meet the smoke and toxicity requirements of the Fire Test Procedures Code differs from the wording used in SOLAS regulation 5.3.2.4.1 for identifying those surfaces required to have low flame-spread characteristics.

5. As far as the fire protection materials on cargo ships are concerned, MSC/Circ. 1120 contains one interpretation indicating "*With respect to materials and components used for bulkheads in accommodation spaces, as defined in regulation 3.1, see tables for regulations 5.3 and 6.2 in the appendix.*". These tables were derived from IACS UI SC 126, submitted to MSC 75 attached to document MSC 75/19/2.

6. In respect to SOLAS regulation 6.2, MSC/Circ. 1120 contains an interpretation which states "*Surfaces referred to in regulation 6.2 are those of bulkheads, decks, floor coverings, wall linings and ceilings as appropriate. The requirements described within these regulations are not meant to apply to plastic pipes, electric cables, and furniture*".

Clarification needed

7. It is IACS opinion that the interpretations in MSC/Circ. 1120 referred to in previous paragraphs 5. and 6. should be reviewed in order to:

a) For cargo ships, recognize that it is not specifically required that bulkheads and decks within accommodation spaces shall meet the requirement of SOLAS regulation II-2/6.2 unless the surface is exposed and covered with paints, varnishes or other finishes; and
b) For all ship types, clearly identify the spaces to which the requirement set out in SOLAS regulation II-2/6.2 applies.

8. Moreover, IACS has the opinion that the table for passenger ships appearing on page 29 of MSC/Circ.1120 should be expanded to include the items addressed by the table for cargo ships appearing on page 30 of MSC/Circ.1120.

IACS View Point

Revision of UI SC 126

9. IACS reviewed Unified Interpretation SC 126, as shown in the Annex, in order to properly address the need for clarification explained in paragraph 7.a).

Revision of UI SC 127

10. It is IACS opinion that Unified Interpretation SC 127, given in the Annex, adequately addresses the needed clarification explained in paragraph 7.b).

11. Unified Interpretations in paragraphs 9. and 10. are applied by IACS members on behalf of Administrations unless indicated otherwise.

Action requested of the Sub-Committee

12. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

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UI SC127 "Paints, varnishes and other finishes"

Summary

The UI has been updated to include the text of SOLAS II-2/6.2 as amended by resolution MSC.57(67)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2023)	10 January 2023	-
Rev.2 (Nov 2005)	Nov 2005	1 January 2006
Rev.1 (July 2004)	July 2004	-
New (May 1998)	May 1998	1 January 1999

- **Corr.1 (Jan 2023)**

1 Origin of Change:

☑ Other *(IACS 10th anniversary review)*

2 Main Reason for Change:

At the 10th anniversary review, it was decided that the text of the SOLAS regulation as amended by resolution MSC.57(67) should be included.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Safety Panel discussed and agreed the changes by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal : 22 September 2022 (Made by: Safety Panel member)
Panel Approval : 15 November 2022 (Ref: PS19002zISc)
GPG Approval : 10 January 2023 (Ref: 19001yIGd)

- **Rev.2 (Nov 2005)**

Refer to Part B Annex 1 for TB file.

- **Rev.1 (July 2004)**

No records available.

- **New (May 1998)**

No records available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC127:

Annex 1. **TB for Rev.2 (Nov 2005)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document available for New (May 1998), Rev.1 (July 2004) and Corr.1 (Jan 2023).

Technical Background

UI SC 127 (Rev.2, Nov 2005)

Objective

The original text was amended as follows:

1. updating the normative reference to current SOLAS Chapter II-2;

2. addition of "stairway enclosures" to those spaces required to meet the requirement of SOLAS regulation II-2/6.2 (low emission of smoke and toxic gases of exposed surfaces when exposed to fire).

Submitted by Statutory Panel Chairman
6 Nov 2005

Permsec's Note:

The revised UI SC 127 (Rev.2) together with UI SC 126 (Rev.2) were submitted to IMO FP 50 on 4 November 2005 (5091d). The IACS submission paper is attached to this TB for records.

Attached.

FP 50/…..
[DATE]
Original: ENGLISH

SUB-COMMITTEE ON FIRE PROTECTION
50th SESSION
Agenda Item 11

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Clarification on the application of interpretations to SOLAS regulations II-2/5.3 and 6.2 as contained in MSC/Circ. 1120

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive summary:	This document contains IACS' view point on the application to cargo ships of interpretations to SOLAS regulations II-2/5.3 and 6.2 as contained in MSC/Circ. 1120 . This documents also forwards IACS UI SC 127.
Action to be taken:	Paragraph 12.
Related documents:	SOLAS 74 as amended, Fire Test Procedures Code, MSC 75/19/2, MSC/Circ. 1120

Background

1. SOLAS Regulation II-2/5.3 regulates the use of combustible materials onboard ships. This regulation contains requirements on the fire characteristics that finishing materials shall possess (such as low flame-spread and maximum calorific value) as well as requirements on the total volume of combustible material allowed for facings mouldings, decoration and veneers within accommodation spaces.

2. In particular, SOLAS regulation II-2/5.3.2.4.2 states "*The following surfaces shall have low flame-spread characteristics in accordance with the Fire Test Procedures Code:*
3.2.4.1 In passenger ships:
.1 ***exposed surfaces*** *in corridors and stairway enclosures and of bulkhead and ceiling linings in accommodation and service spaces (except saunas) and control stations; and*
……
3.2.4.2 In cargo ships:
.1 ***exposed surfaces*** *in corridors and stairway enclosures and of ceilings in accommodation and service spaces (except saunas) and control stations; and*
.2 surfaces and grounds in concealed or inaccessible spaces in accommodation and service spaces and control stations."

3. SOLAS Regulation II-2/6.2 reads "*Paints, varnishes and other finishes used on* ***exposed interior surfaces*** *shall not be capable of producing excessive quantities of smoke and toxic products, this being determined in accordance with the Fire Test Procedures Code.*"

4. It is noted that the wording used in this regulation for identifying the surfaces (exposed interior surfaces covered with paints, varnishes and other finishes) that are required to meet the smoke and toxicity requirements of the Fire Test Procedures Code differs from the wording used in SOLAS regulation 5.3.2.4.1 for identifying those surfaces required to have low flame-spread characteristics.

5. As far as the fire protection materials on cargo ships are concerned, MSC/Circ. 1120 contains one interpretation indicating "*With respect to materials and components used for bulkheads in accommodation spaces, as defined in regulation 3.1, see tables for regulations 5.3 and 6.2 in the appendix.*". These tables were derived from IACS UI SC 126, submitted to MSC 75 attached to document MSC 75/19/2.

6. In respect to SOLAS regulation 6.2, MSC/Circ. 1120 contains an interpretation which states "*Surfaces referred to in regulation 6.2 are those of bulkheads, decks, floor coverings, wall linings and ceilings as appropriate. The requirements described within these regulations are not meant to apply to plastic pipes, electric cables, and furniture*".

Clarification needed

7. It is IACS opinion that the interpretations in MSC/Circ. 1120 referred to in previous paragraphs 5. and 6. should be reviewed in order to:

a) For cargo ships, recognize that it is not specifically required that bulkheads and decks within accommodation spaces shall meet the requirement of SOLAS regulation II-2/6.2 unless the surface is exposed and covered with paints, varnishes or other finishes; and
b) For all ship types, clearly identify the spaces to which the requirement set out in SOLAS regulation II-2/6.2 applies.

8. Moreover, IACS has the opinion that the table for passenger ships appearing on page 29 of MSC/Circ.1120 should be expanded to include the items addressed by the table for cargo ships appearing on page 30 of MSC/Circ.1120.

IACS View Point

Revision of UI SC 126

9. IACS reviewed Unified Interpretation SC 126, as shown in the Annex, in order to properly address the need for clarification explained in paragraph 7.a).

Revision of UI SC 127

10. It is IACS opinion that Unified Interpretation SC 127, given in the Annex, adequately addresses the needed clarification explained in paragraph 7.b).

11. Unified Interpretations in paragraphs 9. and 10. are applied by IACS members on behalf of Administrations unless indicated otherwise.

Action requested of the Sub-Committee

12. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

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UI SC128 “CO2 Discharge Time”

Summary

This UI is to clarify the allowed methods of checking the requirements for the quantity of carbon dioxide available and the maximum time for the gas introduction to the relevant spaces.

Respective requirements were deleted from SOLAS Chapter II-2 and re-introduced in FSS Code Chapter 5. FSS Code requirements include a requirement to perform system flow calculations so the UI can be deleted.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Apr 2021)	1 April 2021	-
Rev.2 (Nov 2005)	November 2005	-
Rev.1 (July 2004)	July 2004	-
New (May 1998)	May 1998	1 January 1999

- **Del (Apr 2021)**

1 Origin of Change:

☐ Based on IMO Regulation *(FSS Code Chapter 5)*

2 Main Reason for Change:

Requirements for the quantity of carbon dioxide available and the maximum time for the gas introduction to the relevant spaces were deleted from SOLAS II-2/20.6.1.1.1 by Resolution MSC.338(91) and re-introduced in FSS Code Chapter 5 by Resolution MSC.339(91) together with a requirement to perform system flow calculations.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Revision is part of the review of Resolutions and Recommendations which have not been updated for the last ten years - GPG 85 FUA 9 (PS19002_).

A qualified majority agreed that the UI could be deleted in light of the FSS Code Chapter 5, 2.1.2.1 requirement that “*System flow calculations shall be performed using a calculation technique acceptable to the Administration*”.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	31 December 2020 (Made by: *Safety Panel*)
Panel Approval:	17 March 2021 (Ref: PS19002qISd)
GPG Approval:	1 April 2021 (Ref: 19001jIGe)

- **Rev.2 (Nov 2005)**

Not available

- **Rev.1 (July 2004)**

Not available

- **New (May 1998)**

Not available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Apr 2021)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents available for New (May 1998), Rev.1 (July 2004) and Rev.2 (Nov 2005).*

Technical Background (TB) document for UI SC128 (Del Apr 2021)

1. Scope and objectives

This UI is to clarify the allowed methods of checking the requirements for the quantity of carbon dioxide available and the maximum time for the gas introduction to the relevant spaces

2. Engineering background for technical basis and rationale

Not available

3. Source / derivation of the proposed IACS Resolution

Not available

4. Summary of Changes intended for the revised Resolution:

Reference to SOLAS Reg. II-2/20.6.1.1.1 and FSS Code, Ch. 5, 2.2.1.2 is changed to FSS Code, Ch. 5, 2.2.1.2, 2.2.1.6 and 2.2.1.7

5. Points of discussions or possible discussions

A qualified majority agreed to deletion, however some members preferred to retain the UI as the three paragraphs in 2.2.1 are regarding the quantity of fire-extinguishing medium while paragraph 2.1.2.1 is relating to installation requirement. The UI is for clarifying that the three paragraphs of 2.2.1.2, 2.2.1.6 and 2.2.1.7 can be checked by suitable calculation, not by real discharge test of CO2.

6. Attachments if any

None

UI SC132 "Release Operation of the CO_2 System"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.4 (Nov 2013)	30 November 2013	1 July 2014
Corr.2 (Dec 2011)	21 December 2011	-
Corr.1 (Sept 2010)	24 September 2010	-
Rev.3 (May 2010)	19 May 2010	1 July 2010
Rev.2 (Nov 2005)	17 November 2005	-
Rev.1 (July 2004)	5 July 2004	-
NEW (May 1998)	8 May 1998	1 January 1999

- **Rev.4 (Nov 2013)**

.1 Origin of Change:

☑ Suggestion by IACS Statutory Panel

.2 Main Reason for Change:

Provisions 2.1.3.2 and 2.2.2 of the FSS Code were amended by MSC.339(91), in which relevant interpretation of MSC/Circ.1120 was incorporated.

Rev.4 of UI SC 132 is intended to clarify the application to "conventional cargo spaces", which are not required to be provided with means for automatically giving audible and visual warning of the release.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This revision of UI SC132 was discussed and developed by the Statutory Panel.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *11 November 2013 Made by: Statutory Panel*
GPG Approval: *30 November 2013 (Ref: 13241_IGb)*

- **Corr.2 (Dec 2011)**

.1 Origin of Change:

☑ Suggestion by IACS Statutory Panel

.2 Main Reason for Change:

Corrected by IACS Statutory Panel (under the long-standing Task 8 - Maintenance of IACS Resolutions) to put the UI in line with MSC.206(81).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Statutory panel proposed the correction and not to develop the associated HF & TB. GPG agreed to the proposal. PermSec revised the HF file to record the changes.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *07 December 2011 Made by: Statutory Panel*
GPG Approval: *21 December 2011 (Ref: 10055aIGb)*

- **Corr.1 (Sept 2010)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

UI SC132 is intended to clarify the spaces to which the requirements of FSS Code, Ch. 5, 2.2.2 apply.

Retroactive application of FSS/5.2.2.2 as per MSC.256(84) is not addressed in UI SC132, but is the subject of current discussions in the Statutory Panel.

Therefore, the submission to FP 55 should be revised so as to focus on harmonizing the spaces to be protected, as opposed to the retroactive application of FSS/5.2.2..2.

Additionally, MSC.206(81) amends FSS/5.2.2.2, adding an additional condition ("Positive means shall be provided so they can only be operated in that order.") for ships constructed on or after 1 July 2010.

Since UI SC132 (Rev.3) applies to ships contracted for construction on or after 1 July 2010, it seems prudent for UI SC132 to be editorially revised to include the additional sentence in the quoted regulation FSS/5.2.2.2 before it is submitted to FP 55.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The proposal was made by a GPG member during the discussion of cover paper for submission to FP55 concerning Rev.3 of UI SC132. The proposal was agreed by GPG.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *04 August 2010 Made by a GPG member (Ref: 10055_ABb)*
GPG Approval: *24 September 2010 (Ref: 10055_IGg)*

- **Rev.3 (May 2010)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

This revision of UI SC132 was developed due to introduction of SOLAS Chapter II-2 10.4.1.5 by MSC.256(84).

.3 History of Decisions Made:

This revision of UI SC132 was discussed and developed by the Statutory Panel per se through correspondence and finally agreed unanimously by the Panel at its 11th Meeting.

.4 Other Resolutions Changes

None

.5 Any dissenting views

This revision of UI SC132 was agreed unanimously by the Panel.

.6 Dates:

Original Proposal: *13 November 2009 made by Statutory Panel*
Statutory Panel Submission to GPG: *30 April 2010*
GPG Approval: *19 May 2010 (ref. 10055_IGb)*

- **Rev.2 (Nov 2005)**

Outcome of WP/FP&S task no.41 – change to reference regulation in accordance with SOLAS 2000 amendments.

No TB document available.

- **Rev.1 (July 2004)**

No TB document available – addition of 'Contracted for Construction' footnote.

- **NEW (May 1998)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC132:

Annex 1. **TB for Rev.3 (May 2010)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for the original resolution (May 1998), Rev.1 (July 2004), Rev.2 (Nov 2005), Corr.1 (Sept 2010), Corr.2 (Dec 2011) and Rev.4 (Nov 2013).*

Technical Background for UI SC132 Rev.3, May 2010

1. Scope and objectives

To interpret the application scope of FSS Chapter 5.2.2.2 following the introduction of SOLAS Chapter II-2 10.4.1.5 by MSC.256(84) and achieve the common manner on implementation.

2. Engineering background for technical basis and rationale

Following the introduction of SOLAS Chapter II-2 10.4.1.5 by MSC.256(84), the Panel recognized the necessity to revise UI SC132 in the manner of achieving harmonization of the protected spaces addressed by FSS/5.2.2.2 with those specified by FSS/5.2.1.3.2 (as summarized in the table below) but for new ships only. To this end, this revision of UI SC132 shall be implemented only on ships contracted for construction on/after 1 July 2010. The revised text of UI SC132 is therefore similar to the interpretation given in MSC/Circ.1120 (or UI SC25) for FSS 5.2.1.3.2 (spaces where CO_2 alarm is required).

Reference	Requirement	Application	Comment
2001 SOLAS II-2/5.2.5	**CO_2 system to have two separate controls**	**1. any CO_2 system 2. installed ≥ 1 Oct 94**	**Scope of application is the broadest of all the references**
FSS/5.2.2.2		**1. any CO_2 system 2. ships constructed ≥ 1 July 2002**	
SC 132	**Clarifies scope of application of SOLAS II-2/5.2.5 and FSS/5.2.2.2**	**1. normally manned spaces 2. ships contracted for construction ≥ 1 July 1999**	**SC 132 narrows the scope of application relative to other references**
FSS/5.2.1.3.2	**All fixed systems to have audible alarm**	**1. ro-ro spaces 2. spaces where personnel normally work 3. spaces where personnel have access.**	**Scope of application is broader than SC 132 and SOLAS II-2/10.4.1.5**
MSC/Circ.1120	**Clarifies scope of application of alarm requirements under FSS/5.2.1.3.2**	**1. ro-ro cargo spaces 2. holds in container ships equipped for integrated reefer containers 3. other spaces where personnel can be expected to enter and where the access is therefore facilitated by doors or manway hatches.**	**This application covers spaces which are much broader than those spaces which are normally manned.**
SOLAS II-2/10.4.1.5	**Comply with FSS/5.2.2.2**	**1. Machinery spaces 2. cargo pump-rooms 3. ships constructed < 1 July 2002**	**Retroactive**

3. Source / derivation of the proposed IACS Resolution

MSC/Circ.1120 (or UI SC25) was referred and the revised text of UI SC132 is similar to the interpretation given therein.

4. Summary of Changes intended for the revised Resolution:

Based on item 2 above, the interpretation was changed as follows to make a more transparent link between the regulation being interpreted (FSS Code, Ch 5, 2.2.2) and the basis for that interpretation (FSS Code, Ch 5, 2.1.3.2 as interpreted by MSC/Circ.1120):

"~~*These requirements only apply to systems protecting those spaces which are normally manned.*~~
The requirements of FSS Code, Ch 5, 2.2.2 apply to the spaces identified in Ch 5, 2.1.3.2 of FSS Code as interpreted by MSC/Circ.1120."

5. Points of discussions or possible discussions

The Panel agreed that the FSS Code Ch.5-2.2.2 is also applicable to ro-ro spaces subject to SOLAS II-2/20.6.1.1.1. However with respect to the application of the retroactive requirements under SOLAS II-2/10.4.1.5, it's considered that UI SC132 is moot as it does not apply to ships contracted for construction before 1 Jan 1999. As there is no compelling need for retroactive application, the revision of SC132 was agreed to apply to new ships (contracted for construction on/after 1 July 2010) only.

6. Attachments if any

N.A.

UI SC137 "Definition of High-Speed Craft"

Summary

The original UI provides interpretation on definition of High-Speed Craft for the purposes of application of the ISM (International Safety Management) Code.

The SOLAS reference has been updated so the UI has been updated to reflect the new one.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2020)	13 November 2020	-
New (Apr 1998)	April 1998	-

- **Rev.1 (Nov 2020)**

1 Origin of Change:

☑ Based on IMO Regulation

2 Main Reason for Change:

The text of SOLAS Chapter X "*Safety measures for high-speed craft*", Regulation 1 "*Definitions*", has been amended by IMO Resolution MSC.99(73) and definition of High-Speed Craft is now renumbered from para. 1.2 to 1.3.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

As a part of the maintenance of IACS Resolutions and Recommendations which have not been updated for the last ten years, Safety Panel decided to update the SOLAS reference within UI SC137, and GPG endorsed it

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	30 September 2020	Made by: Safety Panel
Panel Approval:	28 October 2020 (Ref: PS19002jISb)	
GPG Approval:	13 November 2020 (Ref: 19001cIGb)	

- **New (Apr 1998)**

No records available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC86:

◄▼►

Note: There are no separate Technical Background (TB) documents for New (Apr 1998) and Rev.1 (Nov 2020).

UI SC138 "Safe Access to Tanker Bows"

Summary

This Unified Interpretation is editorially amended to delete the outdated revision number for the referenced UI LL50.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Feb 2023)	03 February 2023	-
New (May 1998)	May 1998	-

- **Corr.1 (Feb 2023)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

The UI refers to UI LL50 Rev.2 1997 which is not the latest version.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

At the 10th Anniversary review IACS Safety Panel noted that reference was made from UI SC138 to UI LL50 (Rev.2 1997). UI LL50 has been updated a number of times since the Rev.2.

The Safety Panel concluded that it was best to delete the reference to a specific revision of UI LL50.

5 Other Resolutions Changes:

UI LL50

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 15 November 2022	(Made by: Safety Panel member)
Panel Approval	: 04 January 2023	(Ref*:* PS22018oISc)
GPG Approval	: 03 February 2023	(Ref: 22183bIGb)

- **New (May 1998)**

No records were available.

****

Part B. Technical Background

Note: There are no separate Technical Background (TB) documents for the New (May 1998) and Corr.1 (Feb 2023).

UI SC140 "Secondary Means of Venting Cargo Tanks"

Summary

This UI provides unified interpretation on SOLAS regulations II-2/4.5.3.2.2 and 11.6.3.2 – Cargo areas of tankers; Protection of cargo tank structure against pressure or vacuum in tankers.
The Revision 4 of UI has been aligned with the decision taken under SSE 10 and conforms to the framework outlined in document SSE 10/12/5.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.4 (Sept 2025)	4 September 2025	1 January 2026
Rev.3 (Jan 2011)	28 January 2011	1 July 2013
Rev.2 (Nov 2005)	17 November 2005	-
Rev.1 (June 1999)	*No Record*	-
NEW (Oct 1998)	09 October 1998	-

- **Rev.4 (Sept 2025)**

.1 Origin for Change:

☑ Based on IMO Regulation (MSC.1/Circ.1684)

.2 Main Reason for Change:

To update UI SC 140 for Revision 4 in alignment with the decision taken under SSE 10, based on our submission SSE 10/12/5 and MSC.1/Circ.1684.

.3 Surveyability review of UR and Auditability review of PR

Not applicable.

.4 Human Element issues assessment

☐ The human element checklist in internal guidelines reviewed by EG/MS and SG/HE
Not applicable.

.5 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.6 History of Decisions Made:

Feedback was received through the IACS Observer's Report, specifically Recommendation No. 19, which proposed that the Machinery Panel consider adopting and promulgating the decision outlined in document SSE 10/12/5, as submitted by IACS to SSE 10.

Given that the Machinery Panel had originally developed the content of SSE 10/12/5 based on the need to revise UI SC 140 Revision 3, the discussion within the Panel subsequently focused on updating UI SC 140 to reflect the agreed changes.

.7 Other Resolutions Changes

None

.8 Any hinderance to MASS, including any other new technologies:

None

.9 Dates:

Original proposal:	March 2024 *Made by:* Machinery panel
Panel Approval:	26 July 2023 (PM20910cIMh)
GPG Approval:	04 September 2025 (25135_IGc)

- **Rev.3 (Jan 2011)**

.1 Origin for Change:

☑ Other (Suggestion by OCIMF)

.2 Main Reason for Change:

OCIMF has been working with IACS for the last several years in order to resolve differences between IACS UI SC140 and OCIMF SIRE VIQ Inspector Guidance notes on the correct interpretation and application of SOLAS Reg. II-2/11.6.3.2. OCIMF are of the opinion that their guidance notes most accurately reflected the correct interpretation of the SOLAS secondary venting requirements for tankers. Accordingly, it was agreed that IACS would amend UI SC140 in order to clarify any differences with the OCIMF guidance.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Feedback was received from OCIMF regarding their views on UI SC140 in respect of secondary venting and valve arrangements. Discussions at Machinery Panel meetings and between Panel Chairman and OCIMF have demonstrated that revisions to UI SC140 are necessary. Form A submitted by the Machinery Panel was approved by GPG on 28 March 2008. Panel Chairman submitted the draft revised UI SC140 and its HF&TB concerning Secondary Means of Venting Cargo Tanks to GPG on 12 January 2011. GPG, after further discussions, approved the revised UI SC140 on 28 January 2011.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: March 2008 *Made by:* Machinery panel
Panel Approval: 12 January 2011
GPG Approval: 28 January 2011 (Ref. 6041_IGn)

- **Rev. 2 (Nov 2005)**

The references to SOLAS within the UI were updated so that the references were corrected in respect to the updated SOLAS and FSS Code.

No TB document available.

- **Rev. 1 (June 1999)**

The fourth paragraph was added to the UI, which is currently paragraph 4 of the Rev. 3 version.

No TB document available.

- **New (Oct 1998)**

The UI included three paragraphs which are currently paragraphs 1, 2 and 3 of the Rev. 3 version.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC140:

Annex 1. **TB for Rev. 3 (Jan 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev. 4 (Sept 2025)**

See separate TB document in Annex 2.

Note:

1) There are no separate Technical Background (TB) documents for UI SC140 New (Oct 1998), Rev.1 (June 1999) and Rev.2 (Nov 2005).

Technical Background for UI SC140 Rev.3, Jan 2011

1. Scope and objectives

Feedback from OCIMF regarding views on UI SC140 in respect of secondary venting and valve arrangements highlighted discrepancies between their documentation and IACS interpretation. Discussions at Machinery Panel meetings and between the MP Chairman and OCIMF have demonstrated that revisions to SC140 are necessary.

Therefore, the objective was to revise current version of SC140 to reflect feedback from OCIMF on the practical application of SC140 and reported tank damages due to valve operation/mal-operation during cargo handling.

2. Engineering background for technical basis and rationale

OCIMF believes that vessels utilising a common gas / vapour system as the primary means of venting which is isolated from a cargo tank by a valve, or other means, which is shut due to the normal operation of the vessel (such as in the case of a vessel carrying parcel cargo with non compatible vapours) are not in compliance with the requirements of SOLAS Reg. II-2/4.5.3 unless they have a second independent means of venting which can not be isolated from the cargo tank.

After careful consideration, the OCIMF concerns were discussed during the 9th IACS Machinery Panel meeting and the agreed consensus was the UI SC140 was applicable to – arrangements involving homogenous or compatible cargo vapours (such as ships with groups of tanks with each group having a “secondary” venting arrangement, etc.) and the UI would be amended to identify this. For tanks with non-compatible cargoes, independent secondary venting arrangements shall be provided.

OCIMF also believes that the Human Element should be considered when approving the secondary means of venting for a cargo tank as there have been some cases where personnel have inadvertently left valves in the incorrect position when completing filling/discharging operations.

The machinery panel also discussed this point at the 9th IACS Machinery Panel meeting and it was identified that paragraph 4 of the UI already clearly addressed the IACS position on this issue, as follows:

“Inadvertent closure or mechanical failure of the isolation valves required by SOLAS Reg. II-2/4.5.3.2.2 and the FSS Code, Ch. 15, paragraph 2.3.2.2 need not be considered in establishing the secondary means since:
a) The valves are operated under the control of the responsible ship’s officer and a clear visual indication of the operational status of the valves required by SOLAS Reg. II-2/4.5.3.2.2, as amended, and
b) The possibility of mechanical failure of the valves is remote due to their simplicity.”

However, the machinery panel agreed to include the clarification for homogeneous cargoes to paragraph 4.

Based on experience with certain chemical tankers it was suggested that IACS should also make clarifications on the required settings of the P/V -alarms that are generally accepted as an alternative means to secondary venting, such as for ships that do not have P/V-breakers and/or do not carry homogenous cargoes. It is understood that the purpose of the alarms is to warn the crew in the event the P/V-valves (being the primary means of venting on these ships) have malfunctioned. The panel agreed and therefore, a new paragraph 5 was added to the UI as follows:

For ships that apply pressure sensors in each tank as an alternative secondary means of venting as per SOLAS Reg. II-2/11.6.3.2, the setting of the overpressure alarm shall be above the pressure setting of the P/V-valve and the setting of the under-pressure alarm shall be below the vacuum setting of the P/V-valve. The alarm settings are to be within the design pressures of the cargo tanks. The settings are to be fixed and not arranged for blocking or adjustment in operation.

The matter was further discussed at the 12th Machinery Panel meeting and the consensus was that at the introduction of UI SC140 in 1998 it was clearly communicated that due to the locking arrangements and requirement to visual indication of position for cargo tank isolation valves, inadvertent closing of these valves was not assumed to be a failure mode.

As such therefore this is seen as an operational matter and should further amendment be required this must be directed through flag administrations to IMO.

3. Source / derivation of the proposed IACS Resolution

- SOLAS Reg. II-2/4.5.3 Cargo Tank Venting
- SOLAS Reg. II-2/11.6 Protection of cargo tank structure against pressure or vacuum in tankers
- OCIMF SIRE Vessel Inspection Questionnaire 8.3 Are SOLAS secondary venting requirements being complied with?

4. Summary of Changes intended for the revised Resolution:

- To identify that this UI is only applicable for homogeneous or cargoes where the vapours are compatible and do not require isolation.
- To include requirements for the setting of P/V alarms where they are used in lieu of a secondary means of venting.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC140 Rev.4 (Sept 2025)

1. Scope and objectives

This UI provides unified interpretation on SOLAS regulations II-2/4.5.3.2.2 and 11.6.3.2 – Cargo areas of tankers; Protection of cargo tank structure against pressure or vacuum in tankers, concerning the requirements for the secondary means of venting cargo tanks.

The Revision 4 of UI has been aligned with the decision taken under SSE 10 and conforms to the framework outlined in document SSE 10/12/5.

2. Engineering background for technical basis and rationale

Considering that SOLAS regulation II-2/4.5.3.2.2, as amended by resolution MSC.392(95), requires that "any isolation shall also continue to permit the passage of large volumes of vapour, air or inert gas mixture during cargo loading and ballasting, or during discharging...", which is different from the previous requirement of "flow caused by thermal variations ... in accordance with regulation 11.6.1.1", IACS discussed a possible impact on the secondary means of venting cargo tanks.

In that discussion, the focus was whether the P/V breaker in the inert gas main line could still be used as the primary or secondary means of venting, such arrangement being common on-board tankers built before 1 January 2017.

IACS understands that SOLAS regulation II-2/4.5.3.2.2, as amended by resolution MSC.392(95), requires the passage of large volumes of vapour after any isolation, so if P/V breaker is to be used as the secondary means of venting, its installation shall follow other requirements in SOLAS regulation II-2/4.5.3.4.1, such as:

.1 the outlet for free flow shall be not less than 6 m above the cargo tank deck or fore and aft gangway if situated within 4 m of the gangway and located not less than 10 m measured horizontally from the nearest air intakes and openings to enclosed spaces containing a source of ignition and from deck machinery; and

.2 the outlet for high-velocity discharge shall be located at a height not less than 2 m above the cargo tank deck and not less than 10 m measured horizontally from the nearest air intakes and openings to enclosed spaces containing a source of ignition and from deck machinery.

Further, IACS understands that the P/V breaker fitted in the inert gas main line is no longer accepted by the relevant SOLAS requirements, as amended by resolution MSC.392(95), but it can serve as an additional safeguard, which is an extremely reliable device.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

The source and derivation of the proposed IACS Resolution are based on the guidance provided in MSC.1/Circ.1684, which serves as the foundational reference for its development.

4. Summary of Changes intended for the revised Resolution:

The requirements for the secondary means of venting cargo tanks have been clarified. (The proposed changes reflect IMO decision based on published MSC.1/Circ.1684.)

5. Points of discussions or possible discussions

Members confirmed that common cargo tank venting is no longer an option for the secondary means on oil tankers and a P/V-breaker should be regarded as an additional safeguard (despite it no longer being formally accepted as the secondary mean of venting).

As a PV valve allowing large volume of vapours to be provided for (each) tank may be an option for the secondary venting.

Furthermore, an exception has been introduced for tankers transporting various types of cargoes that may require different PV valve settings. This applies specifically to liquid products with a vapour exceeding 1.013 bar absolute at 37.8 ˚C, which are regulated under SOLAS Chapter II-2, Regulation 1.6.2.2 and IBC Code Section 15.14.

6. Attachments if any

None.

UI SC143 "Stowage of Marine Evacuation Systems"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2010)	19 February 2010	1 July 2010
New (1999)	29 January 1999	1 July 1999

- **Rev.1 (Feb 2010)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The original UI makes reference to the fact that windows and side scuttles of the non-opening type are allowed if complying with Reg.II-2/33.3 which refers to SOLAS Passenger Ship requirements. It was considered necessary for the UI to be updated to also cover SOLAS Cargo Ships requirements.
The reference to Reg.II-2/33.3 should also be changed to Reg.II-2/9.4.1.3.3 to reflect SOLAS 2000 Amendments.

.3 History of Decisions Made:

UI SC143 has been updated to also cover requirements to cargo ships. References are also updated to reflect SOLAS 2000 Amendments.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *26 October 2009, made by Statutory Panel*
Panel Approval: *8 February 2010*
GPG Approval: *19 February 2010 (ref. 10001aIGb)*

- **New (1999)**

Developed by CG/LSA – no TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC143:

Annex 1. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) document for the original resolution (1999).*

Technical Background for UI SC143 Rev.1, Feb 2010

1. Scope and objectives

UI 1SC43 has been updated to also cover requirements to cargo ships. Rule references are also updated to reflect SOLAS 2000 Amendments.

2. Engineering background for technical basis and rationale

The intention with SOLAS Regulation III/15.1 is that the ship's side shall not have any openings between the embarkation station of the marine evacuation system and the waterline in the lightest seagoing conditions.
An interpretation is needed to clarify the different type of openings permitted and the closure requirements to such openings.

Traditionally Marine Evacuation Systems have only been used on Passenger Ships where this UI has been used.
The trend now is that Marine Evacuation Systems are also being used on Cargo Ships and SPS vessels following SOLAS Cargo Ship requirements.
Cargo Ship requirements are therefore included in UI SC143.

3. Source / derivation of the proposed IACS Resolution

IACS Statutory Panel agreed to the revision of UI SC143.

4. Summary of Changes intended for the revised Resolution:

The original version of UI SC143 was updated.

5. Points of discussions or possible discussions

-

6. Attachments if any

N.A.

UI SC144 "Maintenance, Thorough Examination, Operational Testing, Overhaul and Repair of Lifeboats, Rescue Boats and Fast Rescue Boats, Launching Appliances and Release Gear"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Oct 2017)	30 October 2017	1 January 2020
Rev.2 (Sept 2012)	25 September 2011	1 January 2013
Rev.1 (Nov 1999)	03 November 1999	1 July 1999
NEW (Feb 1999)	29 February 1999	1 July 1999

- **Rev.3 (Oct 2017)**

.1 Origin for Change:

☑ Other (amendments to SOLAS Regulation III/20.11 adopted through resolution MSC.404(96))

.2 Main Reason for Change:

UI is updated to take account of amendments to SOLAS Reg.III-20.11 adopted through resolution MSC.404(96).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS had drafted a new revision (rev.3) of UI SC144, and submitted it as the annex to SSE 1/17/15, for the Sub-Committee's consideration at SSE 1.

At SSE 1, the Sub-Committee anticipated that the Maritime Safety Committee would adopt the above-mentioned resolutions at its 93rd Session and therefore did not take any action on a previous version of UI SC144 submitted by SSE 1/17/15.

The MSC, at its 96th session, adopted resolution MSC.404(96) which amends SOLAS Regulation III/20.11 to mandate the application of the requirements in MSC.402(96) and to enhance clarity in respect of the maintenance, thorough examination, operational testing, overhaul and repair of lifeboats, rescue boats and fast rescue boats, launching appliances and releasing gear.

In light of the above, IACS resubmitted Revision 3 of IACS UI SC 144, including some minor editorial improvements, to SSE 5.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal made by safety panel
Panel Approval: 03 October 2017 (Ref: SP14006i, PSU16063)
GPG Approval: 30 October 2017 (Ref: 17099_IGf)

- **Rev.2 (Sept 2012)**

.1 Origin for Change:

☑ Other (Amendments to SOLAS Reg.III-20.11 and MSC.1/Circ.1206 (and its Revision 1) & MSC.1/Circ.1277)

.2 Main Reason for Change:

UI is updated it to take account of amendments to SOLAS Reg.III-20.11 and recent relevant discussions and developments, such as the approval of MSC.1/Circ.1206 (and its Revision 1) and MSC.1/Circ.1277.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Statutory panel discussed the revision of UI SC144, at the suggestion of PermRep to IMO. It was decided to submit the revised UI as a part of the submission to DE 57.

It was also decided not to develop any technical background document as the revision is not of technical nature.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 31 August 2012 *Made by:* Statutory panel
GPG Approval: 25 September 2012 (Ref. 12134_IGd)

- **Rev. 1 (Nov 1999)**

GPG identified the need to amend UISC 144, i.e delete para. 5 since a UI cannot set a convention requirement out of action. Also, GPG agreed to develop guidance in order to minimize the risk in tests on pre-86 gear (ref: 9166_)

No TB document available.

- **New (Oct 1998)**

CG/LSA submitted the proposed UI to GPG for review and adoption on 9 December 1998.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC144:

◄▲►

Note:

1) There are no separate Technical Background (TB) documents for UI SC144 New (1999), Rev.1 (Nov 1999), Rev.2 (Sept 2012) and Rev.3 (Oct 2017).

UI SC146: “Fire hose couplings and nozzles”

Summary

Revision to UI SC146 was made to delete irrelevant wording in the object SOLAS regulation II-2/10.2.3.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (June 2021)	29 June 2021	01 July 2022
Rev.1 (Nov 2005)	November 2005	N/A
New (May 1999)	May 1999	January 2000

- **Rev.2 (June 2021)**

1 Origin for Change:

☑ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reasons for Change:

The UI was updated in line with the current UI format and the Panel considered the need for the “introductory” sentence.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Revision was carried out by correspondence.

The Panel agreed that the “introductory” sentence which appears before the interpretation in Rev.1 should be deleted.

Changes made, although extensive, do not change the technical basis of the interpretation.

5 Other Resolutions Changes

None

6 Any hindrance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	9 September 2019 Made by Safety Panel
Panel Approval:	11 June 2021 (Ref: PS19002ISg)
GPG Approval:	29 June 2021 (Ref: 19001oIGb)

- **Rev.1 (Nov. 2005)**

  No HF & TB document available

- **New (May 1999)**

  No HF & TB document available

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC146:

◄▼►

Note: *There are no separate Technical Background (TB) documents for UI SC146 New (May 1999), Rev.1 (Nov 2005) and Rev.2 (June 2021).*

UI SC147 “Watertight door closure”

Summary

This interpretation clarifies closing requirements for watertight doors also serving as fire doors.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Feb 2021)	22 February 2021	-
Rev.1 (Nov 2005)	November 2005	-
New (May 1999)	May 1999	1 January 2000

- **Rev.2 (Feb 2021)**

1 Origin of Change:

☐ Based on IMO Regulation *FSS Code*

2 Main Reason for Change:

IMO FSS Code has been amended through MSC.311(88) which has entered into force on 01/07/2012, thus changing the wording of the reference regulation.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Noting that the reference regulation has been amended, the Panel agreed to update the interpretation.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	10 December 2020 (Made by: Safety Panel)
Panel Approval:	14 January 2021 (Ref: PS19002IISc)
GPG Approval:	22 February 2021 (Ref: 19001gIGc)

- **Rev.1 (Nov 2005)**

No history available

- **New (May 1999)**

No history available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Rev.2 (Feb 2021)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no Technical Background (TB) documents available for New (May 1999) and Rev.1 (Nov 2005).*

Technical Background (TB) document for UI SC 147 (Rev.2 Feb 2021)

1. Scope and objectives

This interpretation aims at clarifying closing requirements for watertight doors also serving as fire doors.

2. Engineering background for technical basis and rationale

Same as original UI

3. Source / derivation of the proposed IACS Resolution

This interpretation makes clear that watertight door are not to close automatically even if they are used as fire doors.

4. Summary of Changes intended for the revised Resolution:

Update the reference regulation (FSS Code Ch.9 as amended)

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC148 "Ventilation by fan coil units and internal circulation fans"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Sept 2015)	3 September 2015	1 July 2016
Rev.1 (Nov 2005)	*No record*	-
New (May 1999)	*No record*	1 January 2000

- **Rev.2 (Sept 2015)**

.1 Origin of Change:

☑ Suggestion by IACS Member

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a member.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: May 2014 made by a member
Panel Approval: 26 June 2015 (Ref: SP14006g)
GPG Approval: 3 September 2015 (Ref: 15115aIGe)

- **Rev.1 (Nov 2005)**

No records available

- **New (1999)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC148:

Annex 1. **TB for Rev.2 (Sept 2015)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no Technical Background (TB) documents available for New (1999) and Rev.1 (Nov 2005).*

◄▲►

Technical Background document for UI SC148 (Rev.2, Sept 2015)

1. Scope and objectives

The UI has the scope to clarify requirements to remote control of ventilation fans that do not supply outside air to a cabin, cabinet or switchboard for all ship types.

2. Engineering background for technical basis and rationale

Rev.1 of UI SC 148 contains an interpretation of SOLAS Ch. II-2 Reg. 5.2.1.3 and II-2 7.9.3. The interpretation and associated SOLAS references consider control of fans on passenger ships carrying more than 36 passengers and exempts fans not capable of providing inside air to cabins from the requirements to be controlled from a centralized position outside the space being served. Rev.1 of UI SC 148 does not apply to cargo ships or passenger vessels carrying not more than 36 passengers.

Taking into account the functional requirement in Reg. 5.1.1:
"means of control for the air supply to the space shall be provided"

Members agreed that the UI should be revised to allow "fans not capable of supplying outside air to a cabin" to be exempted also from II-2/5.2.1.2, meaning that such fans that are not capable of supplying outside air to the space (See Fig.1) need not be required to be controlled from outside the space being served for all ship types. Also it was agreed to include in the UI a clarification regarding requirement for, and location of, controls for circulation fans inside cabinets and switchboards.

Fig.1 Example of a small unit intended for re-circulation of air within a cabin

3. Source / derivation of the proposed IACS Resolution

- SOLAS II-2/5.1.1
- SOLAS II-2/5.2.1.2
- SOLAS II-2/5.2.1.3
- SOLAS II-2/7.9.3

4. Summary of Changes intended for the revised Resolution

Not applicable.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

UI SC149 "Gas Measurement and Detection - Portable instruments (SOLAS Reg. II-2/4.5.7.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Feb 2012)	13 February 2012	1 January 2013
Rev.1 (Nov 2005)	17 November 2005	-
New (May 1999)	21 May 1999	1 January 2000

- **Rev.2 (Feb 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Revision of an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel. There was some discussion on the availability of instruments that are capable of detecting both oxygen and flammable gas but the Panel agreed that such instruments are available. It was agreed to amend UI SC 149 and draft an associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 28 October 2011 *Made by:* Statutory panel
Panel Approval: 30 January 2012 *by:* Statutory Panel
GPG Approval: 13 February 2012 (Ref. 12017_IGb)

- **Rev.1 (Nov 2005)**

WP/FP&S Task No.41.

No TB document available.

- **New (May 1999)**

WP/FP&S submitted the proposed UI in its 1998 progress Report. Approved at GPG46. Subject No: 9100_.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC149:

Annex 1. **TB for Rev.2 (Feb 2012)**

See separate TB document in Annex 1.

◄▲►

Note:

1) There are no separate Technical Background (TB) documents for UI SC149 New (May 1999) and Rev.1 (Nov 2005).

Technical Background for UI SC149 Rev.2, Feb 2012

1. Scope and objectives

Rev. 2 of this UI revises the interpretation to incorporate amendments introduced through MSC.291(87), which enters into force on 1 January 2012.

2. Engineering background for technical basis and rationale

This UI interprets the provision of two instruments for measuring flammable vapour concentrations as satisfying the requirement for at least one portable instrument together with a sufficient set of spares.

MSC.291(87) extended this SOLAS requirement to include portable instruments for measuring oxygen.

The UI is therefore revised to remain aligned with SOLAS.

This UI has to be read as stating that compliance with UR F7 satisfies the SOLAS vague requirement for spares.

3. Source / derivation of the proposed IACS Resolution

The applicable SOLAS regulation paragraphs are as follows:

Regulation II-2/5.7.1 as amended by Resolution MEPC.291(87):

"5.7 Gas measurement and detection

5.7.1 Portable instrument

~~All~~ Tankers shall be equipped with at least one portable instrument for measuring oxygen and one for measuring flammable vapour concentrations, together with a sufficient set of spares. Suitable means shall be provided for the calibration of such instruments."

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC153 "Rudder Stock Diameter"

Summary

The UI SC153 Corrigenda 1 provides editorial correction of the references made to the SOLAS regulation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2019)	9 December 2019	-
New (Feb 2000)	Feb 2000	1 January 2001

Corr.1 (Dec 2019)

1 Origin of Change:

☒ Suggestion by IACS member
☒ Based on IMO Regulation *(SOLAS)*

2 Main Reason for Change:

The GPG tasked the Hull Panel under the standing task for maintenance of IACS Resolutions to identify the ones needing update among the resolutions and recommendations which have not been updated for the last ten years.

IACS Member identified that the UI SC153 makes reference to previous version of SOLAS regulation.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

N/A

4 History of Decisions Made:

During the HP30 Meeting the Hull Panel Members confirmed their agreement to update the UI SC153.

One Member proposed to update the references made to the SOLAS regulation. The Hull Panel discussed the subject via correspondence and unanimously agreed to the proposal made by the Member.

The following Editorial corrections were incorporated as per SOLAS:

- Paragraph 2 SOLAS Regulation 19.14 is corrected to 29.14, and yield strength is corrected to yield stress.

- SOLAS referenced paragraphs were copied to the UI as per the current UI format adopted by IACS.

The interpretation is based upon the fact that:

- the yield stress of the material to be considered for the calculation of the diameter of the rudder stock is not mentioned in the SOLAS convention.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	April 2019	Made by: Hull Panel
Panel Approval:	22 November 2019 (Ref: 19241_PHa)	
GPG Approval:	9 December 2019 (Ref: 19241_IGa)	

New (Feb 2000)

No HF/TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC153:

Note: *There is no separate Technical Background (TB) documents for the original interpretation (2000) and Corr.1 (Dec 2019).*

UI SC154 "Provision of Detailed Information on Specific Cargo Hold Flooding Scenarios (SOLAS XII/9.3)"

Summary

UI SC154 was reviewed as part of a review of UIs which have not been reviewed/amended for more than 10 years. References have been updated to refer to the current document and a HF + TB document has been created.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2021)	22 September 2021	-
New (Mar 2000)	March 2000	1 January 2001

- **Corr.1 (Sep 2021)**

1 Origin of Change:

☑ Other *(Update of requirement references)*

2 Main Reason for Change:

The text has been reviewed and references to SOLAS XII/4.2 have been updated to SOLAS XII/4.3 and the reference to SOLAS XII/4.3 has been updated to SOLAS XII/4.4 (changes made to SOLAS in resolution MSC.170(79)). Reference to UR S24 has been updated to refer to UI SC180 which replaced UR S24 for bulk carriers (UR S24 deleted in January 2004).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

This UI was agreed as needing to be updated as part of the Safety Panel review of resolutions under correspondence subject PS19002_.

The changes made are editorial only and were agreed by the Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None. The UI is applicable to bulk carriers constructed before 1 July 1999. The flooding assumptions and loading conditions to be considered will be same regardless of the level of automation. The results will still need to be presented although they may not be kept onboard (which is not a requirement in the UI) for a crewless ship. Abandon ship procedures will exist when people are onboard; the relevance of item 3 will vary depending on the level of automation and the presence of people onboard.

7 Dates:

Original Proposal	: March 2019	(Made by IACS member)
Panel Approval	: 03 September 2021	(Ref: PS19002bISc)
GPG Approval	: 22 September 2021	(Ref: 19001pIGb)

- **New (Mar 2020)**

No records are available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC154:

Note: *There are no separate Technical Background (TB) documents developed for New (Mar 2000) and Corr.1 (Sep 2021)*

UI SC155 "Lightweight check in lieu of inclining test"

Summary

UI SC155 is deleted as the requirements contain in it are replaced by UI SC297

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Aug 2022)	10 August 2022	01 January 2023
Rev.2 (Feb 2010)	19 February 2010	For ships contracted for construction or which commence conversions **before** 1 July 2010
Rev.1 (Feb 2008)	18 February 2008	1 April 2008
NEW (June 2000)	15 June 2000	1 January 2001

- **Del (Aug 2022)**

1 Origin of Change:

☐ Other - Review at 10th Anniversary

2 Main Reason for Change:

This UI was due for review in 2020 but due to considerations at IMO regarding the UI SC297 developed under subject PS18010i the review was delayed to 2022. The new UI is applicable to all changes in lightship properties so this UI is considered to be no longer required.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel considered this UI by correspondence and agreed by a majority that it should be deleted.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 08 July 2022	(Made by: Safety Panel members)
Panel Approval	: 25 July 2022	(Ref: PS22018kISc)
GPG Approval	: 10 August 2022	(Ref: 20203aIGb)

- **Rev.2 (Feb 2010)**

.1 Origin of Change:

☐ Based on IMO Regulation (SOLAS Chapter II-1, Reg.5)

.2 Main Reason for Change:

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82). As result, the Note of SC155 is added for clarifying that the UI only interprets old SOLAS Reg.II-1/Reg.22.

.3 History of Decisions Made:

The recommended criteria for accepting a deadweight survey in lieu of an inclining experiment were not contained in Chapter II-1, Reg. 22, but were contained in MSC/Circ.1158 as a recommendation. After amendment by MSC.194(80) and MSC.216(82), the criteria from MSC/Circ.1158 was specified by Reg.5. Therefore, the note of the UI SC155 is added for clarifying that the UI only interprets old SOLAS Reg.II-1/Reg.22 by indicating that the UI SC 155 shall only be applied to ships that are contracted for construction, or to ships which commence conversions, before 1 July 2010.

.4 Other Resolutions Changes: None

.5 Any dissenting views: None

.6 Dates:

Original Proposal	: 22 July 2009	Made by Statutory Panel
Panel Approval	: January 2010	
GPG Approval	: 19 February 2010	(Ref: 10001_IGe)

Rev.1 (Feb 2008)

Revision to align UI SC155 with MSC/Circ.1158 - see TB document in Part B.

NEW (June 2000)

No TB document available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC155:

Annex 1. **TB for Rev.1 (Feb 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Feb 2010)**

See separate TB document in Annex 2.

Note: There are no separate Technical Background (TB) documents for the New (June 2000) and Del (Aug 2022).

Technical Background (TB) document for UI SC155 Rev.1 (Feb 2008)

The Panel noted that two different interpretations to SOLAS, Reg.II-1/22 currently exist:

1) IACS UI SC155 (June 2000) "Lightweight check in lieu of inclining test"; and

2) MSC/Circ.1158 (24 May 2005) Stability information for passenger ships and cargo ships.
Lightweight check

These existing interpretations use different percentages of principal hydrostatic parameters as a basis to judge sister ship status.

Based on the above, given the more recent date associated with MSC/Circ.1158, the Panel decided that it was necessary to revise UI SC 155 to align it with MSC/Circ.1158.

Some Members experienced problems with ships meeting more onerous criteria contained in MSC/Circ.1158, but recognized that the flag Administration could be approached in such cases where a slightly greater tolerance is needed in order to accept a deadweight survey in lieu of inclining experiment until such time as the mandatory tolerances under SOLAS regulation II-1/B-1(5.2) enter into force.

The Panel was aware that the matter of seeking acceptance of the use of a deadweight survey in lieu of inclining experiment to determine the lightship characteristics for a sister ship has political implications as it is related to findings raised by EMSA during audits of some Members, and therefore concurred that the revision of paragraph 2 of the UI would remove the problem experienced by some Societies during EMSA audits.

Submitted by Statutory Panel Chair
1 February 2008

Technical Background (TB) document for UI SC155 (Rev.2 Feb 2010)

1. Scope and objectives

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82) and the Note of SC155 is added by indicating that the UI SC155 shall only be applied to ships that are contracted for construction, or to ships which commence conversions, before 1 July 2010.

2. Engineering background for technical basis and rationale

The recommended criteria for accepting a deadweight survey in lieu of an inclining experiment were not contained in Chapter II-1, Reg. 22, but were contained in MSC/Circ.1158 as a recommendation. After amendment by MSC.194(80) and MSC.216(82), the criteria from MSC/Circ.1158 was specified by Reg.5. Therefore, the note of the UI SC155 is added for clarifying that the UI only interprets old SOLAS Reg.II-1/Reg.22 by indicating that the UI SC155 shall only be applied to ships that are contracted for construction, or to ships which commence conversions, before 1 July 2010.

3. Source/derivation of the proposed IACS Resolution

IACS Statutory Panel agreed to the amendment to the Note of UI SC155.

4. Summary of Changes intended for the revised Resolution:

The Note of UI SC155 is added for clarifying that the UI is applied to ships that are contracted for construction, or to ships which commence conversions, before 1 July 2010.

5. Points of discussions or possible discussions

It is clarified that the UI SC155 interprets SOLAS Reg.II-1/22 other than the latest SOLAS Reg.II-1/5.

6. Attachments if any

None

UI SC156 "Doors in watertight bulkhead of cargo ships and passenger ships"

Summary

IACS UI SC156 Rev.3 has been published as a consequence of these recently published IMO instruments: MSC.474(102), MSC.491(104), MSC.492(104), MEPC.343(78), MEPC.345(78), MSC.526(106).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (July 2024)	22 July 2024	1 July 2025
Rev.2 (Jan 2021)	29 January 2021	1 July 2021
Rev.1 (Oct 2018)	01 October 2018	1 January 2020
New (June 2002)	June 2002	1 January 2003

- **Rev.3 (July 2024)**

1 Origin of Change:

☑ Other changes to IMO Instruments.

2 Main Reason for Change:

The amendments to SOLAS chapter II-1 part B and B-1 (MSC.216(82) and MSC.421(98)) introduced inconsistencies with parts B-1, B-2 and B-4. These arose from the different philosophies behind the probabilistic damage stability assessment and the assumptions made. The probabilistic method does not rely on a single deck (the bulkhead deck) to provide the uppermost watertight boundary, instead the upper boundary of the buoyant volume may be used. In theory this does not need to be a single horizontal surface. MSC 102 adopted amendments to address those inconsistencies (resolution MSC 472(102)).

In addition, MSC 104 adopted amendments to the 1988 Load Lines Protocol (resolution MSC.491(104)) and the IGC Code (resolution MSC.492(104)) to harmonize the consideration of watertight doors in damage stability calculations with those in SOLAS. Similar amendments to MARPOL Annex I (resolution MEPC.343(78)) and the IBC Code (resolution MEPC.345(78), MSC.526(106)) were adopted by MEPC 78 and MSC 106.

The amendments to the 1988 Load Lines Protocol, MARPOL Annex 1 and the IGC Code will enter into force on 1 January 2024. The amendments to the IBC Code will enter into force on 1 July 2024.

The above amendments require an update/simplification of IACS UI SC156.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

IACS UI SC156 Rev.3 has been developed as a consequence of the following recently published IMO instruments:

MSC.474(102), MSC.491(104), MSC.492(104), MEPC.343(78), MEPC.345(78), MSC.526(106).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

The basic principles relating to MASS were taken into account while developing this revision of UI SC156.

7 Dates:

Original Proposal:	15 February 2023	(Made by: SDC 7 planned action 1.3, 2nd Step)
Panel Approval:	27 May 2024	(Ref: PS23010_PSo)
GPG Approval:	22 July 2024	(Ref: 23087_IGf)

- **Rev.2 (Jan 2021)**

1 Origin of Change:

☐ Other changes to IMO MSC.1/Circ.1572

2 Main Reason for Change:

UI SC156 Rev.1 was submitted to SDC 6 (paper SDC 6/9/1). The IMO's circular, which is their version of this UI, is MSC.1/Circ.1572. Amendments to the circular were agreed at SDC 7 and subsequently approved at MSC 102. The IACS UI was consequently in need of amendment to ensure the two documents were aligned:

- "Normally open" definition was removed as this type of door is no longer permitted. Consequently, text relating to "normally open" in paragraph 5.3.3 has been deleted.
- "Used" definition was updated.
- Paragraph 3.3.1 Local control for passenger ships was updated to remove the angle of heel during intermediate stages of flooding as a parameter for the angle at which passenger ship local control by hand is to be possible.
- Updates to references to regulations.

- Requirements for passenger ships and cargo ships regarding alarms in paragraphs 3.5.1 and 3.5.3 were separated. The alarm for passenger ships needs to be made at the central operating console on the navigation bridge, which for cargo ships only needs to be at the navigation bridge.
- A new requirement regarding the location of passenger ship watertight doors and their controls is included.
- Requirements for doors also used as fire doors have been clarified.
- The footnote in paragraph 5.2 has been deleted.
- The clarification in paragraph 5.2 relating to hose testing has been deleted.
- References to SOLAS regulations in the tables have been updated.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

It was agreed to keep IACS mandatory text ("shall") and not IMO text ("should").

The term "quick acting" for watertight doors, was removed in line with discussions with the Australian Administration under subject PS20011_.

Amendments to the text to align with the IMO circular were made according to §2 above.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

The basic principles relating to MASS were taken into account while developing this revision of UI SC156.

7 Dates:

Original Proposal:	14 April 2020 (Made by: SDC 7 planned action 1.3)
Panel Approval:	12 January 2021 (Ref: PS20011hISr)
GPG Approval:	29 January 2021 (Ref: 20101_IGk)

- **Rev.1 (Oct 2018)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Based on the amendments of SOLAS Chapter II-1 by MSC.Resolution 216(82), the Safety Panel has updated IACS UI SC156.

Regarding the revision of Table 1 of IACS UI SC156, which is the compilation of the requirements for internal and external watertight closing devices, the Panel established a PT to carry out further technical and thorough discussion for the revision and update of Table 1 considering not only the latest SOLAS but also LL, MARPOL, IBC Code, IGC Code and other relevant IMO instruments. In addition, the Panel reflected the amendments to SOLAS II-1 and Explanatory Notes as adopted by MSC.421(98) and MSC.429(98) to IACS UI SC156 and to develop the submission paper to SDC 6 for clarifying some inconsistency between SOLAS and other relevant IMO instruments in the PT.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

This task was originated from discussions in 2010 within the Machinery Panel and continued within Statutory Panel by PT 31 as a Task 38 (initial Form A was approved by GPG 12 November 2012) with the aim of amending the UI SC 156 to account for amendments to SOLAS Chapter II-1 by MSC.216 (82) and to take into consideration the 2009 Code of Alarms and Indicators. The PT finished its work and was subsequently disbanded, noting that finalization of the UI can be done by discussion within the Panel (in consultation with Machinery Panel);

While the main part of the updated UI SC156 was agreed by the Panel, the Panel found difficulties in finalizing the revised Table 1 of UI SC 156 and concluded that formation of a new PT would be the best way forward;

New PT PS 36 was established (Form A was approved by GPG by 20 November 2015) with the aim to revise and update the Table 1 of UI SC 156 considering not only the latest SOLAS but also LL, MARPOL, IBC Code, IGC Code and other relevant IMO instruments;

The PT then reported to the Safety Panel with their version of the revised Table 1, was then extensively discussed in the Panel. The task was extended from original target date Q2 2016 a number of times (last extension was requested vide Safety Panels Quarterly report for Q3 2018) due to in-depth discussions on the matter, and the difficulty in coming to a consensus with regard to some of the issues, for example the update of footnote 7 (Table 1, Part A) and its application date.

Finally the revised Table 1, UI SC 156 and HF/TB were agreed by the Panel.

5 Other Resolutions Changes:

None

.6 Dates:

Panel Approval: 12 September 2018 (Ref: SP10006h)
GPG Approval: 07 August 2018 (Ref: 18081_IGe)

- **New (June 2002)**

No records available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC156:

Annex 1. **TB for Rev.1 (Oct 2018)**

See separate TB document in Annex 1.

◄▼►

Note: There is no separate Technical Background (TB) document available for New (June 2002) and Rev.2 (Jan 2021). For Rev.3 (July 2024), see "Main reason for change" in the HF.

Technical Background (TB) document for UI SC156 (Rev.1 Oct 2018)

1 Scope and objectives

(a) Update Table 1 of IACS UI SC156 in accordance with SOLAS amended by MSC. Resolutions 216(82) and 421(98), Explanatory Note by MSC.429(98), LL, MARPOL, IBC Code, IGC Code, and other relevant IMO instruments

(b) Compile and organize the requirements for internal and external watertight closing devices into the table, considering all circumstances (e.g. above/below freeboard (bulkhead) deck) in IACS UI SC156

2 Engineering background for technical basis and rationale

According to the amendments of SOLAS Chapter II-1 by IMO Resolution MSC.216(82) and 421(98) and Explanatory Note by MSC.429(98), Table 1 in UI SC156 shall be updated.

3 Source / derivation of the proposed IACS Resolution

SOLAS Chapter II-1 amended by MSC. Resolution 216(82) and 421(98), Explanatory Note by MSC.429(98), LL, MARPOL, IBC Code and IGC Code.

4 Summary of Changes intended for the revised Resolution

Table 1 has been divided to two tables for internal and external boundary, and updated in accordance with SOLAS requirements.

5 Points of discussions or possible discussions

(a) Table 1 is divided to two tables for internal and external watertight boundary as follows, for user-friendliness:
   A. Door in Internal Watertight Bulkheads
   B. Door in External Watertight Boundaries below equilibrium or intermediate waterplane

(b) The Panel reached the following consensus on the application of other IMO Instruments such as MARPOL, IBC Code and IGC Code requirements.
   A. There are some inconsistencies among these conventions on the requirements on doors in watertight bulkhead. (Inconsistencies are that MARPOL, IBC-Code, IGC-Code and ICLL on how to handle the requirements for doors other than those defined as “used”, such as hinged doors which are “permanently closed” and especially hinged doors which are “normally closed”, etc., as these types are not clearly specified in the above IMO instruments, although SOLAS has the requirements for doors in watertight bulkhead vary by the frequency of use of the doors.)
   B. It is reasonable to handle such doors in accordance with the SOLAS convention which is updated more frequently than other IMO legislations.
   C. Submission paper to SDC 6 for clarifying these inconsistencies has been developed with updated IACS UI SC156.

(c) Based on the above, footnotes referring to MARPOL and the IBC/IGC Codes were not included for the Tables.

(d) IMO Circ.1461 is not included in the Table because it is not a mandatory requirement under the international conventions.

6 Attachments if any

N/A

UI SC159 “Equivalent Protection SOLAS II-2/10.7.2”

Summary

UI SC159 has been updated to correct references to IMO documents. Other editorial amendments have been made to include the text of the SOLAS regulation being interpreted.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2021)	22 September 2021	-
Rev.1 (Nov 2005)	November 2005	-
Corr.1 (May 2001)	May 2001	-
New (June 2000)	June 2000	1 January 2001

- **Corr.1 Sep 2021**

1 Origin of Change:

☑ Other *(Update to IMO documents)*

2 Main Reason for Change:

IACS UI SC159 has been updated to account for changes to the referenced IMO circulars. Other editorial changes have been made to align the UI with the current IACS standard format.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

This UI was agreed as needing to be updated as part of the Safety Panel review of resolutions under correspondence subject PS19002_.

The changes made are editorial only and were agreed by the Panel.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

The UI is applicable for all levels of automation.

7 Dates:

Original Proposal	: March 2019	(Made by IACS member)
Panel Approval	: 03 September 2021	(Ref: PS19002bISc)
GPG Approval	: 22 September 2021	(Ref: 19001pIGb)

- **Rev.1 (Nov 2005)**

No records are available.

- **Corr.1 (May 2001)**

No records are available.

- **New (June 2000)**

No records are available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC159:

Note: *There are no separate Technical Background (TB) documents developed for New (June 2000), Corr.1 (May 2001), Rev.1 (Nov 2005) and Corr.1 (Sep 2021)*

UI SC161 "Timber deck cargo in the context of damage stability requirements"

Summary

Rev.3 is updated following reconsideration the new TDC code (Resolution A.1048(27)) and SOLAS amendments (Resolution MSC.421(98)).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (May 2022)	18 May 2022	1 January 2023
Rev.2 (Apr 2021)	27 April 2021	1 July 2022*
Rev.1 (Feb 2008)	20 February 2008	1 January 2009
New (May 2000)	May 2000	1 January 2001

- **Rev.3 (May 2022)**

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

During discussions while preparing a submission to IMO regarding the possible need to change circular MSC/Circ.998, the Panel agreed that uprights should comply with the 2011 TDC Code.

3 List of non-IACS Member Classification Societies contributing or participating in IACS Working Group: None

4 History of Decisions Made:

The Panel agreed through correspondence that reference should be made to the 2011 TDC Code. An appropriate submission was made to SDC 8. Following SDC 8 the UI was aligned with the IMO circular MSC.1/Circ.1653.

5 Other Resolutions Changes: None

6 Any hinderance to MASS, including any other new technologies: None

7 Dates:

Original Proposal	: August 2021	(Made by Safety Panel)
Panel Approval	: 13 April 2022	(Ref: PS19002pISu)
GPG Approval	: 18 May 2022	(Ref: 19001iIGp)

- **Rev.2 (Apr 2021)***

* Rev.2 was withdrawn before coming into force on 1 July 2022 (Ref: 19001iIGr)

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

The TDC code has been revised and noted the SOLAS amendments, the interpretation of the damage stability requirement for timber deck cargo is updated accordingly.

3 List of non-IACS Member Classification Societies contributing or participating in IACS Working Group: None

4 History of Decisions Made:

Based on Periodic review of IACS Resolution by Safety Panel, noted that the TDC code is updated, the Interpretation is to be updated accordingly.

5 Other Resolutions Changes: None

6 Any hinderance to MASS, including any other new technologies: None

7 Dates:

Original Proposal	: September 2020	(Made by: Safety Panel)
Panel Approval	: 12 April 2021	(Ref: PS19002pISf)
GPG Approval	: 27 April 2021	(Ref: 19001iIGf)

- **Rev.1 (Feb 2008)**

Refer to Part B Annex 1 for TB file

- **New (May 2000)**

No records are available

Part B. Technical Background

List of Technical Background (TB) documents for UI SC161:

Annex 1. **TB for Rev.1 (Feb 2008)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.2 (Apr 2021)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.3 (May 2022)**

See separate TB document in Annex 3.

Note: There is no separate Technical Background (TB) document for New (2008).

Technical Background (TB) document for SC161 (Rev.1 Feb 2008)

UI SC161 has been updated to confirm its applicability after the entering into force of the revised SOLAS Ch.II-1 as contained in resolution MSC.216(82).
Submitted by Statutory Panel Chairman
31 January 2008

Permanent Secretariat note, February 2008:

During GPG discussion DNV noted that Figure 1 (Examples of Combined GM Curves) in the Statutory Panel's revised UI SC161 was misleading and suggested that the figure be removed. This was supported by five members, ABS agreed that the figure was incorrect and proposed that it be revised and three members did not comment. Revised UI SC161, with Figure 1 deleted, was approved by GPG on 20 February 2008 (ref.8524_IGb).

Technical Background (TB) document for SC161 (Rev.2 Apr 2021)

1. Scope and objectives

Review of the Unified Interpretation SC 161 Rev.1 (February 2008)

2. Engineering background for technical basis and rationale

This UI was developed to provide the interpretation of the damage stability requirement for the timber deck cargo. The TDC code has been revised and noted the SOLAS amendments, the interpretation is updated accordingly.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The Safety Panel discussed the application of the UI, some members considered that it need only apply to cargo ships as a passenger ship would be unlikely to carry timber to the extent where the UI could be applied. It was noted that the Rev.1 was applicable to both passenger and cargo ships and this application was retained.

The Safety Panel also considered the significant changes introduced in the 2011 Timber Deck Cargo Code (TDC Code). In particular concern was raised with the new requirement for uprights which require significantly larger uprights. The text was amended to retain the existing requirements for uprights.

The Safety Panel noted that the extent of the stowage of timber was no longer contained in the 2011 TDC Code, but the old extent requirements could be found in the 2008 Intact Stability Code. It was concluded that it was appropriate to refer to the 2008 IS Code but that this should not mean that the alternative criteria for intact stability when carrying timber cargoes had to be used.

6. Attachments if any

None.

Technical Background (TB) document for UI SC161 (Rev.3 May 2022)

1. Scope and objectives

Review of the Unified Interpretation SC 161 Rev.2 (Apr 2021)

2. Engineering background for technical basis and rationale

This UI was developed to provide the interpretation of the damage stability requirement for the timber deck cargo. On further reflection it was agreed that the requirements of the 2011 TDC Code for uprights should be used.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The Safety Panel further considered the significant changes introduced in the 2011 Timber Deck Cargo Code (TDC Code), in particular the new requirements for uprights. The Panel recognised that the 2011 TDC Code requirements for uprights had been developed based on extensive engineering studies and, taking into account that technical justification to challenge their application was not identified during the Panel's discussion, agreed to the application of the 2011 TDC Code requirements for uprights in Rev.3 of SC161.

The Safety Panel noted that this decision could have an impact on deck loads, as shown in the example calculation provided by a member, see attachment.

6. Attachments if any

Example calculation for increased deck load.

Attachment for UI SC161 Part B Annex 3

Taking the following ship (referring to the ship that have been built in the last few years) as an example,

H = 9.3 m

k = 1.8 (with hog lashing)

B = 30 m

N = 35

m = 11,912 tons

at = 4.6 m/s^2 (*)

μ_{static} = 0.35(*)

PW = 770 kN (*)

PS = 220 kN (*)

(*) the exact value for this model ship is not known, the value in Example B5.3.1 was used, which is the calculation example closest to the case of this ship among the calculation examples in the Annex of 2011TDC.

In cases that the ship carrying loose sawn wood and round timber,

CM_1 = 534.8 kN/m
CM_2 = 1,537.5 kN/m

$M_{bending}$ = 1,827 kN/m (applied top-over lashing)

The modulus of section *Z* is

Z = $M_{bending}$ / (50% of 360 MPa) = 10,150 cm^3

The following is an example of a design that satisfies this requirement.

Upright : (H-section steel) H650x450x20/35
(*Z* = 10,175 cm^3, the weight is about 3.15 tons)

Calculation detail:

width (mm)	height (mm)	I' (mm^4)	A (mm^2)	L (mm)	AL	AL^2	(AL)^2
450	35	1607812.5	15750	17.5	275625	4823437.5	7.5969E+10
20	580	325186667	11600	325	3770000	1225250000	1.4213E+13
450	35	1607812.5	15750	632.5	9961875	6300885938	9.9239E+13
				N.A. (mm)	I (cm^4)	Z (cm^3)	weight (t)
				325	330692.417	10175.1513	3.1465155

However, the characteristics of the uprights which have been fitted on a ship that has been built in the last few years is illustrated as follows (this is not considered to be an extreme example).

Upright: H500x200x12/25 (Z = 2,623 cm^3, the weight is about 1.12 tons)

Calculation detail:

width (mm)	height (mm)	I' (mm^4)	A (mm^2)	L (mm)	AL	AL^2	(AL)^2
200	25	260416.667	5000	12.5	62500	781250	3906250000
12	450	91125000	5400	250	1350000	337500000	1.8225E+12
200	25	260416.667	5000	487.5	2437500	1188281250	5.9414E+12
				N.A. (mm)	I (cm^4)	Z (cm^3)	weight (t)
				325	65570.8333	2622.83333	1.124277

Therefore, the difference in weight per a stanchion is 2.03 tons. In general, 34KDWT Bulk Carrier has about 100 stanchions, so the total weight increased on the deck will be 200 tons. This means that the hull structure will need to be reinforced.

UI SC163 "Emergency fire pumps in cargo ships – sea suction and sea valves"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Sept 2009)	15 September 2009	1 January 2010
Rev.1 (Nov 2005)	17 November 2005	
NEW (Feb 2002)	13 February 2002	

- **Rev.2 (Sept 2009)**

.1 Origin for Change:

☑ Suggestion by IACS member
☑ Other - *MSC.1/Circ.1314, dated 10 June 2009*

.2 Main Reason for Change:

It had been noted that Rev.1 of the UI SC 163 introduced the required capacity of emergency fire pump by FSS Code as the additional capacity to that required for the fixed water-based fire extinguishing system installed for the protection of the machinery space with SOLAS regulation II-2/10.4.1.1. This was found to give results that are different from that intended by the original version of the UI.

.3 History of Decisions Made:

- March 2008 – Statutory Panel approved IACS TASK FORM A for maintenance of IACS UI SC 163
- May 2008 – Statutory Panel approved IACS FORM 1 for the above
- July 2008 – PT submitted the original proposal as Rev.2 for IACS UI SC 163
- September 2008 – Statutory Panel decided to reserve the original proposal above and confirm the IMO's intention on this matter (see IACS submission FP 53/3/2)
- June 2009 – MSC.1/Circ.1314 issued
- June 2009 – Statutory Panel decided that IACS UI SC 163 should be revised based on MSC.1/Circ.1314
- July 2009 – PT submitted the final proposal as Rev.2 for IACS UI SC 163

.4 Other Resolutions Changes

N/A.

.5 Any dissenting views

One member did not support the original proposal provided by PT in July 2008 due to the lack of technical background for revise the Rev.2 of UI SC 163. The other members eventually agreed and it was decided to seek confirmation of IMO's intention on this matter at FP 53 and MSC 86.

.6 Dates:

Original Proposal: *31 July 2008, made by PT SP7005m*
Revised Proposal: *17 July 2009, made by PT SP7005m*
Panel Submission of revised proposal to GPG: *24 August 2009*
GPG Approval: 15 September 2009 *(ref. 8564_IGf)*

- **Rev.1 (Nov 2005)**

.1 Origin for Change:

☑ Based on IMO Regulation *(*SOLAS II-2/4.3.3.2 and FSS Code 12/2.2.1.1*)*

.2 Main Reason for Change:

The re-location of the emergency fire pump requirements:

- From SOLAS II-2/4.3.3.2 (two jets of water to satisfaction of Administration and II-2/4.3.3.2.1 (40% of the total fire pump capacity - 180 m^3/hr max, but not < 25 m^3/hr (110 gpm))
- To the FSS Code 12/2.2.1.1 (40% of the total fire pump capacity - 180 m^3/hr max), but not < 25 m^3/hr (110 gpm))

.3 History of Decisions Made:

SC 163, Rev.1, was editorially revised in Nov 2005 to reference the requirements for the emergency fire pump which were re-located from SOLAS II-2/4.3.3.2 and FSS Code 12/2.2.1.1.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None recorded in IACS archives

.6 Dates:

Original Proposal: *25 Nov 2004 m*ade by *WP/FP+S*
Council Approval: *17 Nov 2005 (ref. 3002aICb)*

- **NEW (Feb 2002)**

See TB in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC163:

Annex 1. **TB for Original Resolution (Feb 2002)**

See separate TB document in Annex 1 – *note the TB is primarily for deletion of UR F20 and new UR M62 but it also covers new UIs SC 162 – 164.*

◄▼►

Annex 2. **TB for Rev.2 (Sept 2009)**

See separate TB document in Annex 2.

◄▼►

Note: *There is no separate Technical Background (TB) document for Rev.1 (Nov 2005).*

Technical Background
To

DELETION OF F 30

&

NEW UR M 62 (Feb. 2002)

In the WP/FP+S Progress Report No.34 (March 2001), the WP/FP+S proposed to transfer three parts of F30 as interpretations (three UI SCs) and to drop the rest, as they were adequately covered by SOLAS and other interpretations.
(Task No.31: To re-formulate F30, F34 and F35 into UIs or RECs as appropriate)

The following steps have been taken:

1. GPG agreed to completely delete F30 from the Blue Book at its 50th meeting (Tokyo, March 2001);

2. GPG approved the three UI SCs 162, 163, and 164, as proposed by WP/FP+S, which were not covered by the Convention;

3. After GPG 50, LR confirmed that the WP/MCH's proposed amendment to F30.2.7 (The rooms where the pump mover…) was not contained in the Convention, however, it was already contained in LR Rules. LR had no objection to it being a UR on Machinery. Finally, GPG agreed that the proposed amendment to F30.2.7 should be classified as UR M 62 "Rooms for em'cy fire pumps in cargo ships".

- Outcome
  1. Deletion of F30.
  2. Creation of new UR M62.
  3. Creation of three UI SCs 162, 163, and 164.

- Information
  GPG agreed that F30.4.1 should be formulated as a UI if it is not dealt with in the SOLAS text.
  The text was prepared by WP/MCH with due consideration to practical difficulty for larger ships in meeting M 46 inclination requirements. However, having identified a need to define "lightest seagoing condition" in the draft UI SC zzz, GPG tasked WP/FP+S to consider Members' experience of plan approval work and performance test after installation of em'cy fire pump systems in consultation with CG/LSA (Refer to the outcome of WP/FP+S Task 39).

Prepared by the Permanent Secretariat

(submitted on 30 August 2001)

Technical Background (TB) document
UI SC163 (Rev.2, Sept 2009)

1. Scope and objectives

To clarify whether Rev.1, requiring the capacity of emergency fire pump by FSS Code in addition to the capacity required for the fixed water-based fire extinguishing system installed for the protection of the machinery space with SOLAS regulation II-2/10.4.1.1 and which seems to give different understanding from that intended by the original version of SC 163, would be in line with SOLAS.
And, if not, to provide the Rev.2 as per the confirmed interpretation.

2. Engineering background for technical basis and rationale

It has been confirmed that the required additional capacity referenced in above 1 is for two jets of water with the capacity of not less than 25m^3/h at MSC 86.
MSC.1/Circ.1314, 10 June 2009 has been issued and it was determined that Rev.1 should be amended to be in line with the said Circular.
Also, it was deemed appropriate to clarify and/or set the applicable/practicable application of 'two jets of water' in the Circular and the estimated water delivery rates of nozzles at the required pressure of 0.27 N/mm^2 as indicated below.

Nozzle diameter	Water delivery
16 mm	16.0 m^3/h/jet
19 mm	23.5 m^3/h/jet

3. Source / derivation of the proposed IACS Resolution

N/A.

4. Summary of Changes intended for the revised Resolution:

Rev.1 should be amended totally as below.

Quote:
The emergency fire pump shall as a minimum comply with paragraph 2.2.1.1 of FSS Code, Ch.12. Where a fixed water-based fire extinguishing system installed for the protection of the machinery space in accordance with SOLAS regulation II-2/Reg.10.4.1.1, is supplied by the emergency fire pump, the emergency fire pump capacity should be adequate to supply the fixed fire extinguishing system at the required pressure plus two jets of water.
*The capacity of the two jets shall in any case be calculated by that emanating from the biggest nozzle size available onboard from the following table (*note), but shall not less than 25 m^3/h.*

Capacity of single jet

Nozzle size / *Press at Hydrant*	*16 mm*	*19mm*
0.27 N/mm^2	*16 m^3/h*	*23.5 m^3/h*

*(*note)*
When selecting the biggest nozzle size available onboard, the nozzles located in the space where the main fire pumps are located can be excluded.
Unquote

Changes introduced in Rev.2 are to be uniformly implemented by IACS Members and Associated for ships contracted for construction on or after 1 January 2010.

5. Points of discussions or possible discussions

MSC.1/Circ.1314 recommends that the minimum pressure should be understood to mean 0.27 N/mm^2.
However, SOLAS II-2/10.2.1.6 specifies the 0.27 N/mm^2 and 0.25 N/mm^2 for cargo ships 6000GT & above and less than 6000GT, respectively.
The proposed Rev.2 of the UI uses a single value of 0.27 N/mm^2 as per the Circular.

6. Attachments if any

N/A.

UI SC167 “Electrical distribution boards”

Summary

An incorrect reference in the references to SOLAS has been corrected. The UI has been reformatted to the current IACS template.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Nov 2021)	08 November 2021	-
Rev.1 (Nov. 2005)	November 2005	-
New (June 2002)	June 2002	1 January 2003

- **Corr. 1 (Nov 2021)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

During the review of UIs more than 10 years old it was identified that the reference to SOLAS II-2/9.2.4.2.2.2(5) was stated to be to SOLAS II-2/9.3.4.2.2.2(5). This needed to be corrected.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel unanimously agreed to the correction by correspondence. The opportunity was taken to update the format of the UI to the current IACS format.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 06 June 2019	Made by: IACS member
Panel Approval	: 04 October 2021	(Ref: PS19002cISd)
GPG Approval	: 08 November 2021	(Ref: 19001qIGb)

- **Rev.1 (Nov 2005)**

No records are available.

- **New (June 2002)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC167:

Note: *There are no separate Technical Background (TB) documents developed for New (June 2002), Rev.1 (Nov 2005) and Corr.1 (Nov 2021).*

UI SC169 "Foam systems positions of aft monitors"

Summary

The regulations referenced in the UI were amended in resolution MSC.339(91) and the related IMO circular, MSC/Circ.1120 was updated by MSC.1/Circ.1491, so the UI was updated to align.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2021)	08 November 2021	1 January 2023
Corr.1 (Feb 2003)	February 2003	-
New (June 2002)	June 2002	1 January 2003

- **Rev.1 (Nov 2021)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

The IMO had updated the SOLAS regulations and the associated unified interpretation (by resolution MSC .339(91) and MSC.1/Circ.1491 respectively) so the IACS UI needed to be updated to match.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel unanimously agreed with the proposed amendments by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 06 June 2019	Made by: IACS member
Panel Approval	: 04 October 2021	(Ref: PS19002cISd)
GPG Approval	: 08 November 2021	(Ref: 19001qIGb)

- **Corr.1 (Feb 2003)**

No records are available.

- **New (June 2002)**

No records are available.

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC169:

Note: *There are no separate Technical Background (TB) documents developed for New (June 2002), Corr.1 (Feb 2003) and Corr.1 (Nov 2021).*

UI SC170: "Low pressure CO2 systems"

Summary

This UI provides a unified interpretation of the requirements for low pressure CO2 systems in FSS Code, Ch. 5.2.2. It has been deleted as the requirements have been included in the FSS Code and in IACS UR F46.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Aug 2021)	25 August 2021	01 July 2022
Rev.1 (Nov 2005)	November 2005	-
New (June 2002)	June 2002	1 January 2003

- **Del (Aug 2021)**

1 Origin of Change:

☑ Other *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

The main content of this UI has been consolidated into FSS Code, Ch. 5.2.2.4, amended by Resolution MSC.206(81), adopted on 18 May 2006. Para. 11 of the UI has been included in UR F46.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel unanimously agreed that the UI could be deleted as the content has been included into the FSS Code and UR F46.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal: December 2020 (Made by: Safety Panel)
Panel Approval: 05 August 2021(Ref: PS19002oISn)
GPG Approval: 25 August 2021 (Ref: 21114_IGh)

- **Rev.1 (Nov 2005)**

No records available

- **New (June 2002)**

No records available

****

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Del (Aug 2021)**

See separate TB document in Annex 1.

Note: There are no technical background documents available for New (June 2002) and Rev.1 (Nov 2005)

◄▼►

Technical Background (TB) document for UI SC170 (Del Aug 2021)

1. Scope and objectives

The task was initiated to delete UI SC170 since it was found that the content of this UI has been consolidated into FSS Code, Ch. 5.2.2.4, amended by Resolution MSC.206(81), adopted on 18 May 2006.

2. Engineering background for technical basis and rationale

The Panel majority agreed that the UI SC170 should be deleted because the content of this UI has been consolidated into FSS Code, Ch. 5.2.2.4, amended by Resolution MSC.206(81), adopted on 18 May 2006, while the only requirement not incorporated in FSS Code amendments has been included in new UR F46.

3. Source/derivation of the proposed IACS Resolution

Not Applicable

4. Summary of Changes intended for the revised Resolution:

Delete UI SC170

5. Points of discussions or possible discussions

The one point which was not included in the updates to the FSS Code (the requirement for a minimum pressure at the nozzle of the CO2 piping system) has been made into a new UR, UR F46. This UI can be deleted from the application date of the new UR, which is expected to be 1 July 2022.

6. Attachments if any

None

UI SC171 “Interpretation of the term "First Survey"”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Aug 2008)	18 August 2008	31 December 2008 *
Rev.1, Corr.1 (Mar 2008)	28 March 2008	-
Rev.1 (Mar 2008)	28 March 2008	31 December 2008
NEW (July 2002)	3 July 2002	1 July 2002

** Note: the changes in Rev.2 supersede those in Rev.1.*

- **Rev.2 (Aug 2008)**

Document updated to be generic so that it doesn’t need to be revised each time the relevant SOLAS regulations are amended – see TB document in Part B.

UPDATE Jan 2010: *Rev.2 is now consistent with MSC.1/Circ.1290.*

- **Rev.1, Corr.1 (Mar 2008)**

Correction noting that V/19-1 4.1 covers first survey of radio installation – see TB document in Part B.

- **Rev.1 (Mar 2008)**

Update to include SOLAS Reg V/19-1 4.1 – see TB document in Part B.

- **NEW (July 2002)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC171:

Annex 1. **TB for Rev.1 (Mar 2008)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1, Corr.1 (Mar 2008)**

See separate TB document in Annex 2.

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Annex 3. **TB for Rev.2 (Aug 2008)**

See separate TB document in Annex 3.

◄▼►

Note: *There is no separate Technical Background (TB) document for the original resolution (July 2002).*

Technical Background

UI SC 171 Rev.1, March 2008

The UI SC171 is updated for the purpose of including SOLAS Regulation V/19-1 4.1 – Provision of LRIT – which enters into force on 31 December 2008 with an interpretation of the term ‘first survey’ when applying the Regulation.

Submitted by Statutory Panel Chair
25 March 2008

Permanent Secretariat Note (March 2008):
Approved by GPG 28 March 2008 (ref. 8527aIGa) and submitted to FSI 16.

Technical Background

UI SC 171 Rev.1, March 2008 & Corr.1, March 2008

The UI SC171 is updated for the purpose of including SOLAS Regulation V/19-1 4.1 – Provision of LRIT – which enters into force on 31 December 2008 with an interpretation of the term ‘first survey’ when applying the Regulation.

Submitted by Statutory Panel Chair
25 March 2008

Permanent Secretariat Note (March 2008):
Approved by GPG 28 March 2008 (ref. 8527aIGa) and submitted to FSI 16.

Corr.1, March 2008

Following circulation of UI SC171 Rev.1 it was brought to GPG’s attention (ref. 8527aABb) that “*since SOLAS V/19-1 4.1 discusses the first survey of the radio installation, the agreed UI SC 171 needs to be expanded to also refer to the Safety Radio Certificate and to recognize "periodical surveys" for the Safety Equipment Certificate and that there is no "annual survey" for Safety Radio Certificate.*”

Therefore the interpretation text was corrected as follows:

"For passenger ships, the term "first survey" relates to the first initial[1] or renewal survey for the issue of the Passenger! Ship Safety Certificate. For ships other than passenger ships, the term "first survey" relates to the first initial, annual, periodical or renewal survey for the issue of the Cargo Ship Safety Equipment Certificate and to the first initial, periodical or renewal survey for the issue of the Cargo Ship Safety Radio Certificate or any occasional survey which implies the confirmation of validity of the certificate".

Technical Background

UI SC 171 Rev.2, Aug 2008

For the purpose of reflecting the decision of FSI 16 on IACS submission FSI 16/12, the UI SC 171 is updated to be expressed in a generic manner so that UI SC 171 need not be revised every time when relevant requirements of SOLAS are amended.

Submitted by Statutory Panel Chair
1 August 2008

Permanent Secretariat note:
Approved by GPG 18 August 2008 (8527aIGe) with an implementation date of 31 December 2008.

Technical Background to Unified Interpretations FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1

The UIs, UI FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1, have been editorially revised simply to incorporate reference to MSC.1/Circ.1203.

Submitted by GPG Chairman
2 August 2006

UI SC178 "Emergency Fire Pumps in Cargo Ships (FSS Code, Ch.12, 2.2.1.3)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Apr 2011)	18 April 2011	1 January 2012
Withdrawn (Apr 2005)	01 April 2005	-
New (July 2003)	14 July 2003	1 January 2004

- **Rev.1 (Apr 2011)**

.1 Origin for Change:

☑ Non-uniform application of the provisions of paragraph 2.2.1.3 of Chapter 12 in the FSS Code recognized by IACS.

.2 Main Reason for Change:

To harmonize the application of paragraph 2.2.1.3 of Chapter 12 in the FSS Code. Based on several IACS submissions to the FP S/C, IMO developed the unified interpretation to provide more specific guidance for application of the requirements relevant to emergency fire pumps as contained in MSC.1/Circ.1388.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

- December 2010 - MSC.1/Circ.1388 was approved at MSC88.
- February 2011 – Statutory Panel decided that IACS UI SC178 should be revised based on MSC.1/Circ.1388

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 18 February 2011 *Made by:* Statutory panel
Panel Approval: 06 April 2011 *by:* Statutory Panel
GPG Approval: 18 April 2011 (Ref. 11062_IGb)

- **Withdrawn (April 2005)**

No TB document available.

- **New (July 2003)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC178:

Annex 1. **TB for Rev.1 (Apr 2011)**

See separate TB document in Annex 1.

◄▲►

Note:

1) There are no separate Technical Background (TB) documents for UI SC178 New (July 2003) and Withdrawn (April 2005).

Technical Background for UI SC178 Rev.1, Apr 2011

1. Scope and objectives

To clarify the design conditions of emergency fire pumps.

2. Engineering background for technical basis and rationale

Paragraph 2.2.1.3 of chapter 12 in the FSS Code, 3 reads:

> "*The total suction head and the net positive suction head of the pump shall be determined having due regard to the requirements of the Convention and this chapter on the pump capacity and on the hydrant pressure under all conditions of list, trim, roll and pitch likely to be encountered in service. The ballast condition of a ship on entering or leaving a dry dock need not be considered a service condition.*"

In consideration that the pump performance is closely related with the premises of ship condition, it is necessary to give the concrete premises of ship condition in order to facilitate the uniform application of the above requirement.

3. Source / derivation of the proposed IACS Resolution

Multiple submissions to the FP S/C which ultimately led to the IACS Statutory Panel agreeing to revise UI SC178 to be in line with MSC.1/Circ.1388, except as noted in item 5, below.

4. Summary of Changes intended for the revised Resolution:

The concrete premises of ship condition to design emergency fire pumps were amended.

5. Points of discussions or possible discussions

The implementation date has been adjusted from MSC.1/Circ.1388 to be the "contract for construction date", in consideration that this UI significantly affects conventional ship design.

6. Attachments if any

PT Report and Addendum

IACS Project Team Report

Project Team on Revision of UI SC 178

Task No. 5 :

Position of the emergency fire pump on cargo ship

Attendance :

Mr. B. Lian	DNV
Mr. I. Imamoto	NK
Mr. S. Zhivitsa	RS

Mr. YeonTae Kim KR (PM)

Work specification 1: Prepare a revision of UI SC178 consistent with the general criteria contained under paragraph 7. of IACS submission FP 50/11/3 and taking into account the design criteria for the individual components of the emergency fire pump set out in UR M46 and the requirement of SOLAS II-2 regulation 14 that the fire fighting systems are to be available at all times when the ship is in service;

The draft revision was prepared according to the general criteria contained under para. 7 of IACS submission FP 50/11/3 as follows;

IACS submission FP 50/11/3 para. 7.1 reads " There is a very remote possibility that a ship in a "lightship condition" (*i.e.*, a loading condition without cargo or ballast water, with 10% stores and fuel remaining) will be operated in a condition which will experience excessive values in roll and pitch". In the draft revision, such lightship condition is not taken into account. For sheltered water condition, roll and pitch is not taken into account and imaginary waterline is introduced to consider the condition of ships entering sheltered water.

IACS submission FP 50/11/3 para. 7.2 reads " Conditions likely to be encountered at the "lightest service" condition should exclude bow slamming and propeller racing ". In the draft revision, loading condition to be considered is ballast condition on the approved stability booklet. Therefore, the condition to be considered excludes bow slamming and propeller racing.

IACS submission FP 50/11/3 para. 7.3 reads " Since the FSS Code, chapter 12, paragraph 2.2.1.3, exempts a very light ballast condition needed to enter or leave a dry dock from a service condition likely to be encountered, this implies that a realistic ballast condition based on the extent of immersion of the propeller at the "lightship" waterline should be used". In the draft revision, loading condition to be considered is ballast condition on the approved stability booklet.

IACS submission FP 50/11/3 para. 7.4 reads " Superimposing pitch and roll angles

about a still waterline is overly simplistic and does not represent realistic “conditions of list, trim, roll and pitch likely to be encountered in service ”. To represent the realistic condition of roll, pitch and heave, ship motion analysis was carried out and the effect of combination of different ship motions is reflected in the draft revision.

IACS submission FP 50/11/3 para. 7.5 reads “ The criteria to be developed should fit ships of all size and types as per SOLAS regulation II-2/10.2 and the FSS Code.” The draft revision has been applied to actual ship designs of different kind and size and it has been found that the draft revision requires reasonably similar safety level for all size and kind of ships.

Design criteria for the individual component of the emergency fire pump set out in UR M46 was noted. Our view is that UI SC 178 should be treated differently than the UR M46 because UI SC 178 is related to the waterline while UR M46 is not.

Requirement of SOLAS II-2 regulation 14 which requires that the fire fighting systems are to be available at all times when the ship is in service was noted. As for conditions such as without cargo and ballast in port, our view is that there is very remote possibility to use emergency fire pump at such condition due to the availability of shore based fire fighting assistance. Therefore, such conditions are not reflected in the draft revision.

For the preparation of pitch, roll and heave value, it was born in mind that they should have sound technical basis and rationale because, among other things, it will be discussed at FP 51. It is noted that the code mentions only pitch and roll. However, heave is also to be taken into account in the draft revision to represent realistic ship motion. Brief explanation for the technical basis upon which the draft revision was prepared is given as follows;

- Values are based on the ship motion related formula in Common Structure Rules
- Since the formula in CSR is based on the return period of 20 years, the formula was modified to reflect the fact that the emergency fire pump is used in emergency condition of engine room in fire. Therefore, return period of one year was used as was done for IACS UR S17 (longitudinal strength of hull girder in flooded condition of bulk carrier)
- Failure of propulsion was considered due to fire in engine room
- Concept of one hour average was introduced to consider the operation of pump under fluctuating static head

- Ship motion analysis were carried out to confirm the pitch, heave and roll values and to investigate the effect of combination of roll, pitch and heave

Work specification 2: Consider any advice that may become available which clarifies the nature of the verbal intervention raised by Korea during FP 50, concerning their exception to subparagraph 7.3 of FP 50/11/3, as reported in 5091fIAa, IACS Observer Report of FP 50;

Contact was made to the Korean delegation to the FP 50 and it was found that the point of the Korean delegation at that time was that the UI should improve the design of ship but should not require impracticable change of design, which may lower the whole safety level. The Project Manager had a discussion with the Korean delegation to the FP 50 with the result of application of the draft revision to some actual ship designs and it was found that the result was acceptable to him.

Work specification 3: Consider the comments by the Panel to PT Status Report and finalize the draft UI;

There was no comment from the Panel to PT Status Report. The draft revision is attached hereto for the review of the Panel.

Work specification 4: Prepare a relevant submission to FP 51 containing also IACS opinion on comments raised to the original text of UI SC 178 by Japan in document FP 49/13 if they may be considered relevant to the revised UI;

Draft submission to FP51 has been prepared and is attached hereto for review of the Panel. Comments raised to the original text of UI SC 178 by Japan in document FP 49/13 were reviewed and IACS opinion on the comments is included in the IACS submission paragraph 5 which is copied below for ready reference of the Panel.

(Quote)
5. IACS notes the comments received, especially the comments provided by Japan in the submission FP 49/13 which consider that the original UI SC 178 is excessive and the sea condition on which the original UI SC178 is based is not appropriate. IACS considers that the sea condition on which the original UI SC178 is based is not reasonable because the original UI SC 178 does not take into account the situation

where emergency fire pump is used in relation to the return period of the sea state and ship motion, and the characteristics of the operation of pump under fluctuating static head.
(Unquote)

In addition to the above, result of application of the revision to actual ship design is included in the IACS submission paragraph 7 to show that the revision is not excessive unlike the original UI SC 178.

Addendum to PT report

This file contains the replies provided by the PT on questions posed by Statutory Panel

In response to SP5009LRg

Comment
1. The first sentence under the heading "Interpretation" in the draft UI does not reflect the intent of the original reason behind UI SC 178 and is very misleading.

1.1 I would not disagree that the sea chest or sea suction inlet or low end of the suction pipe as pointed out in KRj needs to be fully submerged for the pump to deliver. However, it is the vertical height of the pump relative to the sea level taking into account the pump characteristics and all flow losses in the suction piping that determines whether or not the pump will deliver. It was always the case that interpretation of paragraph 2.2.1.3 of the FSS Code chapter 12 was required to clarify the meaning of "all conditions ..... likely to be encountered in service". An interpretation that simply states that the sea chest should be submerged is not helpful. It is recommended that the first sentence should be amended to read:
"It should be demonstrated by calculation that Ch 12, 2.2.1.3 of the Code is satisfied under all conditions given in this paragraph:"

Reply
We fully support that the pump's capability to deliver water relative to the vertical height is the issue, hence we as the first step under item 1 interpreted all the sea levels being the conditions from which it shall be documented that the pump can deliver the required amount of water.
The vertical height of the pump and pump characterisetics as mentioned in the above are covered in paragraph 3 in the UI.
According to the paragraph, the net positive suction head (NPSH) of the pump is to be determined taking into account the lowest waterline defined in the UI.
In a case where NPSH available is not greater than NPSHrequired with pump with the lowest available net positive suction head, then the vetical height of the pump is to be adjusted.
In case of small ships, the vertical height of the pump is usually small enough to comply with the net positive suction head required by FSS Code Ch12.2.2.1.3 because they have small depth.
The problem with such small ships is that the sea chest of many ships are located above the lowest waterline in which case it cannot be ensured that the pump will work properly.

With the above clarification, we propose to make the intention clear by amending the first sentence as follow:
1. It should be documented that Ch. 12, 2.2.1.3 of the Code is satisfied and the suction inlet is fully submerged under all conditions given in this paragraph.

Comment
1.2. Paragraph 2.2.1.3 of the code defines the dry dock condition as not being a service condition. It is my understanding that **all** other conditions are service conditions in which the emergency fire pump should be fully operational. For this reason paragraph 2 of the interpretation is not agreed. It is recommended that paragraph 2 be deleted.

Reply
The purpose of paragraph 2 is to avoid different interpretations in the application by positively explaining which conditions are not applicable. We do not agree with "**all** other conditions are service conditions in which the emergency fire pump should be fully operational". It is noted that FP/50/11/3 item 7.3 reads "... this implies that a realistic ballast condition based on the extent of immersion of the propeller at the "lightship" waterline should be used;" We understand that there are 3 kinds of conditions to be taken into account as follows;
- Sea going condition for which roll, pitch and heave are to be taken into account :
We understand that the ballast condition in the approved stability booklet is to be used for this condition because the approved stability booklet defines the necessary ballast to be taken prior to entering open sea also in light condition, hence it represents the realistic sea going condition.
- Sheltered water condition for which roll, pitch and heave are not to be taken into account :
Terminal approaching condition is an example of this condition and Imaginary waterline concept is introduced in the UI to take account of this condition. We understand that the ballast water exchange is carried out temporarily in calm sea and ship motion does not need to be taken into account. During the ballast water exchange, it is usually required that propeller tip is to be immersed. Therefore, with imaginary waterline concept (2/3 immersion of propeller) being applied, the proper working of the pump at the ballast water exchange condition can be ensured and ballast water exchange condition needs not be considered separately. .
- Loading condition in port :
As stated in the status and final report of this PT, our view is that there is very remote possibility to use emergency fire pump at such condition due to the availability of shore based fire fighting assistance.
Therefore, such conditions are not reflected in the UI.
Please note that paragraph 7 of FP49/13 submitted by Japan has the same position.

Comment
1.3. The second sentence of existing paragraph 3 is giving the wrong message. Each pump set has its own operating envelope. Whether 7 meters is an acceptable figure depends on the pump and the accumulated losses in the sea inlet and suction piping. It is recommended that the second sentence be deleted.

Reply
The second sentence of existing paragraph 3 has been added for information purpose only.

In most cases, if the distance is less than 7 meters, the NPSHavailable is greater than NPSHrequired (meaning that it complies with FSS Code Ch12.2.2.1.3).
It is meant in the UI that 7 meter is just information and even though the vertical distance is less than 7 meters, the NPSHavailable is to be greater than NPSHrequired.
We agree to the deletion of the second sentence since it is found to be misleading to the readers.

1.4. From an editorial point of view paragraph 1 of the draft UI requires clearer numbering, there are 3 paragraphs numbered 1, one of which has an un-numbered indent, I would suggest the numbering be revised on the lines of the following:
1 It should be .....
1.1 Operational sea going ....
1.1.1 Heave combined Pitch ....
1.1.2 Heave combined Roll ....
1.2 Sheltered water ....

Noted and agreed

1.5. In the table in paragraph 1 under columns 300 and 350 and above the numbers 1.6 and 1.50 respectively are underlined is there any reason for this if so an explanation needs to be given in the text of the UI.

My apology. They are underlined by mistake

In response to SP5009ABl

Comment
Project Team Report
1) I cannot find any data which justifies that the criteria (which was developed from the CSRs for tankers ≥ 150m and bulk carriers ≥ 90m) fits ships of all size (≥ 500gt) and types (other than tankers and bulk carriers) as per SOLAS regulation II-2/10.2 and the FSS Code.
2) If other types and sizes of ships were not analyzed (which might be the case given the time expended), then some sort of qualifying statement needs to be developed based on the conclusion reported by the PT relative to FP 50/11/3, paragraph 7.5.

Reply
Ship motion are mainly influenced by length and breadth of ships and the influence of block coefficient which differs among different ship type is small.
Therefore, ship type is not necessary to be taken into account.
For ships of length less than 90 meters, some ship motion analysis was carried out to decide pitch, roll and heave values.

Comment
4) To provide for greater uniformity, the "lightest seagoing condition" should be more precisely defined than that which exists in the approved trim and stability booklet . I

suggest that paragraph 1(1) be revised to reflect that the "lightest seagoing condition" should be "a loading condition without cargo or ballast water, with 10% stores and fuel remaining" as per item 7.1 of FP 50/11/3.

Reply
A ship sailing out to open sea and when bad weahter conditions maybe expected shall not operate without taking the necessary ballast clearly defined in the approved stability booklet . Thus We understand that "a loading condition without cargo or ballast water, with 10% stores and fuel remaining" is not realistic sea going condition. Further more, such condition will have propeller racing or bottom slamming which is against item 7.2 of FP50/11/3. We believe that the lightest sea going condition in the UI is correct and is in accordance with IACS point of view in the item 7 of FP 50/11/3.

Comment
5) I agree with item 1.2 of LRg that paragraph 2 (which proposes to exempt BWEx and berthing conditions) should be deleted. I also agree with 1.3 through 1.5 of LRg.

Reply
Please see our response to LRg item 1.2

Comment
6) In paragraph 2, I prefer that "Imaginary" be replaced by "Static" waterline for reasons given in item 9, below.

Reply
We used “imaginary waterline” because it is not realistic waterline but a waterline we presumed. We presumed 2/3 of propeller immersion because the ship would have to maintain at leaset 2/3 of propeller immersion for proper maneuverability. We agree and prefer that it is replaced by "imaginary static waterline".

UI SC179 “Dewatering of forward spaces of bulk carriers”

Summary

In Rev.3 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (Feb 2021)	15 February 2020	1 July 2022
Rev.2 (Mar 2011)	01 March 2011	1 January 2012
Rev.1 (Nov 2005)	09 November 2005	-
New (Sept 2003)	23 September 2003	1 October 2003

- **Rev.3 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **Rev.2 (Mar 2011)**

Refer TB document Annex 1 for details. No history file available.

- **Rev.1 (Nov 2005)**

No history file or TB document available.

- **New (Sept 2003)**

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC179:

Annex 1. **TB for Rev. 2 (Mar 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev. 3 (Feb 2021)**

See separate TB document in Annex 2.

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Note:

1) There are no separate Technical Background (TB) documents for UI SC179 New (Sept 2003) and Rev.1 (Nov 2005).

Technical Background for UI SC179 Rev.2, Mar 2011

1. Scope and objectives

The current SC179/2.4, which requires local hand powered valve operation from above the freeboard deck for a valve fitted in the forepeak tank in accordance with SOLAS Reg. II-1/12.5.1 and also used for draining and pumping ballast water or bilge from this space in accordance with SOLAS Reg.XII/13.1, is ambiguous and in need of clarification regarding the alternative arrangement permitted by SOLAS Reg.XII/13.1.

The above issue was discussed at the 11th Machinery Panel meeting and it was confirmed that the location of the hydraulic quick connect within the engine room located below freeboard deck would be acceptable. Therefore, it was agreed by the Panel to amend paragraph 2.4 of UI SC179 and for clarification five(5) typical examples of arrangement that were collected from various actual applications are included in this TB, where cases #1-#4 show acceptable solutions, case #5 shows a solution which is not acceptable.

2. Engineering background for technical basis and rationale

1. SOLAS Reg.XII/13.1 reads ;
   On bulk carriers, the means for draining and pumping ballast tanks forward of the collision bulkhead and bilges of dry spaces any part of which extends forward of the foremost cargo hold shall be capable of being brought into operation from a readily accessible enclosed space, the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks. Where pipes serving such tanks or bilges pierce the collision bulkhead, valve operation by means of remotely operated actuators may be accepted, as an alternative to the valve control specified in regulation SOLAS II-1/12, provided that the location of such valve controls complies with this regulation.

2. IACS UI SC179 2.4 reads ;
   Local hand powered valve operation from above the freeboard deck, as permitted under SOLAS Reg.II-1/12.5.1, is requested, but is not an acceptable alternative to SOLAS Reg.XII/13.1, unless all of the provisions SOLAS Reg.XII/13.1 are met.

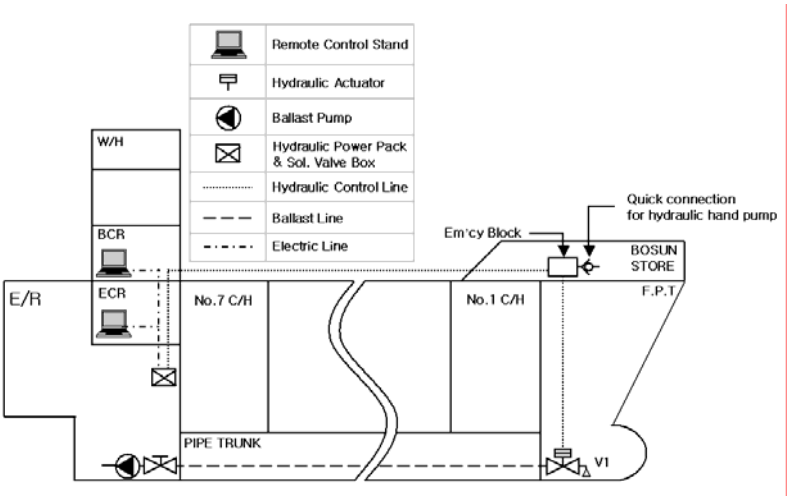
3. In accordance with SOLAS Reg.II-1/12.5.1, the collision bulkhead may be pierced below the bulkhead deck by not more than one pipe for dealing with fluid in the forepeak tank provided that the pipe is fitted with a valve capable of being operated from above the bulkhead deck.

4. Further, in SOLAS Reg.XII/13.1, if the location of such valve controls complies with all requirements of SOLAS Reg.XII/13, it could be accepted as an alternative to the valve control specified in regulation SOLAS Reg.II-1/12. In order to satisfy these requirements, the valve should be capable of being brought into operation from a readily accessible enclosed space, the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks

5. While discussing the above, it was confirmed by the Panel that the location of the hydraulic quick connect within the engine room located below freeboard deck would be acceptable. Local hand powered valve operation from above the freeboard deck is not necessary provided the arrangement fully complies with SOLAS Reg.XII/13.

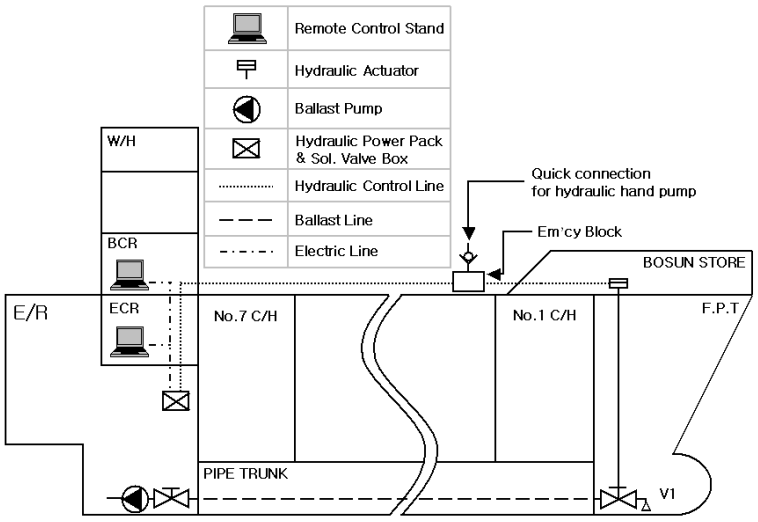
6. Therefore, it was agreed by the Panel to amend paragraph 2.4 of UI SC179 and for clarification five(5) typical examples of arrangement that were collected from various actual applications are included in this TB, where case #1-#4 shows acceptable solutions, case #5 shows a solution which is not acceptable.

< CASE #1 >



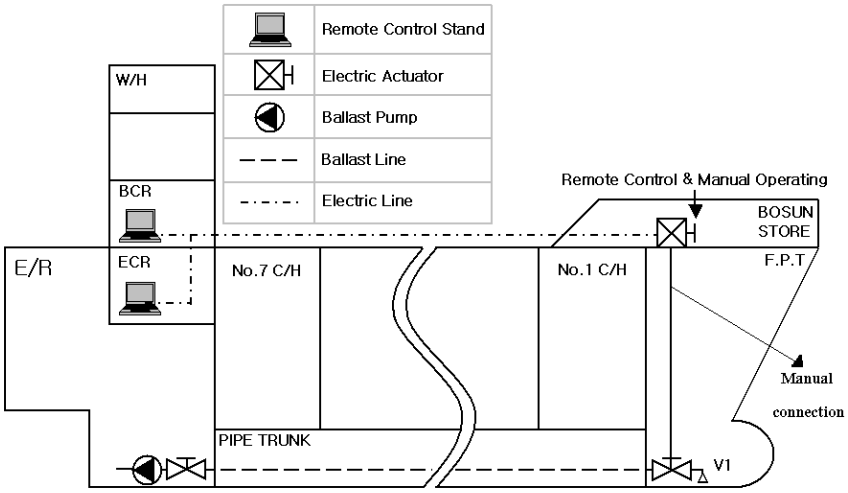
1. The remote control valve (V1) is located in front of the collision bulkhead and can be remotely controlled from the BCR or ECR.
2. The remote control valve (V1) also can be manually operated from the bosun store above freeboard deck by using a hydraulic hand pump.

< CASE #2 >



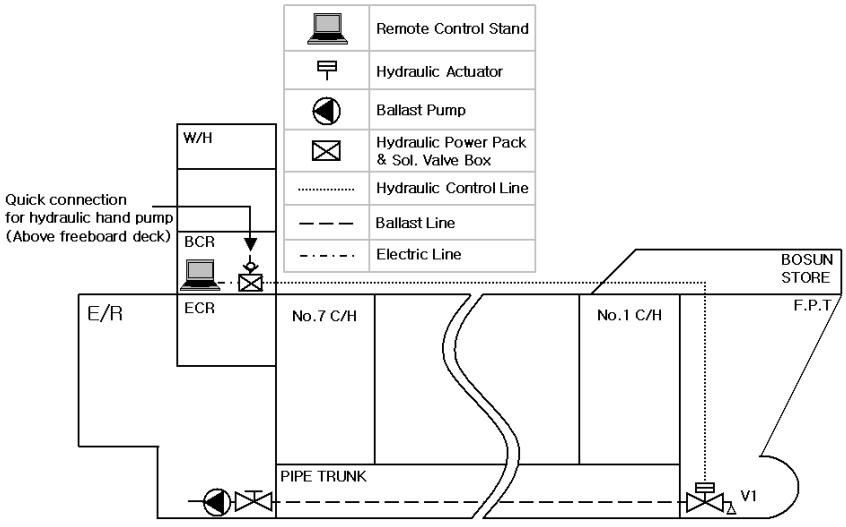
1. The remote control valve (V1) is located in front of the collision bulkhead and can be remotely controlled from the BCR or ECR.
2. The remote control valve (V1) also can be manually operated from the exposed freeboard deck, outside the bosun store and apart from the collision bulkhead, by using a hydraulic hand pump.

< CASE #3 >



1. The remote control valve (V1) is located in front of the collision bulkhead and can be remotely controlled from the BCR or ECR.
2. The remote control valve (V1) also can be manually operated from the bosun store above freeboard deck by disconnecting the electric actuator (extended spindle).

< CASE #4 >

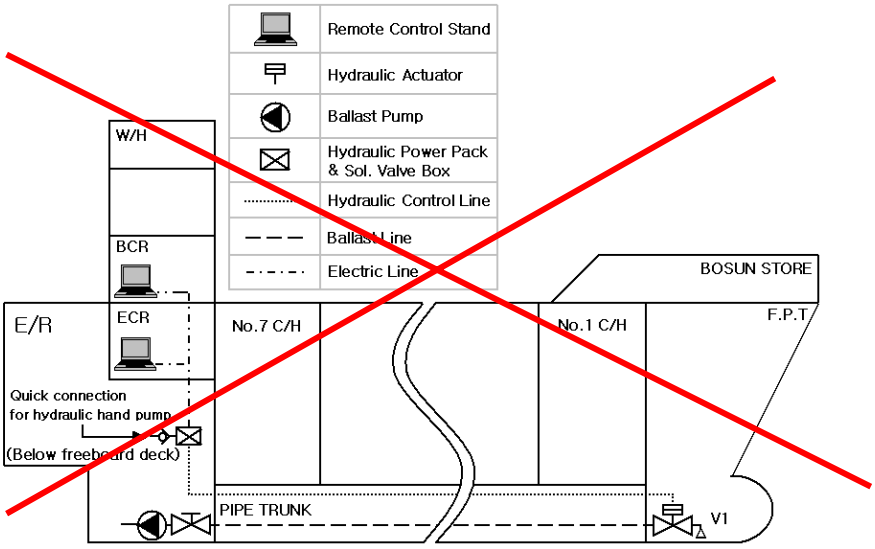


1. The remote control valve (V1) is located in front of the collision bulkhead and

can be remotely controlled from the BCR.

2. The remote control valve (V1) also can be manually operated from the hydraulic power pack located in a readily accessible enclosed space above freeboard deck by using a hydraulic hand pump.

< CASE #5 > (Not acceptable)



1. The remote control valve (V1) is located in front of the collision bulkhead and can be remotely controlled from the BCR or ECR.
2. The remote control valve (V1) also can be manually operated from the hydraulic power pack located in a engine room which is considered to be a readily accessible enclosed space below the freeboard deck by using a hydraulic hand pump.

This arrangement is not acceptable because of the penetration by the hydraulic piping of the collision bulkhead, which is in conflict with the requirements of SOLAS Reg.II-1/12.5.1 that requires the piercing of the bulkhead by not more than one penetration.

3. Source / derivation of the proposed IACS Resolution

- SOLAS Reg. II-1/12.5.1
- SOLAS Reg. XII/13.1
- MSC/Circ.1069

4. Summary of Changes intended for the revised Resolution:

Para 2.4 is revised as follows:

"2.4 local hand powered valve operation from above the freeboard deck as specified in SOLAS regulation II-1/12.5.1 is required. An acceptable alternative to such arrangement may be remotely operated actuators as specified in SOLAS regulation XII/13.1 on the condition that all provisions in 13.1 are met."

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC179 (Rev.3 Feb 2021)

1. Scope and objectives

UI SC179(Rev.2) does not reflect the agreed format for referencing the IEC Standards. Rev.3 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

UI SC179 has been updated to specify the revision/version of the IEC standards as follows:

IEC Publication	Replaced by
IEC 60529	IEC 60529:1989+AMD1:1999+AMD2:2013

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC180 “Hold, ballast and dry space water level detectors and Performance Standards for Water Level Detectors on Bulk Carriers and Single Hold Cargo Ships other than Bulk Carriers (Resolution MSC.188(79))”

Summary

In Rev.4 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.4 (Feb 2021)	15 February 2021	1 July 2022
Rev.3 (Mar 2012)	06 March 2012	1 July 2012
Rev.2 (Nov 2005)	16 November 2005	1 January 2007
Rev.1 (May 2004)	04 May 2004	1 July 2004
New (Sept 2003)	23 September 2003	1 October 2003

- **Rev.4 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **Rev.3 (Mar 2012)**

Refer TB document Annex 2 for details. No history file available.

- **Rev.2 (Nov 2005)**

To amend the UI with clarifications concerning use of single sensor for two levels, Ex grade, testing of equipment, override function.

Refer TB document Annex 1 for details.

- **Rev.1 (May 2004)**

GPG reference No: 4024

No history file or TB document available.

- **New (Sept 2003)**

GPG reference No: 1198hICa

No history file or TB document available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC180:

Annex 1. **TB for Rev.2 (Nov 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.3 (Mar 2012)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.4 (Feb 2021)**

See separate TB document in Annex 3.

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Note:

1) There are no separate Technical Background (TB) documents for UI SC180 New (Sept 2003) and Rev.1 (May 2004).

Technical Background Document
UI SC 180(Rev.2, November 2005)

IACS WP/EL AOB 5.2 "To reconsider UI SC 180 "Hold, ballast and dry space water level detectors and Performance Standards for Water Level Detectors on Bulk Carriers" by amending SC180 of possibility of use single sensor for two levels, use of Ex ib grade equipment in holds, testing of equipment and clarification of override function."

Objective and scope:

To amend a UI SC 180 of SOLAS Reg XII/12 with clarifications concerning use of single sensor for two levels, Ex grade, testing of equipment, override function.

Source of proposed requirements.

SOLAS Ch. XII / 12 MSC.145(77)

Points of discussion

It was found that UI SC180 "Hold, ballast and dry space water level detectors and Performance Standards for Water Level Detectors on Bulk Carriers" to be revisited on the base of survey experience. It was decided to add special clarifications concerning:

1. override function,
2. use single sensor for two levels,
3. use of Ex ib grade equipment in holds,
4. list of alarms of WIDS system,
5. additional cold test and EMC test for sensors,
6. correction of misprint

Submitted by WP/EL Chairman
31 Jan 2005

Permsec's Note

In the course of GPG discussion under s/n 4196m (Changes to UIs – MSC/Circ.1176 & 1177), GPG noted that the interpretation for paragraph 3.3.7 of the Performance standard was different from MSC/Circ.1176 (para. 10.4), and decided to submit a paper to DE 49 with technical justifications. The IACS submission to DE 49 is attached for reference.
Attached.

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT
49TH SESSION
Agenda Item 11

DE 49/11/??
?? November 2005
Original: ENGLISH

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive Summary:-	This paper advises IACS Unified Interpretations that were revised to take into account experience gained by IACS Members concerning the implementation of SOLAS XII/12 and SOLAS II-1/41.
Action to be taken:-	See paragraph 6.
Related Documents:-	MSC/Circ. 1176 Resolution MSC.145(77)

1. IACS notes that earlier versions of the IACS Unified Interpretations SC136 and SC180, at annex, were used to develop MSC/Circ. 1176. Upon reviewing this Circular and based experience gained by IACS Members concerning the implementation of SOLAS XII/12 and SOLAS II-1/41, IACS considered it necessary to revised these Unified Interpretations.

2. IACS Unified Interpretations SC136, Rev.3, and SC180, Rev.2, have no change in technical content from their earlier versions, except as indicated below.

3. Based on UI SC136, Rev.3, two typographical errors appearing in the Annex to MSC/Circ.1176 should be revised:

- Paragraph 5.3 of MSC/Circ.1176 should indicate "*circuit breaker without tripping mechanism <u>or</u> ~~and~~ disconnecting link or switch by which bus bars can be switched easily and safely*"; and
- Paragraph 5.4 should refer to "*SOLAS II-1/41.<u>5.1.3</u>*" not "*SOLAS 41.4*".

4. UI SC180, Rev.2, contains four technical revisions:

- Paragraph 3.2.1 contains a revision to clarify that the "*pre-alarm level*" and "*main alarm level*" are both preset levels which is consistent with the definitions provided in Section 2 of the Annex to MSC.145(77);
- Paragraph 3.3.5 contains precautions on the override alarm, where fitted in spaces that are neither designed nor intended to carry water; and

- Paragraph 3.3.7 contains a revised scope of fault monitoring that is different than paragraph 10.4 of MSC/Circ.1176, which IACS considers appropriate as per paragraph 5, below.
- Paragraph 3.4.1 introduces a requirement for a "*cold test*" and a Electromagnetic Compatibility, "*EMC*" test, which is consistent with 3.2.1 of MSC.145(77) in providing a reliable indication of the water level.

5. IACS considers the revised scope of fault monitoring as per paragraph 3.3.7 of UI SC180, Rev.2, is acceptable based on the following:

(a) Deletion of "*all foreseeable faults*" – This wording goes beyond that required in paragraph 3.3.7, is far too encompassing to be applied in a practicable manner. IACS is not aware of standards which require/recommend the monitoring of all foreseeable faults. The most probable faults are monitored and this is considered adequate based upon the consequence of failure;

(b) Deletion of "*earth fault monitoring*" – Intrinsically Safe (IS) circuits have a fixed earth connection (earthed upon activation of a sensor, or earthed while monitoring) and providing earth fault monitoring in the IS circuit between IS barrier unit and sensor is impracticable; and

(c) Deletion of "*excessive runtime*" and "*I/O unit failure*" - While PLC (Programmable Logic Controller) has a self-monitoring function, the PLC used for water ingress alarm systems normally has an output for either "*System abnormal*" or "*CPU failure*". Fault monitoring for "*I/O unit failure*" and "*excessive runtime*" is provided in "*CPU failure*" and therefore need not be specifically addressed. In addition, it is not deemed worth mentioning "I/O unit failure" and "excessive runtime" because they are very specific failures that can occur only when a particular technology is used.

Action requested of the Committee

6. The Committee is invited to take action as appropriate with respect to MSC/Circ.1176 based on the above revisions to Unified Interpretations SC136 and SC180.

Technical Background for UI SC180 Rev.3, Mar 2012

1. Scope and objectives

Revision 3 reflects that MSC.188(79) superseded and revoked MSC.145(77) but only extended the application of the Performance Standards to include single hold cargo ships other than Bulk Carriers, with no substantive change to the technical requirements of the Performance Standards. Thus, there are no changes in the interpretations in Rev.3 in relation to Rev.2 of this UI.

2. Engineering background for technical basis and rationale

See 1, above.

3. Source / derivation of the proposed IACS Resolution

See 1, above.

4. Summary of Changes intended for the revised Resolution:

See 1, above.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC180 (Rev.4 Feb 2021)

1. Scope and objectives

UI SC180(Rev.3) does not reflect the agreed format for referencing the IEC standards. Rev.4 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

UI SC180 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60079	IEC 60079-11:2011
IEC 60092-504	IEC60092-504:2016

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC182 "Bulk carriers not complying with SOLAS XII/9 as of 1 January 2004"

Summary

Deletion due to no more useful recommendation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Apr 2020)	18 April 2020	-
Rev.1 (Nov 2005)	(Ref. change to IMO MSC Circ.1176)	-
Corr.1 (Dec 2003)	1 December 2003	-
New (Nov 2003)	1 January 2003	1 January 2004

- **Del (Apr 2020)**

.1 Origin for Change:

☑ Other (Review of IACS instruments which have not been updated for the last ten years)

.2 Main Reason for Change:

For addressing GPG 85 FUA 9, Survey Panel reviewed the relevant Resolutions and Recommendations which have not been updated for the last ten years, and agreed to delete UI SC182 because the UI is considered invalid due to the fact that all the related vessels shall have been in compliance with SOLAS regulation XII/Reg.9 as of 1st July 2006.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel reviewed and agreed to delete UI SC182 because the UI is considered invalid due to the fact that all the related vessels shall have been in compliance with SOLAS regulation XII/Reg.9 as of 1st July 2006.

5 Other Resolutions Changes:

None

6 Any hindrance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	29 November 2018 (Requested by GPG Vice-Chair)
Panel Approval:	06 March 2020 (Ref: PSU19016)
GPG Approval:	18 April 2020 (Ref: 19001_IGe)

- **Rev (Nov. 2005)**

(No details)

- **New (Nov. 2003)**

(No details)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC 182:

There is no separate technical background document available for UI SC 182 (New, Nov 2003), Rev.1 (Nov 2005) and Del (Apr 2020).

◄▼►

Technical Background Document
UI SC 183(Rev.1, November 2005)
UI LL 67(Rev.1, November 2005)
UI MPC 10(Rev.1, November 2005)

1. Background

Survey Panel reported on 31 October 2005 that the ex-WP/SRC had agreed to amend UI SC 183, LL 67 and MPC 10 by adding the word “periodical” in front of the sentence “survey visit on which all statutory and class items…” .

2. GPG discussion

2.1 ABS proposed that this revision refer to the resolutions adopted at MSC 79, which revised the content of the certificates required by various Conventions and Codes, rather than MSC/Circ.1012 and MEPC/Circ.384 and the quoted text contained in paragraphs 1 and 2 of the current UI.

2.2 Concerning MSC.176(79), GPG noted that it specifically included a model form of the International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, and this form contained the text regarding completion date of the survey on which it is based, (see page 161 of Annex 10 of MSC 79/23/Add.1), GPG agreed that this Resolution should also be included in the opening text.

2.3 In light of the 1 July 2006 entry into force date of the resolutions, the uniform implementation date was set at 1 July 2006 (Note: MSC.181(79) enters into force on 1 January 2007).

2.4 GPG, noting that MSC 80 and MEPC 53 had approved a Circular from FSI 13 incorporating the original IACS UIs SC183, LL67 and MEPC10, agreed that the revised UIs be submitted to FSI 14 in order for IMO to amend the IMO Circular.

Permanent Secretariat
17 Nov 2005

UI SC186 "Acceptable voltage variations in voltage when the emergency loads are supplied from a battery via an electronic converter/inverter"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Jan 2010)	-	-
NEW (May 2004)		1 January 2005

- **Corr.1 (Jan 2010)**

.1 Origin for Change:

☑ Other *(IACS Permanent Representative to IMO)*

.2 Main Reason for Change:

During a review of all IACS UIs and their status with regard to submission to IMO, the IACS Permanent Representative to IMO noticed that one of the regulations to which the UI referred to is SOLAS II-1/43.3.3.1, whereas based on the actual regulation text quoted in the UI it should be II-1/43.3.2.1.

.3 History of Decisions Made:

After investigation Permsec concluded that this was a typo and prepared a corrected version of UI SC186 with the regulation number corrected accordingly, together with correction of a couple of additional typos in the quoted regulation text spotted during the review process.

.4 Other Resolutions Changes

N/A

.5 Any dissenting views

N/A

.6 Dates:

Corrected file circulated to members: 5 January 2010 (Ref. 8657_IAd)

- **NEW (May 2004)**

Outcome of WP/EL task no.56. No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC186:

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Note: *There are no separate Technical Background (TB) documents for the original resolution (May 2004) and Corr.1 (Jan 2010).*

UI SC 188 “Segregation of Cargo Oil Tanks (Reg.II-2/4.5.1.1)”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.3 (July 2015)	1 July 2015	1 January 2016
Rev.2 (Feb 2015)	3 February 2015	1 January 2016
Rev.1 (Nov 2005)	17 November 2005	-
New (May 2004)	24 May 2004	1 July 2004

- **Rev.3 (July 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In response to the query from shipyards, Safety Panel agreed to clarify that SOLAS regulation II-2/4.5.10 should apply to the pump rooms containing pumps for transfer of fuel oil having a flashpoint not exceeding 60°C ”regardless of their location”. Further, to eliminate an inconsistency of threshold of “flashpoint” between UI SC188 (rev.2) and SOLAS regulation II-2/4.2.1, it was agreed that the threshold of “flashpoint” of the UI should be harmonised with the regulation II-2/4.2.1.

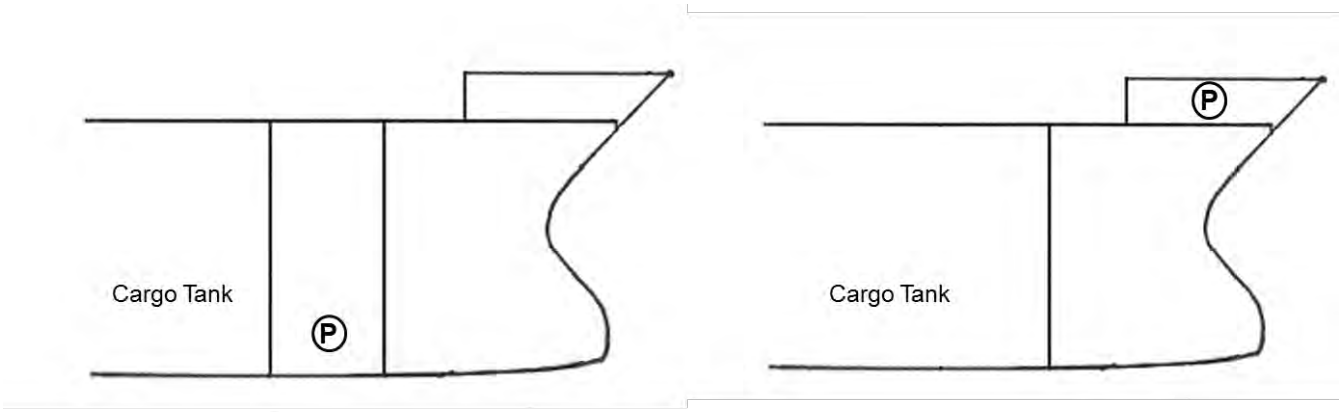
.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UI SC188 (Rev.2) clarifies that “similar pumps" to which the requirements of SOLAS regulation II-2/4.5.10 should be applied are pumps intended for transfer of fuel oil having a flashpoint not exceeding 60°C.

In this regard, a member received inquiries from shipyards as to whether SOLAS regulation II-2/4.5.10 should apply to pump rooms for such purpose which are adjacent to the front of cargo tanks or not adjacent to the cargo tanks as shown in the following figures:



Ⓟ : pumps for transfer of fuel oil having a flashpoint not exceeding 60℃

As pump-rooms containing pumps for transfer of fuel oil having a flashpoint not exceeding 60°C have the same fire risk as cargo pump rooms, Safety Panel agreed that SOLAS regulation II-2/4.5.10 applies to such pump rooms as well regardless of their location.
With regard to the threshold of “flashpoint” between UI SC188 (rev.2) and SOLAS regulation II-2/4.2.1, Safety Panel agreed that the threshold of “flashpoint” of the UI should be changed from “not exceeding 60°C“ to “of less than 60°C“ and from “exceeding 60°C“ to “of not less than 60°C“ to harmonise the UI with the SOLAS regulation II-2/4.2.1 with a view to eliminating an inconsistency of threshold of “flashpoint” between UI SC188 (rev.2) and SOLAS regulation II-2/4.2.1.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 18 April 2015 (SP12007bPCq) by Safety Panel
GPG Approval: 1 July 2015 (Ref: 15011_IGe)

- **Rev.2 (Feb 2015)**

.1 Origin of Change:

☑ Suggestion by IACS Safety Panel

.2 Main Reason for Change:

Safety Panel has endeavoured to incorporate FP 55's understanding (Para 8.6 of FP 55/23) that “SOLAS regulation II-2/4.5.1.1 required the level of safety for such pump-rooms to be equivalent to that for cargo pump-rooms”, into the body of the UI by providing further clarity on the term 'similar pumps', a term which is used in the IACS UI and in both IMO Circulars 1037 and 1120.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Revision of the UI has been unanimously agreed within the Safety Panel; and the UI being in line with existing IMO circulars, it was agreed within the panel that the revised UI need not be submitted to IMO for review by the relevant sub-committee.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 19 January 2015, made by: Safety Panel
GPG Approval: 3 February 2015 (Ref: 15011_IGb)

- **Rev.1 (Nov 2005)**

No records available

- **New (May 2004)**

Outcome of WP/FP&S Task 20 (Ref: 3002d)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC188:

Note: There are no Technical Background (TB) documents available for New (May 2004), Rev.1 (Nov 2005), Rev.2 (Feb 2015) and Rev.3 (July 2015).

◄▼►

UI SC190 "Application of SOLAS Regulation II-1/3-6 (Res MSC.134(76)) and Technical Provisions on Permanent Means of Access (Res MSC.133(76))"

Summary

In Rev.2 of this UI, intervals of periodic inspections of the permanent means of access were clarified together with other vague points included in interpretations on Para. 2.3 of SOLAS regulation II-1/3-6.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2024)	26 Nov 2024	01 July 2025
Rev.1 (Apr 2019)	11 April 2019	01 July 2019
Rev.0 (Apr 2004)	Apr 2004	01 January 2015

- **Rev.2 (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

IACS validated the experience amongst its members and reviewed the unified interpretation on Para. 2.3 of SOLAS regulation II-1/3-6. This review demonstrated the need to improve the degree of uniform implementation regarding the interval of inspections of the means of access (to be carried out by the crew or competent inspectors), which was left to what is specified in the required Part 2 of the access manual. Also, the following items needed to be clarified:

- loss of coating and wastage to be regarded as deterioration of the permanent means of access

- the need for conducting and recording, before the required examinations using the PMA, an inspection to confirm the PMA's condition for each space; and

- the need to make available the inspection records of the PMA to the surveyor of the classification society/recognized organization prior to the survey.

3 Surveyability review of UR and Auditability review of PR

Survey Panel checked the correctness of this revision.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

At the 36th Survey Panel meeting, this task was initiated. After rounds of discussions within the Panel, it was agreed to first submit a paper to the IMO SDC Sub-Committee with proposed draft revisions of MSC.1/Circ.1572/Rev.1 via document SDC 10/10/5 (where an interpretation on the term "open deck", which was not agreed by SDC 10, was also included). These revisions of MSC.1/Circ.1572/Rev.1 were, after agreement of SDC 10, approved by MSC 108 and reflected in as MSC.1/Circ.1572/Rev.2. This UI was updated accordingly.

After MSC 108, a new concern raised on necessity of annual inspections of Permanent Means of Access (PMA) located in crude oil tankers was considered. On this matter, IACS confirmed the following specific views on cargo tanks of oil tankers.

.1 The new wording "annually inspected", specified in MSC.1/Circ.1572/Rev.2, is a part of interpretation on the phrase "subject to survey prior to, or in conjunction with, its use in carrying out surveys in accordance with regulation I/10" stated in SOLAS Reg.II-1/3-6.

.2 However, the interval of access and gas freeing of oil cargo tanks, which means the use of PMA, may exceed 1 year.

.3 The said regulation requires the inspection for PMA to be undertaken only when the space is required to be accessed, which means the use of PMA.

.4 The interpretation should follow this principle as the relevant annual survey item (CA) 2.2.2.33 included in Annex 1 to Res. A.1186(33) has already had clarification that confirmation of conditions of means of access is required "when appropriate and as far as is practicable when examining internal spaces".

6 Other Resolutions Changes:

UI SC191, REC 90

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	:	1 September 2022	(Ref. 36th Survey Panel meeting)
Panel Approval	:	20 June 2024	(Ref: PSU24024_ISUb)
GPG Approval	:	26 November 2024	(Ref: 23041mIGh)

- **Rev.1 (Apr 2019)**

.1 Origin for Change:

☑ Based on IMO Regulation (A.1049(27))

.2 Main Reason for Change:

When reviewing the IMO paper SDC 5/14/1 at the request of IACS Accredited Representative to IMO, in which it is proposed that references are still made to Resolution A. 744(18) in some IMO instruments, which should be replaced by the 2011 ESP Code as adopted by Resolution A.1049(27), Survey Panel identified several IACS Resolutions (UI SC 190, UI SC 191, REC 90 and REC 91) to be updated accordingly.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel discussed this matter under PSU17042. Panel members agreed to amend all the references to ESP Code in UI SC190 from "resolution A.744(18), as amended" to "the ESP Code, as amended".

The implementation date of Rev.1 was set as 1st July 2019.

.5 Other Resolutions Changes

Rec.90, Rec.91, UI SC 191

.6 Any hindrance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 08 January 2018, made by Survey Panel
Panel Approval: 12 March 2019
GPG Approval: 11 April 2019 (Ref: 17130eIGd)

- **Rev.0 (Apr 2004)**

New recommendation Re-categorized from the Application of SOLAS Regulation II-1/3-6 (Res MSC.134(76)) and Technical Provisions on Permanent Means of Access (Res MSC.133(76)).

Part B. Technical Background

List of Technical Background (TB) documents for UI SC190:

Note:

1) There is no separate Technical Background (TB) document for Rev.0 (Apr 2004), Rev.1 (Apr 2019) and Rev.2 (Nov 2024).

UI SC191 "IACS Unified Interpretations (UI) SC 191 for the application of amended SOLAS regulation II-1/3-6 (resolution MSC.151(78)) and revised Technical provisions for means of access for inspections (resolution MSC.158(78))"

Summary

In Rev.9 of this UI, intervals of periodic inspections of the permanent means of access were clarified together with other vague points included in interpretations on Para. 2.3 of SOLAS regulation II-1/3-6.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.9 (Nov 2024)	26 November 2024	01 July 2025
Rev.8 (Apr 2019)	11 April 2019	01 July 2019
Corr.3 (Jan 2017)	-	-
Corr.2 (Dec 2016)	-	-
Corr.1 (June 2016)	13 June 2016	-
Rev.7 (Jan 2015)	12 January 2015	1 July 2016
Corr.1 (Sept 2014)	23 September 2014	-
Rev.6 (May 2014)	8 May 2014	1 July 2015
Rev.5 (May 2013)	17 May 2013	24 June 2013
Corr.1 (Nov 2011)	9 November 2011	-
Rev.4 (Sept 2011)	16 September 2011	1 July 2012
Rev.3 (Mar 2006)	1 March 2006	1 October 2006
Corr.1 (Dec 2005)	No record	1 May 2006
Rev.2 (Oct 2005)	7 October 2005	1 May 2006
Rev.1 (May 2005)	15 May 2005	1 July 2005
NEW (Nov 2004)	19 November 2004	1 January 2005

- **Rev.9 (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

IACS validated the experience amongst its members and reviewed the unified interpretation on Para. 2.3 of SOLAS regulation II-1/3-6. This review demonstrated the need to improve the degree of uniform implementation regarding the interval of inspections of the means of access (to be carried out by the crew or competent

inspectors), which was left to what is specified in the required Part 2 of the access manual. Also, the following items needed to be clarified:

- deterioration would include loss of coating and wastage

- the need for conducting and recording, before the required examinations using the PMA, an inspection to confirm the PMA's condition for each space; and

- the need to make available the inspection records of the PMA to the surveyor of the classification society/recognized organization prior to the survey.

3 Surveyability review of UR and Auditability review of PR

Survey Panel checked the correctness of this revision.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

At the 36th Survey Panel meeting, this task was initiated. After rounds of discussions within the Panel, it was agreed to first submit a paper to the IMO SDC Sub-Committee with proposed draft revisions of MSC.1/Circ.1572/Rev.1 via document SDC 10/10/5 (where an interpretation on the term "open deck", which was not agreed by SDC 10, was also included). These revisions of MSC.1/Circ.1572/Rev.1 were, after agreement of SDC 10, approved by MSC 108 and reflected in as MSC.1/Circ.1572/Rev.2. This UI was updated accordingly.

After MSC 108, a new concern raised on necessity of annual inspections of Permanent Means of Access (PMA) located in crude oil tankers was considered. On this matter, IACS confirmed the following specific views on cargo tanks of oil tankers.

.1 The new wording "annually inspected", specified in MSC.1/Circ.1572/Rev.2, is a part of interpretation on the phrase "subject to survey prior to, or in conjunction with, its use in carrying out surveys in accordance with regulation I/10" stated in SOLAS Reg.II-1/3-6.

.2 However, the interval of access and gas freeing of oil cargo tanks, which means the use of PMA, may exceed 1 year.

.3 The said regulation requires the inspection for PMA to be undertaken only when the space is required to be accessed, which means the use of PMA.

.4 The interpretation should follow this principle as the relevant annual survey item (CA) 2.2.2.33 included in Annex 1 to Res. A.1186(33) has already had clarification that confirmation of conditions of means of access is required "when appropriate and as far as is practicable when examining internal spaces".

6 Other Resolutions Changes:

UI SC190, REC 90

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	:	1 September 2022	(Ref. 36th Survey Panel meeting)
Panel Approval	:	20 June 2024	(Ref: PSU24024_ISUb)
GPG Approval	:	26 November 2024	(Ref: 23041mIGh)

- **Rev. 8 (Apr 2019)**

.1 Origin for Change:

☑ Based on IMO Regulation (A.1049(27))

.2 Main Reason for Change:

When reviewing the IMO paper SDC 5/14/1 at the request of IACS Accredited Representative to IMO, in which it is proposed that references are still made to Resolution A. 744(18) in some IMO instruments, which should be replaced by the 2011 ESP Code as adopted by Resolution A.1049(27), Survey Panel identified several IACS Resolutions (UI SC 190, UI SC 191, REC 90 and REC 91) to be updated accordingly.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Survey Panel discussed this matter under PSU17042. Panel members agreed to amend all the references to ESP Code in UI SC191 from "resolution A.1049(27) (2011 ESP Code), as amended" to "the ESP Code, as amended".

The implementation date of Rev.8 was set as 1st July 2019.

.5 Other Resolutions Changes

Rec.90, Rec.91, UI SC190

.6 Any hindrance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal: 08 January 2018, made by Survey Panel
Panel Approval: 12 March 2019
GPG Approval: 11 April 2019 (Ref: 17130eIGd)

- **Corr.3 (Jan 2017)**

.1 Origin for Change:

☑ Other (Editorial correction identified by IMO Secretariat)

.2 Main Reason for Change:

Editorial correction identified by IMO Secretariat.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 19 January 2016
Panel Approval: N.A.
GPG Approval: N.A.

- **Corr.2 (Dec 2016)**

.1 Origin for Change:

☑ Other (Editorial correction identified during submission to MSC 97)

.2 Main Reason for Change:

Editorial correction identified during submission to MSC 97.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made

None

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 16 September 2016
Panel Approval: N.A.
GPG Approval: N.A.

- **Corr.1 (June 2016)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

To correct the provisions relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder.
To extend the interpretation given for the arrangement of the vertical ladder, when fitted in a space of a bulk carrier, also to the oil tankers.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the re-examination of the revision 7, a Member noted that:

- the provisions given for the height of the handrail of the resting platform was incorrectly referred to the stanchions supporting the handrail and not to the handrail itself.
- by providing the interpretation relevant to the arrangement of a vertical ladder, when this is composed by more than one section, for the bulk carriers (paragraphs 3.13.2 and 3.13.6 of the Technical Provisions) it was not considered that the same interpretation may be applied also to Oil Tankers.

Members discussed the two issues and agreed the following corrections:

a) Modification of the note to the tables of Figures A and B of the paragraph "Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6".
b) Insertion in paragraph "Technical Provision, resolution MSC.158(78), paragraph 3.5" of the reference to the interpretations given in paragraph "Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6". Moreover the subparagraph 1.i) has been corrected by inserting the sentence relevant the adjacent section of vertical ladder.

See also TB document in Part B Annex 6.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 05 January 2016 made by an IACS Member;
Panel approval: 16 March 2016 (Ref: PSU16001)
GPG Approval: 13 June 2016 (Ref: 16089_IGe)

- **Rev.7 (Jan 2015)**

.1 Origin for Change:

☑ Request by a non-IACS entity (Grontmij A/S)

.2 Main Reason for Change:

To clarify the issue of "adjacent section of ladder" and, in particular, the meaning of the wording "lateral offset".

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the request made by an external entity and received from IACS Permanent Secretariat, Panel analysed the issue of the possibility to reduce the distance between two adjacent sections of vertical ladder under the business PSU13031.
Members concurred that the issue was already discussed by the Panel by reaching conclusion that "'Adjacent sections of ladder should be laterally offset from each other by at least the 'width of the ladder' to be interpreted as the distance between the ladders. If there are any practical limitations, e.g. the breadth of the corrugation of the bulkheads, a reduced distance can be allowed.
IACS Permanent Secretariat expressed concern on Panel interpretation of 'adjacent sections of ladder'. IACS Permsec advised that allowing a reduced distance could be challenged in IMO and might not be accepted by IMO.

Consequently Survey Panel sought the advice of Hull Panel on this issue.
Hull Panel commented that the issue does not affect structural matters and that it was opinion of the Hull Panel Members that matter should be dealt with by seeking the opinions of the Statutory Panel.

Statutory Panel (it is to note that at the end of the examination of the issue it was become Safety Panel) discussed and provided their comments to Survey Panel, SP13015l.

Survey Panel Members, on the basis of the comments received, decided to improve the interpretation by providing details about the distances between two section of vertical ladders (lateral offset and vertical offset) and by inserting figures relevant to two possible configuration of resting platform connecting the two sections of ladder, viz one relevant to the "Ladder through the linking platform" and one relevant to the "ladder side mounting".

See also TB document in Part B Annex 5

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 05 August 2013 *made by: non*-IACS entity;
Panel approval: 03 December 2014 (PSU 13031)
GPG Approval: 12 January 2015 (Ref: 14197_IGb)

- **Corr.1 (September 2014)**

.1 Origin for Change:

☑ Suggestion by Survey Panel Chairman

.2 Main Reason for Change:

To correct the erroneous references as follows:
1. Change all references to 'A.744(18)' to the 'A.1049(27) (2011 ESP Code), as amended'.
2. Change the reference to 'A.864(20)' to the 'A.1050(27)' in footnote of page 6.

To correct the minor typos as below:
3. insertion of the word "or" towards the top of page 20 between 'longitudinal' and 'athwartship'.
4. remove a word 'for' from 3rd paragraph of page 23.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The corrections pointed out by Survey Panel Chairman were confirmed by IACS Accredited Representative to IMO and Permsec prepared the draft corrigenda.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 25 July 2014 made by: Survey Panel Chair
GPG Approval: 23 September 2014 (Ref: 14057_IGe)

- **Rev.6 (May 2014)**

.1 Origin for Change:

☑ Suggestion by an IACS member
☑ Suggestion by a Statutory Panel

.2 Main Reason for Change:

1) To clarify the meaning of the wording "DECK" used in paragraph 3.14 of TP contained in IMO Res MSC. 158(78) (IACS Member suggestion). The purpose of the clarification was connected to the application of the T.P. for all means of access to the compartments having their top not coincident with the weather deck: e.g. fuel oil tanks located forward the cargo area, lower fore peak tank when an upper void fore peak is expected.
2) To clarify the applicability of the wording "similar compartment not intended for the carriage of oil or hazardous cargoes " contained in SOLAS regulation II-1/3-6, paragraph 3.1 (Statutory Panel Suggestion). The clarification was required in order to exclude from the spaces not considered giving a "safe access" to other spaces the following: pump-room, deep cofferdam, pipe tunnel, cargo hold or double hull space

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

1) The meaning of the word "deck" has been deeply and at length discussed by the Survey Panel by correspondence and at the 16th,18th and 19th Meetings under item PSU12014.
2) The clarification proposed by the Statutory Panel has been deeply and at length discussed by the Survey Panel by correspondence and at the 16th,18th and 19th Meetings under item PSU12012.
3) The revision 6 of the UI SC 191 has been drafted under PSU12014, considering also the outcomes of PSU12012.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal:
1) 30 MARCH 2012 *made by:* IACS Member;
2) 02 APRIL 2012 *made by: IACS Statutory Panel*

Panel Approval: March 2014
GPG Approval: 08 May 2014 (Ref: 14057_IGb)

- **Rev.5 (May 2013)**

.1 Origin for Change:

☑ Suggestion by IACS Accredited Representative to IMO

.2 Main Reason for Change:

To remove the paragraph relating the extension of the relaxation of vertical and horizontal access holes being at least 800mm * 600mm and 600mm * 600mm.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Based on the outcome of the IMO DE 57(DE 57/25, paragraphs 3.3 to 3.5 refers), GPG 74 decided to revise the latest version of UI SC 191 to be in line with MSC circular on Unified Interpretations (MSC.1/Circ.1464 dated 24 June 2013). It was also decided that the implementation date of Rev.5 is to be aligned with that of MSC.1/Circ.1464.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: April 2013 (GPG 74) *by:* IACS Accredited Representative to IMO
GPG Approval: 17 May 2013 (Ref. 13109_IGb)

- **Corr.1 (Nov 2011)**

.1 Origin for Change:

☑ Suggestion by Permanent Representative to IMO

.2 Main Reason for Change:

In undertaking a final review of the changes to UI SC 191 Rev.4 (Annex 2 of the paper to DE 56) it was noted that the phrase "intermediate bar" in 'Technical Provision, resolution MSC.158(78), paragraph 3.3' had been changed to "intermediate rail". Therefore the term "intermediate bar" was re-instated in the version submitted to the IMO.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Permanent Representative to IMO recommended that as a matter of principle, IACS UI cannot amend the wording of an IMO mandatory instrument and therefore issue a correction to the UI changing the term back to "intermediate bar".

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 20 Oct 2011 *made by:* Permanent Representative to IMO

GPG Approval: 9 November 2011 (Ref. 7503_IGr)

- **Rev.4 (Sept 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

In order to unify the interpretation of plan examinations for the requirements of means of access for spaces in, and forward of, the cargo area specified in SOLAS Ch.II-1 Reg.3-6 among the classification societies.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

1) The Survey Panel (Spring 2007) reviewed a member's comments (2/1/07) on guardrails welded to deckhead instead of to PMA (i.e. hanging guardrails) and unanimously agreed this design was not acceptable (T.P. Para 3.3, Interpretation) thus taking into consideration Survey Panel Task 51.
2) PT at their meeting (4/12/08) discussed and agreed on items brought by members regarding:-
(i) Table 1, Para 1.1.4, Interpretation. (ii) Table 2, Para 2.5, Interpretation (iii) Ladder linking platforms – T.P. Para 3.14 and Interpretation. (iv) Portable ladders – Table 2, Para 1.8 and interpretation.
3) SOLAS Reg. II-1/3-6, Para 2.1 and Interpretation added; T.P. Para 3.10,11, Interpretation added; T.P. Para 3.14, Interpretation - partial amendment to draft agreed by PT.
4) A member suggested that the practices of plan examinations for the requirements of means of access amongst classification societies should be unified at the panel meeting in March 2009.
5) Subsequently, practices of each society's plan examination departments were collected for the review of survey panel.
6) The panel members discussed the issues under Task 53 (PSU6013) and reached conclusion to unify the interpretations.
7) Comments for the access to Fore Peak Void and Guardrail intermediate rail were raised by a GPG member.
8) The panel members discussed the issues raised by GPG member, and reached conclusion at the panel meeting in March 2011.

.5 Other Resolutions Changes

IACS Rec.91.

.6 Dates:

Original proposal: 14/3/07, 12/9/07, 14/12/07, 4/12/08, 19/2/10 *made by:* Survey Panel on Task 1 and Survey Panel PT on task 53.

Panel Approval: 09 September 2011
GPG Approval: 16 September 2011 (Ref. 7503_IGp)

- **Rev. 3 (Mar 2006)**

See TB document in Part B Annex 3.

- **Rev. 2 (Oct 2005) & Corr.1 (Dec 2005)**

See TB document in Part B Annex 2.

- **Rev. 1 (May 2005)**

Treated as a Complete Revision.

See TB document in Part B Annex 1.

- **New (Nov 2004)**

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC191:

Annex 1. **TB for Rev. 1 (May 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev. 2 (Oct 2005) & Corr.1 (Dec 2005)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev. 3 (Mar 2006)**

See separate TB document in Annex 3.

Annex 4. **TB for Rev. 4 (Sept 2011)**

See separate TB document in Annex 4.

Annex 5. **TB for Rev. 7 (Jan 2015)**

See separate TB document in Annex 5.

Annex 6. **TB for Corr.1 (June 2016)**

See separate TB document in Annex 6.

Note:

1) There are no separate Technical Background (TB) documents available for UI SC191 New (Nov 2004), Corr.1 (Nov 2011), Rev.5 (May 2013), Rev.6 (May 2014), Corr.1 (Sept 2014), Corr.2 (Dec 2016), Corr.3 (Jan 2017), Rev.8 (Apr 2019) and Rev.9 (Nov 2024).

Technical Background Document
UI SC191 (Rev.1, May 2005)

1. Objective:

Develop common procedures for acceptance of Alternative Means of Access to be described in the Access Manual.

2. Background :

The approval of “Access Manual” as required by SOLAS II-1/3-6 makes it necessary to develop a common standard for approval of “Alternative Means of Access” with corresponding safety procedures. Currently the attending surveyors have necessary authority to reject means of access not found appropriate or ask for additional staging when available access is considered not satisfactory. Owners having an approved access manual available may refer to the solutions accepted in the access manual and the approval can thereby contest the attending surveyor’s authority to decide which means of access is appropriate and safe.

The approved application of alternative means of access in the access manual will also set the standard for surveys to be carried out on existing tankers and bulk carriers.

3. Discussion

3.1 AHG/PMA developed new Annex to SC 191 on 20 Dec 2004.

3.2.1 So as to not be overly prescriptive of the SMS, throughout the document a revision has been made such that the maintenance, rigging and operation of equipment and training in its use should be "addressed by" (as opposed to "included in") the Ships Safety Management System. This allows the use of the ship's access manual to contain these provisions; and

3.2.2 The reference to the Register of Innovative Designs on pg 10/10 has been placed in lower case and the reporting of innovative designs to IACS has been made recommendatory.
(3037hABj, 14 Mar 2005)

3.3 Section 5.6 on Innovative Approaches. Considering that the area of alternative means of access with regard to their approval is somewhat new to class societies, the AHG felt is important to suggest to GPG a scheme where Members would share their experience with new emerging solutions for means of access.(AHG/PMA report, 3037hLRc, 20 Dec 2004).

Submitted by the Permanent Secretariat
11 April 2005

Technical Background

UI SC 191 (Rev.2, Oct / Corr. Dec 2005) *Para.3.2 of SC191 : the IACS submission to DE 49 is annexed.

&

UR Z10.1 (Rev.13)
UR Z10.2 (Rev.18)
UR Z10.3 (Rev.8)
UR Z10.4 (Rev.3)
UR Z10.5 (Rev.2)

1. Objective

- to confirm whether the guidelines for approval/acceptance of alternative means of access (now REC91, ex Annex to UI SC191) is mandatory or non-mandatory.
- to consider other safety related proposals.

2. Background

The DNV proposal to submit the UI SC191(Rev.1, May 2005, Annex 1) to IMO DE49 triggered a number of discussion points that led to amendments to the following resolutions:

UI SC191(Rev.2)
New REC 91
REC 39(Rev.2)
UR Z10s

Points of Discussion

3. Is the Annex to UI SC191(Rev.1, May ’05, guidelines for approval / acceptance of alternative means of access) mandatory or non-mandatory ?

   Answer: Non-mandatory. Hence, re-categorized as new REC 91.

4. Limitation of use of rafts in bulk carrier holds

   DNV proposed that conditions for rafting should be limited to areas, such as anchorage or harbour, where swell conditions are limited to 0.5m. After discussion, GPG approved the ABS’ alternative proposal to use the swell

condition as a basis to determine the appropriateness of rafting, instead of geographic areas(harbours or anchorage). 5.5.4 of Z10.2 refers.
RINa proposed that para 5.5.4 should be included in all the Z10s. NK's objection is recorded as follows (3037hNKq, 29/08/2005):

> 1. With regard to RIm of 26 August 2005, NK considers that the proposed amendment to 5.5.4 should be limited to UR Z10.2.
>
> 2. Rafting survey for tankers are actually carried out on the open sea from a discharge port to a loading port and in such situation the rise of water within the tanks would always exceed 0.25m. It is different situation from rafting survey for hold frames of bulk carriers normally conducted in a harbour or at an anchorage.
>
> 3. If the same requirement applies to tankers, any rafting survey for cargo oil tanks and ballast tanks of tankers would be prohibited. This is not practicable under present survey procedure for tankers.
>
> 4. Therefore, NK can not support Laura's proposal that the proposed amendment to 5.5.4 of UR Z10.2 is introduced into the other URs and new Recommendation.

For compatibility with the IMO's mandatory requirements*, GPG decided to add the same amendment to all the UR Z10s.

*

- Appendix 4 to MEPC.99(48) ' Mandatory requirements for the Safe Conduct of CAS Surveys'
- MSC.197(80) – amendments to A.744918), Annex A for DSS and SSS bulk carriers and Annex B for single and double hull oil tankers.

As a consequence, 5.5.1 of REC 91(ex Annex to UI SC191) was also amended:

-to remove the reference to dynamic /sloshing (as the 0.25m rise was considered negligible);
-to refer to the rafting conditions contained for cargo holds in Z10.2 and Z10.5 and for oil cargo tanks in Z10.1 and Z10.4.

5. Means of access from longitudinal permanent means of access within each bay to rafts

GPG reviewed the proposal that the following text be added to Z10s:

A means of access to the longitudinal permanent platform from rafts or boats is to be fitted in each bay.
(Technical Background: for the safety of surveyors)

There may be ships which are arranged in accordance with para b, page 8 of the Annex to the current SC 191 (i.e., no means of access from the LPMA in each bay to a raft is required) and therefore could not be rafted if the sentence proposed by RINA("A means of access to the longitudinal permanent platform from rafts or boats is to be fitted in each bay") is included in the Z10's.
GPG therefore agreed not to include this sentence in Z10s.

For the same reason, the same sentence was not added to Rec.39.

Finally, GPG added the following sentence to UI SC191(interpretation for II-1/3-6):

A permanent means of access from the longitudinal platform to the water level indicated above is to be fitted in each bay (e.g permanent rungs on one of the deck webs inboard of the longitudinal permanent platform).

6. Implementation

It was agreed that the revised UI SC191 be implemented to ships contracted for construction 6 months after adoption by Council.

UI SC191 was also edited in line with IMO MSC/Circular. 1176, leaving its mandatory language (is/are to, shall) unchanged.

(Note: UI SC191(Rev.2) makes references to the following new Recommendations:

- REC 90: Ship Structure Access Manual
- REC 91: Guidelines for approval/acceptance of Alternative Means of Access)

23 September 2005
Permanent Secretariat
Updated on 13 Oct 2005.

Annex: the IACS submission to DE 49 re para.3.2 of UI SC191(Rev.2, Corr. 2005)

SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT
49TH SESSION
Agenda Item 11

DE 49/11/??
?? December 2005
Original: ENGLISH

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive Summary:-	This paper contains at annex Revision 2 of IACS Unified Interpretation SC 191 based on experience gained in the application of UI SC 191, Rev.1, which is contained in MSC/Circ.1176, and seeks the Sub-Committee's concurrence to develop a corresponding draft revision to MSC/Circ.1176.
Action to be taken:-	See paragraph 6.
Related Documents:-	MSC/Circ.1176, DE 48/25 and DE 48/21/2

Background

1. IACS submitted DE 48/21/2, which contained Unified Interpretation SC 191, to the Sub-Committee for consideration and action as appropriate.

2. The Sub-Committee agreed with the text of the interpretation contained in the document and instructed the Secretariat to include it in the draft MSC circular on Interpretations to SOLAS chapter II-1 as noted in paragraph 21.17 of DE 48/25.

3. The Committee, at its 80th Session, approved MSC/Circ.1176 on Interpretations of SOLAS chapters II-1

Extent of Revision to UI SC 191

4. The full text of IACS Unified Interpretations SC 191, Rev.2, is posted at http://www.iacs.org.uk/interpretations/main.htm. Of these revisions, only the revision to the interpretation to SOLAS regulation II-1/3-6, paragraph 3.2 impacts MSC//Circ.1176. Therefore, only this revision with new text shown as *underlined* has been included at annex. All other revisions are editorial corrections or revisions to bring UI SC191 into line with MSC//Circ.1176.

5. IACS considers that the revision at annex is needed to ensure ready and safe access to and from the tank of surveyors and crew carrying out surveys and inspections utilizing rafts.

Action requested of the Committee

6. The Committee is invited to take action as appropriate with respect to MSC/Circ.1176 based on the attached revision to Unified Interpretation SC191.

TB for a Revision of Technical Provision 3.3 of UI SC 191 - Distance between Stanchions

(Rev.3, Feb 2006)

Figure 1 provides a classical arrangement as per the UI SC 191 for the § 3.3 of the Technical provision.
If we call I the inertia of one of the handrails and L_1 its length over the stanchion, the handrails stiffness is proportional to I/L_1.
In order to provide the same stiffness and strength when the handrails are connected together as shown in Figure 2, and if we suppose the same inertia I for the handrails, at first approximation, we can express the stiffness of the arrangement shown in Figure 2 as function of the stiffness of one single handrail of Figure 1, as :

$$\frac{2I}{L_2} = \frac{I}{L_1}$$

It is assumed that in both cases, the same load is acting on one handrail in case of Figure 1 and in the middle of the vertical connection between the connected handrails in case of Figure 2.

That means that $L_2 = 2\ L_1$ for having the same stiffness and strength.

Taking into account that L_1 = 150 mm in order to get a maximum distance between the two stanchions, L_2 should be less than 300 mm leading to a distance between the stanchions equal to 650 mm.

In order to have some safety and considering that the load may act at any point at the vertical member connecting the handrails, we can limit the distance to 550 mm corresponding to $L_2/L_1 = 1.67$.

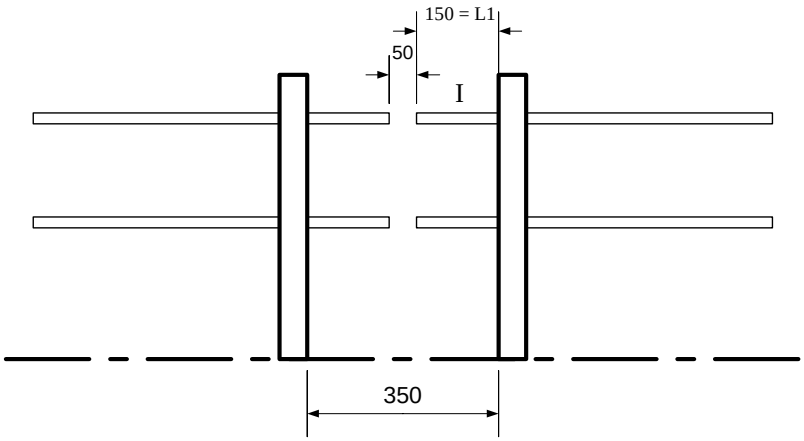


Figure 1

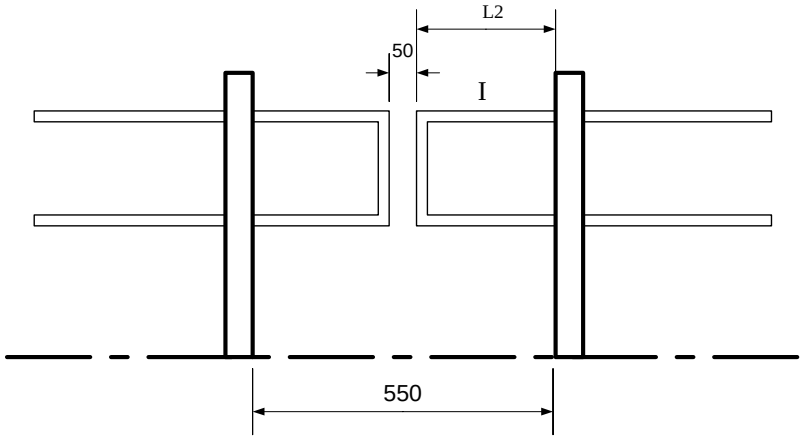


Figure 2

For the maximum distance between one stanchion and another structural member (Bulkhead, web frame, etc), the same consideration is made and so distance between the stanchion and the structural members is limited to 200mm and 300mm in case of Figures 1 & 2 respectively.

Permsec's Note:

1) Implementation date: 1 Oct 2006
2) The IACS reply to SAMSUNG is attached to this TB.

Submitted by the Hull Panel Chairman
6 Dec 2006

IACS

INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES LTD.

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23 March 2006
Our Ref: GYH-3037jIAa

SAMSUNG Heavy Industries
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Att. Mr. Y J Kim, Vice-President & Mr. T S Lee, Senior Manager , Shipbuilding Design Team
Mr. Y S Bae, Vice-President & Mr. J S Park, Senior Manager, Shipbuilding Design Team 2

Your Ref: letter dated 12 October 2005 (SHI/KR-5898) and letter dated 17 October 2005 (SHI/NK-1011)

Subject : Replies to Questions on Technical provisions for Permanent Means of Access – From Samsung Heavy Industry in Korea

Dear Sirs,

With reference to your letter of MSG No. SHI/KR-5898 dated 12th October 2005 concerning IACS unified interpretation UI SC191 we would advise as follows with respect to the questions raised therein:

1. Regarding discontinuous handrails are allowed provided the gap does not exceed 50mm,

1) What is the criterion for deciding maximum 50mm. (We think a distance of 100mm may also meet the intention of this regulation and avoid hand injuries during walking) ?

IACS Response : *The maximum handrail gap allowance of 50mm for discontinuous handrails has been provided to prevent the possibility of any hand slippage through such gaps. 100mm is not acceptable.*

2) Whether the maximum. 50mm gap between mid rails also to be kept ?

IACS Response : *It is not necessary to maintain a gap of 50mm for mid rails provided the distance between end stanchions does not exceed the maximum gap of 350mm.*

3) Whether the maximum 50mm gap between rails (top and mid-rail) and bulkhead (or pipe etc.) is to be kept ?

IACS Response : *The 50mm gap is also to be maintained between the top rail and other structural members.*

2. Regarding the maximum distance between the adjacent stanchions across the handrail gaps is to be 350mm,

1) What is the criterion for deciding maximum 350mm ?

IACS Response : *The stanchion spacing of 350 mm has been provided for the prevention of crews/inspectors falling between stanchions and for ensuring the strength of handrails at their ends.*

* * *

Also in response to your letter of MSG No. SHI/NK-1011 dated 17th October 2005 concerning 'The application of Handrails for PMA' and your request for confirmation which of the 3 sketches (Figure 1) complies with the intent of IACS UI SC191 we would advise as follows:

Case 1 : *This case is acceptable to IACS members.*

Case 2 : *The case 2 is not within the application of IACS UI SC 191, due to the distance between stanchions. However, for that case the top and mid handrails are connected together, IACS considers it as an equivalent solution.*
However the radius of the bent connection between the top and mid rails needs to be limited to 100 mm.

Case 3 : *This case is acceptable to IACS members.*

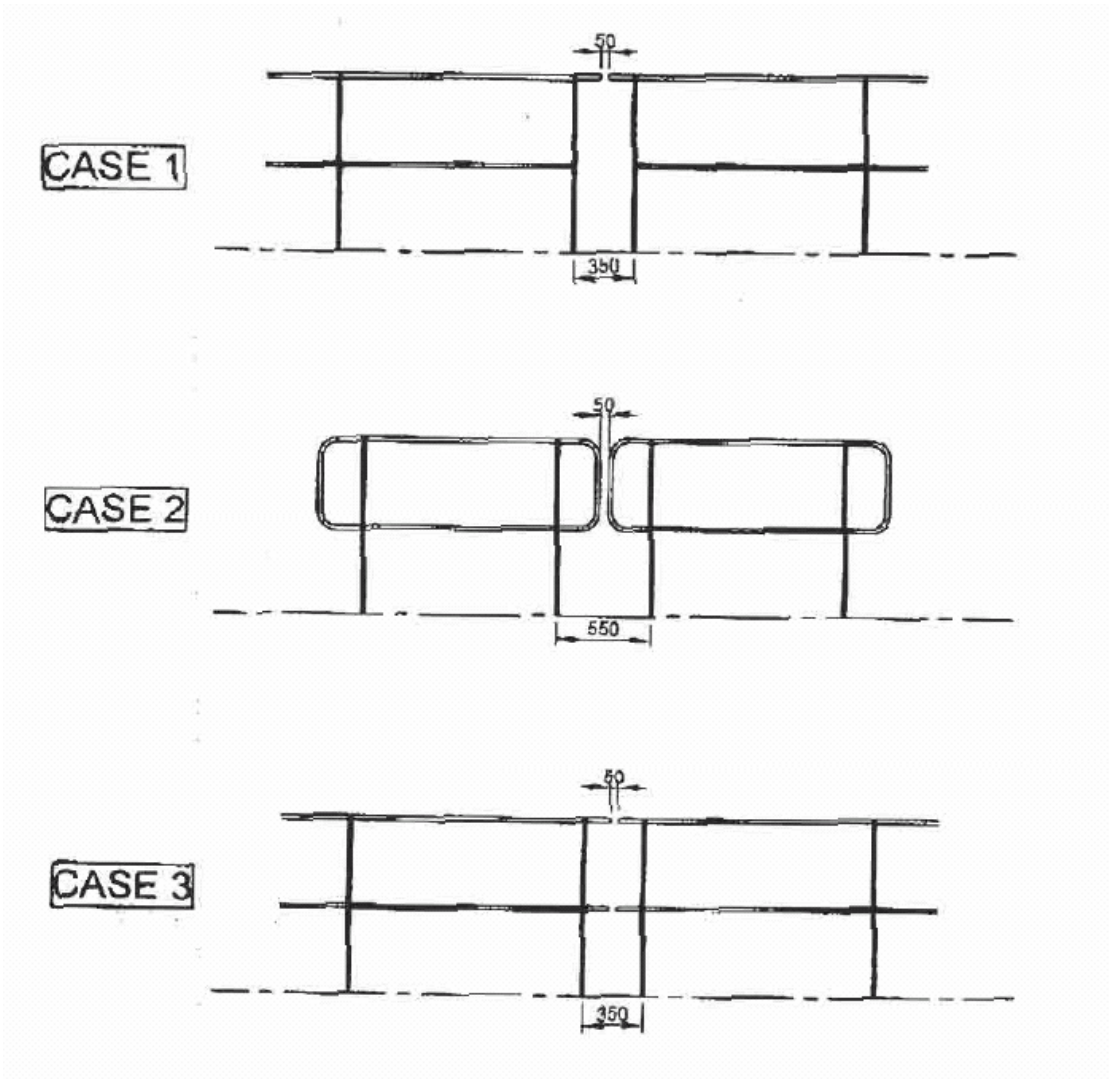


Figure 1 Types of Hand Rail questioned from Samsung Heavy Industry

Yours faithfully,

Steven R McIntyre
Chairman
IACS General Policy Group (GPG)

Technical Background for UI SC191 Rev.4, Sept 2011

1. Scope and objectives

This update of UI SC 191 is to unify the practice of plan examination departments among the classification societies. This is based on annual review of UI SC 191 taking into account Survey Panel Task 51 and ergonomic considerations.

2. Engineering background for technical basis and rationale

- To unify the plan approval examination department practices.
- Achieve uniform interpretation of SOLAS II-1/3-6 and T.P.s..

3. Source / derivation of the proposed IACS Resolution

IACS UI SC 191(Rev.3), IACS UI SC 190, IACS Rec. 91.

4. Summary of Changes intended for the revised Resolution:

1) Each societies plan examination department's practices for every clause of SOLAS CH.II-1 3-6 was collected and reviewed by the Survey Panel.
2) In order to unify the practices of plan examination department's practices and unify interpretations among the classification society, following extensive discussion, amendments have been proposed, relating to:
    - SOLAS regulation II-1/3-6, paragraph 2.1
    - TP Resolution MSC. 158(78) paragraph 3.3
    - TP Resolution MSC. 158(78) paragraph 3.5
    - TP Resolution MSC. 158(78) paragraph 3.6
    - TP Resolution MSC. 158(78) paragraphs 3.10 and 3.11
    - Table 1 - Resolution MSC. 158(78) paragraph 1.1.4
    - Table 2 - Resolution MSC. 158(78) paragraph 1.8
    - Table 2 - Resolution MSC. 158(78) paragraph 2.5.2
3) A new paragraph to Rec. 91 is proposed taking into account IACS UR Z10.2, paragraph 5.3. This amendment to Rec. 91 has been migrated to task 72 (PSU 9022) in order to consolidate with further amendments to Rec. 91 under that Task.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background for UI SC191 Rev.7 (Jan 2015)

1 Scope and objectives

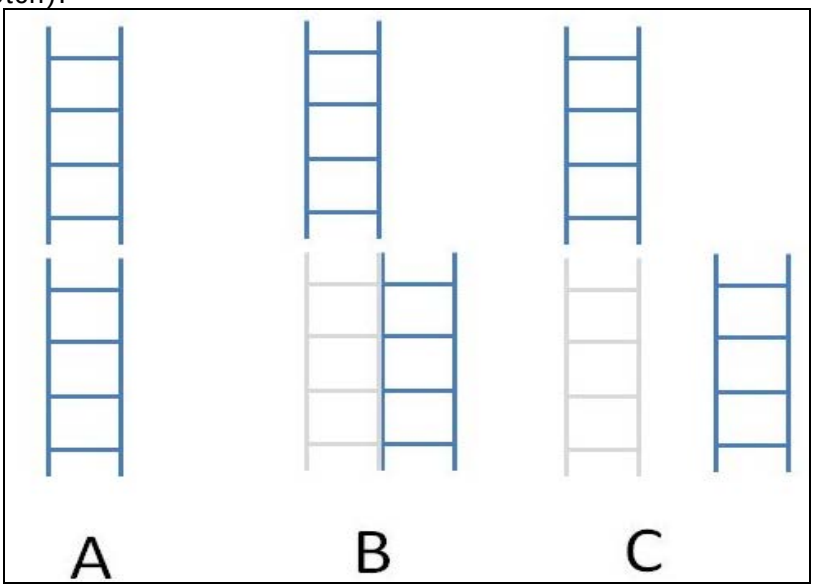
To consider the revision of UI SC191 in order to harmonize the interpretation of the sentence *"Adjacent sections of ladder should be laterally offset from each other by at least the width of the ladder",* in order to give clarification to the meaning of the wording laterally offset from each other by at least the width of the ladder.

Within the aims of the above it has also considered the following issues:
a. Reduce the risk of accidents due to tiredness by providing a rest platform at appropriate intervals.
b. Reduce the risk of collateral injury from falling or dropping items of equipment by preventing the lateral overlap of two ladders

2 Engineering background for technical basis and rationale

Survey Panel, following a request of an external entity, studied the particular case of vertical ladder fitted in a vertical corrugation of a cargo hold bulkhead. This particular layout constrains to adopt a very short distance between two adjacent sections of a vertical ladder.
The requirement of paragraphs 3.13.2 and 3.13.6 of IMO Resolution MSC158(78), that the two section shall be laterally offset of at least the width of the ladder, have been examined by the Panel.
Considering the different opinions among the Members, the Panel decided to seek the advice of Hull Panel. Hull Panel having analyzed the matter and having considered that this is not a structural issue, suggested to propose the query to the Safety Panel (the former Statutory Panel).

Safety Panel provided the uniform interpretation of the requirement by specifying that if the two sections of ladder are fitted so that they are not overlapped this satisfy the requisites (solution B of the following sketch).



3 Source / derivation of the proposed IACS Resolution

According to the interpretation provided by Safety Panel, the Survey Panel focused the attention on the safety of personnel that use the vertical ladders.

Two basic configurations of vertical ladders with associated resting platform have been considered:

- Ladder through the linking platform
- Ladder side mount

Survey Panel considered allowing a sufficient space for the safe landing on the resting platform, fixing a minimum safe distance of 200 mm between the adjacent stringers of the two sections of the vertical ladder.
Also a minimum prolongation of the lower section of the vertical ladder, above the resting platform, has been fixed in 1500mm so that the person may hang up safely the ladder stringers when he descend the ladder from the resting platform.

Moreover, for the side mounting configuration the safety of the persons, that are transferring from the linking platform to the lower section and vice-versa, has been considered by the Panel. Panel agreed that the safe distance between the landing platform and the adjacent stringer of the lower section of the vertical ladder should not be less than 100 mm and not more than 300 mm. This has been also extended to the other configuration, i.e. ladder through the linking platform

According to the above the Panel agreed the revision of the Unified Interpretation UI SC191; the new interpretation, provided with two figures, has been introduced.

Technical Background (TB) document for UI SC191 (Corr.1 June 2016)

1. Scope and objectives

To consider a revision of UI SC191 in order to:

- correct the provisions relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder.
- extend the interpretation given for the arrangement of the vertical ladder, when fitted in a space of a bulk carrier, also to the oil tankers

as proposed by an IACS Member.

2. Engineering background for technical basis and rationale

Survey Panel, examined the topics and the technical background provided in order to support the correction. The proposed topics and technical backgrounds are:

1) Measurement of Handrail Height

Following the review of the IACS UI SC191(Rev.7), there has been found a part that might be to be vague and somewhat inconsistent.
In the Note to table of the figures A and B, of paragraph “Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6 “, it specifies that the 1000 mm is measured to the “handrail stanchion” from platform, while the paragraph 3.3 of Technical Provision of resolution MSC.158(78) (TP), to which this Note clearly refers, provides this height of 1000 mm as that of the handrails, not the stanchions.
Therefore the note should be revised to read:
**Note: the minimum height of the handrail ~~stanchions~~ of resting platform is of 1000 mm (Technical Provision, resolution MSC.158(78), paragraph 3.3)*

2) Application of UI SC191(Rev.7)

In the interpretation of Para 3.5 of TP in the UI, the requirements for the composition and adjacent section of vertical ladders for oil tankers are set out in relation to Paras 3.13.2 and 3.13.6 of TP, whose application is for bulk carriers. Accordingly, the interpretation of these paras also applies to the requirements for the composition and adjacent vertical ladders for oil tankers. However the reference to the relevant TP is unintentionally missing in the UI, thus, it is considered that this UI might be modified to apply the unified interpretation of the adjacent sections of ladders to oil tankers as follows:

Quote:
Technical Provision, resolution MSC.158(78), paragraph 3.5

MA for access to ballast tanks, cargo tanks and spaces other than fore peak tanks: For oil tankers:

1. Tanks and subdivisions of tanks having a length of 35 m or more with two access hatchways:

First access hatchway: Inclined ladder or ladders are to be used.

Second access hatchway:

i. A vertical ladder may be used. In such a case where the vertical distance is more than 6 m, vertical ladders are to comprise one or more ladder linking platforms spaced not more than 6 m apart vertically and displaced to one side of the ladder.

The uppermost section of the vertical ladder, measured clear of the overhead obstructions in way of the tank entrance, is not to be less than 2.5 m but not exceed 3.0 m and is to comprise a ladder linking platform which is to be displaced to one side of a vertical ladder. However, the vertical distance of the upper most section of the vertical ladder may be reduced to 1.6 m, measured clear of the overhead obstructions in way of the tank entrance, if the ladder lands on a longitudinal or athwartship permanent means of access fitted within that range. Adjacent sections of the ladder are to be laterally offset from each other by at least the width of the ladder (see paragraph 20 of MSC/Circ.686 and refer to the interpretation of Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6); or

…..omissis…..

3. *In spaces of less than 2.5 m width the access to the space may be by means of vertical ladders that comprises one or more ladder linking platforms spaced not more than 6 m apart vertically and displaced to one side of the ladder. The uppermost section of the vertical ladder, measured clear of the overhead obstructions in way of the tank entrance, is not to be less than 2.5 m but not exceed 3.0 m and is to comprise a ladder linking platform which is to be displaced to one side of a vertical ladder. However, the vertical distance of the upper most section of the vertical ladder may be reduced to 1.6 m, measured clear of the overhead obstructions in way of the tank entrance, if the ladder lands on a longitudinal or athwartship permanent means of access fitted within that range. Adjacent sections of the ladder are to be laterally offset from each other by at least the width of the ladder (see paragraph 20 of MSC/Circ.686 and refer to the interpretation of Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6).*

…..omissis…..

MA for inspection of the vertical structure of oil tankers:

Vertical ladders provided for means of access to the space may be used for access for inspection of the vertical structure.

Unless stated otherwise in Table 1 of TP, vertical ladders that are fitted on vertical structures for inspection are to comprise one or more ladder linking platforms spaced not more than 6 m apart vertically and displace to one side of the ladder. Adjacent sections of ladder are to be laterally offset from each other by at least the width of the ladder (paragraph 20 of MSC/Circ.686 and refer to the interpretation of Technical Provision, resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6).

3. Source / derivation of the proposed IACS Resolution

According to the technical background provided the Survey Panel concurred that both modifications are supported by a consistent technical background and agreed to correct the UI SC191 as proposed.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background
UI SC 192 (New, Dec 2004)

1. Regulation 7.2.1 reads as follows.

7.2.1 The ventilation systems for machinery spaces of category A, vehicle spaces, ro-ro-spaces, galleys, special category spaces and cargo spaces shall, in general, be separated from each other and fromthe ventilation systems serving other spaces, except that the galley ventilation systems on cargo ships of less than 4,000 gross tonnage and in passenger ships carrying not more than 36 passengers need not be completely separated, but may be served by separate ducts from a ventilation unit serving other spaces. "In any case", an automatic fire damper shall be fitted in the galley ventilation duct near the ventilation unit.

2. "In any case" is subject to interpretation.

It may mean regardless of size or type, there should be an automatic fire damper on a supply duct near the ventilation unit of a galley, irrespective to the fact that the galley is served by an independent unit or not.
Or,
It actually means "In any such cases" for cargo ships under 4000 GRT, or for passenger ships carrying not more than 36 passengers, an automatic fire damper is required irrespectve of the size of the duct when the galley is served by a duct from a common ventilation unit and not from an independent one.

3. Guidance from MSC/Circ.847, from where this regulation comes, confirms the second alternative.

4. All members agreed to that and the proposed interpretation was drafted for this purpose and in such a way that it is not an amendment.

UI SC194 "Installation of electrical and electronic appliances on the bridge and vicinity of the bridge"

Summary

In Rev.1 of this Resolution, the way to refer to instruments other than those specified by IACS was unified.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2021)	15 February 2021	1 July 2022
New (Sept 2005)	September 2005	-

- **Rev.1 (Feb 2021)**

1 Origin of Change:

☑ Other (Update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UI to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **New (Sept 2005)**

Refer TB document Annex 1 for details. No history file available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC194:

Annex 1. **TB for New (Sept 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev. 1 (Feb 2021)**

See separate TB document in Annex 2.

◄▼►

Technical Background Document
UI SC194 (New, August 2005)

IACS WP/EL Task 63

Unified Interpretation of SOLAS Reg V/17 – List of electrical or electronic equipment on the bridge or in the vicinity of the bridge to which electromagnetic compatibility (EMC) tests are to be applied.

Objective and scope:
To develop a UI of SOLAS Reg V/17 – List of electrical or electronic equipment on the bridge or in the vicinity of the bridge to which electromagnetic compatibility (EMC) tests are to be applied.

Source of proposed requirements.
SOLAS Ch. V / 17
IMO A.694 and IMO A.813
IEC 60945, IEC 60533

Points of discussion
According to SOLAS Reg.V/17 all electrical and electronic appliances installed on the bridge and vicinity of the bridge other than mandatory navigation and communication equipment having been type tested according to IEC 60945, as well as loose equipment placed on board by the builders or owners shall have been EMC tested. For this purpose it was decided that all such equipment to be tested on Conducted and Radiated Emission EMC tests at least. During the discussion within AHG/EMC the requirements of SOLAS V/17, IMO Res A.813(19) and test procedures of IEC 60945, IEC 60533 and IACS UR E10 were reviewed to find out the acceptable test procedures.

The next main item was to clarify the definition “vicinity of the bridge” and to establish a list of relevant equipment and locations.

The outcome should clarify the scope of equipment, the location and the test standard.

Submitted by WP/EL Chair
31/01/2005

Technical Background (TB) document for UI SC194 (Rev.1 Feb 2021)

1. Scope and objectives

UI SC194 (Original version) does not reflect the agreed format for referencing the IEC standards. Rev.1 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments (where the number of amendments is large)

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

3. Source / derivation of the proposed IACS Resolution

N/A

4. Summary of Changes intended for the revised Resolution:

UI SC194 has been updated to specify the revision/version of the IEC standards as follows:

IEC standards	Replaced by
IEC 60945	IEC60945:2002
IEC 60533	IEC60533:2015

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background Document
UI SC195 (New, August 2005)

IACS WP/EL Task 66

Unified Interpretation of SOLAS Reg V/18.2 for the performance standards of the Automatic Identification System

Objective and scope:
To develop a UI of SOLAS Reg V/18.2 – reference to performance standards of the Automatic Identification System (AIS).

Source of proposed requirements.
SOLAS Ch. V / 18.2
MSC.74(69), Annex 3
SN/Circ.227

Points of discussion
According to Chapter V, Regulation 18.2 of SOLAS it is required that the Automatic Identification System installed on ships conforms to appropriate performance standards not inferior to those adopted by the Organization and refers to Resolution MSC.74(69), Annex 3.

In addition IMO have published voluntary installation guidelines necessary for the effective performance of the system in document SN/Circ.227.

Besides the reference to above IMO documents it was founded that para.2.2.1 of SN/Circ.227 requires the special note. According to the para.2.2.1 of SN/Circ.227, the objective for the AIS antenna is to see the horizon freely through 360 degree but in practice, the location of the antenna cannot meet this requirement. In most of ships, an AIS antenna is installed on a compass deck or attached on the middle of a mainmast to avoid an interference caused by a VHF antenna installed on the top of the mainmast. In this case, the objective for the AIS antenna cannot see the horizon freely through 360 degree because of the obstruction of the funnel.

It was decided to produce the UI with reference to IMO SN/Circ.227 and to add into UI the special note concerning para.2.2.1 of SN/Circ.227 – "… to be complied with as far as practicable".

Submitted by WP/EL Chair
31/01/2005

Technical Backgrounds

UI SC 196 (New, March 2005)

UI SC 196 Document of compliance for the carriage of dangerous goods (DoC)
Reg.II-2/19.4

As a consequence of Members' agreement to follow the majority practice of applying the SOLAS Requirements to ships carrying dangerous goods for which a DoC is not required, it is found necessary to prepare a UI codifying this unified application for further clarification and future reference.

Permsec Note: At GPG level, it was found that SC 196 should include a sub-category of ships constructed on or after 1 September 1984 and before 1 July 2002 in order to cope with the 1981 and 1966 amendments. The 1996 amendments contain additional classes for the carriage of dangerous goods. See para. 2 and 3 of UI SC 196.

Submitted by WP/FP+S
31 Dec 2004

UI SC197 "Non-combustible cargoes (Reg.II-2/10.7.1.4)"

Summary

This UI provides clarity regarding the exemption from the requirements of Reg. II-2/10.7.1.3. and Reg. II-2/10.7.2., as provisioned by SOLAS regulation II-2/10.7.1.4. The UI highlights that the materials stated in Paragraph 1 (Non-combustible materials) of Annex 2 to the 2010 FTP Code need not be mentioned on the exemption certificates issued under this regulation. Rev.2 updates the SOLAS text and the reference to the FTP Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Mar 2021)	24 March 2021	-
Rev.1 (Aug 2006)	August 2006	-
New (Mar 2005)	March 2005	1 Jul 2005

- **Rev.2 (Mar 2021)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolution by Safety Panel)*

2 Main Reason for Change:

The SOLAS regulation's text referenced in the UI was not up to date.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

During the periodic maintenance of IACS Instruments which have not been updated for the last ten years, the Safety panel agreed to update the outdated referenced SOLAS text.

It was decided in GPG that an implementation date for the revised UI is not necessary as the interpretation has been in force since July 2005 and the revision does not include substantive changes to the interpretation.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	Jan 2021 (Made by: Safety Panel)
Panel Approval:	18 February 2021 (Ref: PS19002rISb)
GPG Approval:	24 March 2021 (Ref: 19001lIGc)

- **Rev.1 (Aug 2006)**

No records available

- **New (Mar 2005)**

No records available

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Mar 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Aug 2006)**

See separate TB document in Annex 2.

Annex 3. **TB for Rev.2 (Mar 2021)**

See separate TB document in Annex 3.

◄▼►

Technical Backgrounds

SC 197 (New, March 2005)

UI SC 197 Non combustible cargoes (Reg.II-2/10.7.1.4)

Having been approached by one of its members regarding the interpretation of SOLAS Ch. II-2 Regulations 10 and 19 and the application of operational and structural regulations to cargo vessels carrying certain dangerous cargoes, BIMCO intended to seek IACS's advice on these matters and it is considered necessary for IACS to provide to the industry its unified interpretation and application of these SOLAS requirements. (BIMCO paper in appendix)

APPENDIX

Lists of permitted cargoes versus Dangerous Goods Certificates

SOLAS Ch. II-2 Part C /53 - 54 (SOLAS Ch. II-2 Part C/10 - SOLAS Ch. II-2 Part G 19)

On dry cargo vessels the issue of which cargoes a vessel is permitted to carry has surfaced a number of times in various connections, be that CP disputes or actual casualties where allocation of liability has been disputed. A member of BIMCO has recently raised this question again.

Two SOLAS regulations cover this issue, namely regulations 53 and 54 of SOLAS Ch. II-2: Construction - fire protection, detection, extinction, cf. SOLAS consolidated edition 2001. The corresponding regulations in the 2000 amendments to SOLAS, entering into force from July 2002, are regulations C/10.7 and G/19.4 of chapter II-2.

Regulation C/53 (C/10.7) concerns the fitting of fixed fire extinguishing systems in cargo spaces of all vessels of 2000 GT and upwards, and in all ships carrying dangerous goods. Both regulations require that cargo spaces are fitted with fire extinguishing systems, and both regulations contain provisions for the issuance of exemption certificates, with a list of permitted cargoes, in accordance with MSC/Circ. 672.

Ch. II-2, Reg. C/54.3 (G/19.4) requires that vessels carrying dangerous cargoes be issued with a Document of compliance with the special requirements for ships carrying dangerous goods (DG certificate). The annex to this DG certificate shows which dangerous cargo classes the vessel is permitted to carry and in which position on the ship. It may list bulk cargoes by name and (IMO) class.

The BC code does not require any special certificates to be issued to a vessel. The information pertaining to permitted BC cargoes are included in the above annex to the DG certificate

Consequently a vessel exempted for the installation of fire extinguishing installation, can be granted this exemption only if the vessel is restricted to carry a limited - and very specific - number of cargoes, cf. MSC/Circ. 671. Some of these cargoes are dangerous cargoes, and hence a DG certificate in accordance with Ch. II-2, Reg. C/54 (G/19) must be issued. As

Reg. C/54 (G/19) requires compliance with Reg. C/53 (C/10.7), the DG certificate should only contain those dangerous cargoes permitted under the Exemption Certificate.

The industry is experiencing problems with the interpretation of these regulations.

- Some classification societies issue separate BC certificates with permitted cargoes
- DG certificates with more cargoes than those listed on the "permitted cargoes list" lead to uncertainty regarding which certificate to apply, and which cargoes a vessel can actually legally carry
- SOLAS Ch. II-2, Reg. C/54.2.8 contains a mixture of operational and constructional requirements regarding insulation of engine room bulkheads to cargo spaces or alternatively stowage distance. This has in the past lead to conflicting advices even from the same classification society regarding the same vessel. While this may be an exception it is very likely that sister ships in different classes will receive certificates with different content.

Furthermore there is an apparent lack of logic in the regulations, as the list of cargoes a vessel can be permitted to carry if exempted for installing fire extinguishing systems include flammable products, such as DRI or sulphur, but it does not include obvious non flammable products such as steel. Although such products can be permitted by the respective administrations, it does not provide much in respect of consistency, if each flag state individually shall assess and describe various cargoes.

BIMCO should appreciate your comments to the above and specifically we should appreciate to hear how your society interpret the regulations in regard of the below listed questions:

1. Is the "list of permitted cargoes" issued pursuant to SOLAS Ch. II-2 Part C/53.1.3 conclusive in as mush as vessels exempted from installing fire extinguishing systems in the cargo spaces can only carry the listed products?

2. Is there any implied - or factual - limitation to which ship types the SOLAS Ch. II-2 Part C/53.1.3 apply? The regulation appear to be intended for Bulk Carriers only, but read literally the regulation could be applied even to tankers.

3. How does SOLAS Ch. II-2 Part C /53.1.3 affect the carriage of deck cargoes?

4. What is the correlation between the issuance of "list of permitted cargoes" cf. SOLAS Ch. II-2 Part C /53.1.3 and the Dangerous Goods (DG) certificate, cf. SOLAS Ch. II-2 Part C/53.1.3? How can a DG certificate contain cargoes not listed in the "list of permitted cargoes"?

5. Clearly non-combustible cargoes such as steel products are not listed in IMO/circ. 671. Can such cargoes not be carried on ships that have been issued with exemption certificates in accordance with SOLAS Ch. II-2 Part C/53.1.3 without the Flag State Administration approving the product?

6. How is SOLAS Ch. II-2 Part C /54.2.8 - insulation of machinery spaces bulkheads applied in respect of issuance of DG certificates, ref the above comments on operational versus constructional requirements?

7. The cargo "Shaped Sulphur" is specifically excluded from the sulphur, UN no. 1350 in the IMDG code. The BC code includes a "Lump and Coarse Grained Sulphur" only.

Can the carriage restrictions in the BC code or SOLAS Ch. II-2 Part C /54 be applied to this cargo?

Technical Background to Unified Interpretations FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1

The UIs, UI FTP 4 Rev.1, SC 16 Rev.2, SC 79 Rev.3, SC 174 Rev.1 and SC 197 Rev.1, have been editorially revised simply to incorporate reference to MSC.1/Circ.1203.

Submitted by GPG Chairman
2 August 2006

Technical Background (TB) document for UI SC197 (Rev.2 Mar 2021)

1. Scope and objectives

To clarify the requirements of SOLAS Reg. II-2/10.7.1.4., w.r.t. non-combustible cargoes and their exemption from the requirements of Reg. II-2/10.7.1.3. and Reg. II-2/10.7.2.

2. Engineering background for technical basis and rationale

NA

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg. II-2/10.7.1.4.

4. Summary of Changes intended for the revised Resolution:

The text of SOLAS Reg. II-2/10.7.1.4. (including the new footnote) referenced in the UI was updated to reflect the current SOLAS text.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC198 "Sections in local application fire extinguishing systems"

Summary

UI SC198 is editorially updated to include the text of SOLAS II-2/10.5.6.3 as amended by resolution MSC.338(91) and to refer to MSC.1/Circ.1387

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sep 2022)	12 September 2022	-
New (June 2005)	January 2005	1 January 2006

- **Corr.1 (Sep 2022)**

1 Origin of Change:

☑ Other - 10th anniversary review

2 Main Reason for Change:

Resolution MSC.338(91) amended the text of SOLAS II-2/10.5.6.3.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Amendments to UI SC198 were discussed by correspondence under subject PS19002u. The UI has been amended to include the text of SOLAS II-2/10.5.6.3 as amended by resolution MSC.338(91) and to refer to MSC.1/Circ.1387. The amendment also revises the text of the UI to mandate the arrangement for multi-engine installations by revising "should" to "shall".

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 18 July 2019	(Made by: Safety Panel member)
Panel Approval	: 25 August 2022	(Ref: PS19002uISc)
GPG Approval	: 12 September 2022	(Ref: 19001vIGb)

- **New (June 2005)**

No records are available.

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC198:

Annex 1. **TB for New (June 2005)**

See separate TB document in Annex 1.

Note: *There is no separate Technical Background (TB) document for Corr.1 (Sep 2022)*

Technical Background (TB) document for UI SC198 (New June 2005)

Proposals were considered on the minimum required number of sections to be provided for multi-engine installations.

Bearing in mind that the local fire fighting system is designed to fight a fire as early and locally as possible, while the total flooding would come if the fire extends, it was considered that at least two sections would be necessary.

Submitted by WP/FP&S Chair
14/01/2005

Technical Background Document
UI SC199 (June 2005)

Fire fighting Systems in Cargo Sampling Lockers
(Reg. II-2/10.6.3.2)

An increased number of questions concerning fire protection of lockers containing cargo samples are received from operators of oil and chemical tankers following comments from part state inspectors or charter's inspectors.

Classification Societies have treated these spaces on board oil tankers as "isolated cargo handling gear lockers" as discussed in SOLAS Reg. II-2/4.5.1.2. These spaces have not been required to be fitted with fixed fire extinguishing system.

In this context, it should also be noted that these spaces should not contain ignition sources. Further these spaces are arranged on weather deck within the cargo area, considered protected by the deck foam system.

For chemical tankers, the IBC Code 16.5 allows space for stowage of cargo samples within the cargo area, but does not mention that this space shall be protected by a fixed fire extinguishing system. Furthermore, within this Code they are defined as cargo service spaces, possibly excluding them from service spaces.

Based on the above, IACS considers a fire extinguishing system is not required for the cargo sample lockers and an interpretation was drafted for this purpose.

Submitted by WP/FP&S Chair
14/01/2005

SC 200 "Container storage for equivalent fixed fire extinguishing systems"

Summary

Original UI provided interpretation of requirements to FSS Code, Ch. 5, 2.5.
Rev.1 provided updates following FSS Code editorial changes due to amendments.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (May 2022)	05 May 2022	-
New (June 2005)	June 2005	1 January 2006

- **Corr.1 (May 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolutions by Safety Panel)

2 Main Reason for Change:

Amendment to FSS Code (MSC.339(91)) deleted paragraph 2.4 and renumbered paragraphs in Chapter 5.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel), noting that in FSS Code as amended by Res. MSC.339 (91) paragraph 2.4 has been deleted and remaining paragraphs renumbered, the Safety Panel agreed to update the regulation's references in the UI, according to the FSS Code amendment in 2 above.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 09 September 2019	(Made by: Statutory Panel)
Panel Approval	: 12 April 2022	(Ref: PS19002dISd)
GPG Approval	: 05 May 2022	(Ref: 19001sIGb)

- **New (June 2005)**

Records are not available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC200:

Annex 1. **TB for New (June 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.1 (May 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC200 (New June 2005)

This UI was developed to ensure a proper distribution of the containers of extinguishing gas where they are stored within the protected space, and on the basis of MSC/Circ. 848, paragraph 11.

Submitted by WP/FP&S Chair
14 January 2005

Technical Background (TB) document for SC 200 (Corr.1 May 2022)

1. Scope and objectives

Review of the Unified interpretation SC 200 (June 2005)

2. Engineering background for technical basis and rationale

This original UI was developed to ensure a proper distribution of the containers container storage arrangements for equivalent fixed gas fire-extinguishing systems as per FSS Code Ch 5, 2.5, where they are stored within the protected space.

The amendments contained in Res. MSC.339(91) (adopted on 30 November 2012) introduced editorial changes that do not modify the FSS Code requirement, but require an update in the UI due to the renumbering of the FSS Code Chapter 5 paragraphs.

3. Source/derivation of the proposed IACS Resolution

Not applicable

4. Summary of Changes intended for the revised Resolution:

Updated regulation’s references.

5. Points of discussions or possible discussions

Safety panel unanimously agreed UI SC200 Rev.1 based on amendments to FSS Code.

6. Attachments if any

None

SC 201 "Location of paint lockers within cargo block"

Summary

This Original Resolution provided interpretation of requirements to SOLAS regulations II-2/4.5.1.2 and 4.5.1.3, IBC Code regulation 3.2.1 prepared by the statutory Panel. Revision 1 provided updated version of the UI following FSS Code amendments

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (May 2022)	05 May 2022	-
Rev.1 (Apr 2006)	April 2006	1 July 2006
Corr.1 (Jan 2006)	January 2006	-
New (Sept 2005)	September 2005	1 January 2006

- **Corr.1 (May 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolutions by Safety Panel)

2 Main Reason for Change:

Amendment to IBC Code Res. MSC.176(79) updated the SOLAS Convention reference.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel), noting that in IBC Code as amended by Res. MSC.176 (79) SOLAS Convention references in paragraph 3.2.1 Chapter 3 of IBC Code have been modified, an updated version of the UI has been prepared.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 09 September 2019	(Made by: Statutory Panel)
Panel Approval	: 12 April 2022	(Ref: PS19002dISd)
GPG Approval	: 05 May 2022	(Ref: 19001sIGb)

- **Rev.1 (Apr 2006)**

Records are not available.

- **Corr.1 (Jan 2006)**

Records are not available.

- **New (Sept 2005)**

Records are not available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC201:

Annex 1. **TB for New (Sep 2005)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Apr 2006)**

See separate TB document in Annex 2.

Annex 3. **TB for Corr.1 (May 2022)**

See separate TB document in Annex 3.

***Note**: There is no separate Technical Background (TB) document for Corr.1 (Jan 2006)*

Technical Background (TB) document for UI SC201 (New Sep 2005)

This Unified Interpretation has been developed in order to fix common acceptability criteria for allowing the installation of paint lockers within the cargo block of oil and chemical tankers. No major opposition to this UI is recorded.

Submitted by Statutory Panel Chairman
Aug 2005

Technical Background (TB) document for UI SC201 (Rev.1 April 2006)

The Unified Interpretation SC 201 was presented to FP 50 but was not accepted because the Sub-Committee "expressed the view that there was no justification for this interpretation since the SOLAS requirements were clear on this issue". Therefore, the Statutory Panel decided that the UI should be revised accordingly.

Submitted by Statutory Panel Chairman
March 2006

Note: The IACS submission to SUB-COMMITTEE ON FIRE PROTECTION FP 51 is annexed (C/GPG s/n 6011a).

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Unified Interpretation to SOLAS regulations II-2/4.5.2 and IBC Code regulation 3.2.1

Submitted by the International Association of Classification Societies (IACS)

SUMMARY	
Executive summary	This paper advises on the revised IACS Unified Interpretation SC XXXX to be implemented by IACS Members
Action to be taken	Paragraph 7
Related documents	FP 50/11/2, FP 50/21, paragraph 11.6

Background

1. With document FP 50/11/2 IACS submitted to the consideration of the Sub-Committee the Unified Interpretation SC 201.

2. This Unified interpretation contained technical requirements whose application might allow, in IACS understanding, paint lockers to be located above the tanks and spaces defined in SOLAS II-2/4.5.1.2 for oil tankers and the cargo area for chemical tankers.

3. The Sub-Committee considered the Unified Interpretation SC 201 (FP50/11/2), and expressed the view that there was no justification for this interpretation since the SOLAS requirements were clear on this issue.

4. The decision in 3. was taken in spite of the fact that opinions were expressed during the plenary session indicating that what is contained in the Unified Interpretation reflected a practice applied occasionally by Industry and accepted by some Administrations.

5. In order to document the decision taken by the Sub-Committee at its 50th session in a more transparent manner, and with the view of ensuring a harmonized application of both SOLAS regulation II-2/4.5.2 and IBC Code regulation 3.2.1, IACS has withdrawn Rev.0 of SC201 and revised the text of the Unified Interpretation SC 201 as presented at Annex in accordance with the decision of FP 50.

6. The interpretation has been uniformly implemented by IACS Members and Associates to ships constructed or arrangements fitted on or after 1 July 2006 when acting as recognized organizations, authorized by flag State Administrations to act on their behalf, unless advised otherwise.

Action requested of the Sub-Committee

7. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

Technical Background (TB) document for SC 201 (Corr.1 May 2022)

1. Scope and objectives

Review of the Unified interpretation SC 201 Rev.1.

2. Engineering background for technical basis and rationale

This original UI was developed to ensure an harmonized application of SOLAS Convention and IBC Code regulations related to the location of paint lockers within the cargo block.

The amendments contained in Res. MSC.176 (79) introduced editorial changes in the IBC Code by updating SOLAS Convention references. The technical content did not change.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

Updated regulation’s references.

5. Points of discussions or possible discussions

Safety panel unanimously agreed UI SC201 Rev.1 based on amendments to IBC Code.

6. Attachments if any

None

Technical background

UI SC203
(March 2006)

Carriage requirements for shipborne navigational systems and equipment

This Unified Interpretation has been developed on the basis of the considerations reported in the following.

1. In respect to the possibility of installing a gyrocompass for complying with regulation V/19.2.2.1, it is noted that this regulation requires that the additional equipment (*other mean*) need only "duplicate" the functions under regulation V/19.2.1.1 but it does not need to be an exact duplicate of the equipment provided under regulation V/19.2.1.1. Therefore, it is understood that nothing in regulation V/19.2.2.1 that prohibits the "*other means*" from being powered (e.g. gyrocompass).

2. Regarding the assumption that a gyrocompass fitted to comply with regulation V/19.2.2.1 cannot be credited to fulfill regulation V/19.2.5.1, this is based on the text of the chapeaux for each of the following regulations:

- reg. V/19.2.2 requires a spare magnetic compass "*in addition to*" the equipment required by reg. V/19.2.1.1;
- reg. V/19.2.3 requires various equipment "*in addition to*" the equipment required by reg. V/19.2.2; and
- reg. V/19.2.5.1 requires a gyrocompass or other means "*in addition to*" the equipment required by reg. V/19.2.3.

3. The only dissenting view submitted on this UI is contained in 5030kNKa). NK considers the following as “means of duplicate equipment” in V/19.2.2.1 and the spare magnetic compass specified in V/19.2.2.1 is not required in case where,

(1) A standard magnetic compass installed on the compass deck is readable at the main steering position by reflecting glass etc. (V/19.2.1.1), and
(2) A gyro compass required by V/19.2.5.1 is installed on board and a gyro repeater is provided at the main steering position (prescribed by the amendment to V/19.2.5.1 at MSC.79).

NK argued that the present regulation of SOLAS V/19 was amended at MSC 73 in 2000 and the existing regulation to a spare magnetic compass before 2000 was V/12(b)(iii): “*A spare magnetic compass, interchangeable with the standard compass shall be carried, unless the steering compass mentioned in subparagraph (i)(2) or a gyro compass is fitted.*”

Based on the above, NK considered that it is clearly specified that in case where a steering compass or gyro compass is provided, a spare magnetic compass is not required. NK’s interpretation of V/19.2.2.1 is developed based on this regulation. Furthermore, NK does not consider that intention/purpose at MSC73 was amendment of the regulation V/12(b)(iii) to a spare magnetic compass.

On the other hand, the draft UI specifies that "*a gyro compass can be fitted*" as a spare magnetic compass "*however this gyro compass cannot credited to fulfill regulation V/19.2.5.1*". This means that standard magnetic compass (V19.2.1.1), gyro compass as a spare magnetic compass (V/19.2.2.1) and one more gyro compass(V/19.2.5.1) are required under the UI. From the safety navigation point of view, NK considers that there is no compelling need and cost-effectiveness to require two(2) gyrocompasses at the main steering position.

Technical background

UI SC203 - Carriage requirements for shipborne navigational systems and equipment

(New – March 2006) and (Corr. 1 – May 2007)

March 2006

This Unified Interpretation has been developed on the basis of the considerations reported in the following.

1. In respect to the possibility of installing a gyrocompass for complying with regulation V/19.2.2.1, it is noted that this regulation requires that the additional equipment (*other mean*) need only "duplicate" the functions under regulation V/19.2.1.1 but it does not need to be an exact duplicate of the equipment provided under regulation V/19.2.1.1. Therefore, it is understood that nothing in regulation V/19.2.2.1 that prohibits the "*other means*" from being powered (e.g. gyrocompass).

2. Regarding the assumption that a gyrocompass fitted to comply with regulation V/19.2.2.1 cannot be credited to fulfil regulation V/19.2.5.1, this is based on the text of the chapeaux for each of the following regulations:
   - reg. V/19.2.2 requires a spare magnetic compass "*in addition to*" the equipment required by reg. V/19.2.1.1;
   - reg. V/19.2.3 requires various equipment "*in addition to*" the equipment required by reg. V/19.2.2; and
   - reg. V/19.2.5.1 requires a gyrocompass or other means "*in addition to*" the equipment required by reg. V/19.2.3.

3. The only dissenting view submitted on this UI is contained in 5030kNKa). NK considers the following as "means of duplicate equipment" in V/19.2.2.1 and the spare magnetic compass specified in V/19.2.2.1 is not required in case where,
   (1) A standard magnetic compass installed on the compass deck is readable at the main steering position by reflecting glass etc. (V/19.2.1.1), and
   (2) A gyro compass required by V/19.2.5.1 is installed on board and a gyro repeater is provided at the main steering position (prescribed by the amendment to V/19.2.5.1 at MSC.79).

NK argued that the present regulation of SOLAS V/19 was amended at MSC 73 in 2000 and the existing regulation to a spare magnetic compass before 2000 was V/12(b)(iii): "*A spare magnetic compass, interchangeable with the standard compass shall be carried, unless the steering compass mentioned in subparagraph (i)(2) or a gyro compass is fitted.*"

Based on the above, NK considered that it is clearly specified that in case where a steering compass or gyro compass is provided, a spare magnetic compass is not required. NK's interpretation of V/19.2.2.1 is developed based on this regulation. Furthermore, NK does not consider that intention/purpose at MSC73 was amendment of the regulation V/12(b)(iii) to a spare magnetic compass.

On the other hand, the draft UI specifies that "*a gyro compass can be fitted*" as a spare magnetic compass "*however this gyro compass cannot credited to fulfil regulation V/19.2.5.1*". This means that standard magnetic compass (V19.2.1.1), gyro compass as a spare magnetic compass (V/19.2.2.1) and one more gyro compass(V/19.2.5.1) are required under the UI. From the safety navigation point of

view, NK considers that there is no compelling need and cost-effectiveness to require two (2) gyrocompasses at the main steering position.

Corr. 1. May 2007

The UI had been submitted to NAV 52 where it was approved by the Sub-Committee for inclusion in a MSC/Circ Circular. This circular has been lately approved by MSC 82.
The text of the original UI was then editorially modified with the addition of the reference to MSC.1/Circ. 1224.

Submitted by Statutory Panel Chairman
20 April 2007

Permanent Secretariat note, May 2007:

Corr.1 approved by GPG 21 May 2007, ref. 6191aIGb.

SC 204 "Storage of fire-extinguishing media forward the cargo holds"

Summary

This Original Resolution provided interpretation of requirements to SOLAS regulation II-2/10.4.3. and FSS Code paragraph 2.1.3.3, Chapter 5 prepared by the statutory Panel. Revision 1 provided updates version of the UI following FSS Code amendment

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (May 2022)	05 May 2022	-
Original version	24 April 2006	1 January 2007

- **Corr.1 (May 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolutions by Safety Panel)

2 Main Reason for Change:

Amendment to FSS Code Res. MSC. 206 (81) modified requirements in Chapter 5, paragraph 2.1.3.3. The change does not have any impact on the UI text, nevertheless the new text of paragraph 2.1.3.3 requires updates in the UI.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel), noting that in FSS Code as amended by Res. MSC.206 (81) the text of the relevant FSS Code amended paragraph has been updated.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 09 September 2019	(Made by: Statutory Panel)
Panel Approval	: 12 April 2022	(Ref: PS19002dISd)
GPG Approval	: 05 May 2022	(Ref: 19001sIGb)

- **New (Apr 2006)**

Records are not available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC204:

Annex 1. **TB for New (Apr 2006)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.1 (May 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for SC 204 (New Apr 2006)

Arrangements have been found where the storage rooms of fire-extinguishing medium of systems protecting cargo holds are located in the forward part of the ship but aft of the collision bulkhead. It is noted that release of the fire-extinguishing medium (generally CO2) into a cargo hold is usually performed locally from inside the storage room by manually controlling the release of gas into the concerned space; however, this type of arrangement seems not to meet the requirement of paragraph 2.1.3.3, Chapter 5, of the FSS Code, as the controls could be cut off in the case of a cargo hold fire and, therefore the means of control would not be readily accessible.

The UI was developed with the aim of specifying the criteria on the basis of which arrangements where the fixed fire-fighting media are stored in room located forward the protected cargo holds may be accepted.

Submitted by Statutory Panel Chairman
Approved by 6055_IGc, 24 April 2006

Technical Background (TB) document for SC 204 (Corr.1 May 2022)

1. Scope and objectives

Review of the Unified interpretation SC 204.

2. Engineering background for technical basis and rationale

This original UI was developed to ensure an harmonized application of SOLAS Convention and FSS Code regulations related to the storage of fire-extinguishing media forward the cargo holds.

The amendments contained in Res. MSC.206 (86) introduced a new requirement that does not have any impact with the content of the UI.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

Updated regulation’s text.

5. Points of discussions or possible discussions

Safety panel unanimously agreed UI SC204 Corr.1 based on amendments to FSS Code.

6. Attachments if any

None

Technical Backround
UI SC 205 (New, May 2006)

The Statutory Panel felt it necessary to seek clarification from IMO S-C FP if the intent of SOLAS regulation II-2/20.6.2 was to require cargo holds in ships carrying vehicles with fuel in their tanks in open or closed containers to be provided with portable fire-fighting appliances.

This seemed not justified based on the following factors:

.1 the design of ship cargo holds (e.g., presence of cell guides, lack of continuous deck except at the bottom);
.2 the impracticality of gaining access to, and consequently the utility of, the portable fire extinguishers located according to SOLAS regulation II-2/20.6.2.1; and
.3 the questionable effectiveness of fog applicators and foam applicator as per SOLAS regulation II-2/20.6.2.2 in such spaces.

In the light of the above, document FP 50/20 was submitted.

The S-C agreed (FP 50/21, paragraph 20.1) that it was not the intent of SOLAS regulation II-2/20.6.2 to require cargo holds in ships, loaded with vehicles with fuel in their tanks and stowed in open or closed containers, to be provided with portable fire-fighting appliances based on the reasons highlighted in the above.

Having considered the S-C view, the Statutory Panel decided to prepare a relevant UI to SOLAS regulation under discussion.

This UI will be presented, under an appropriately drafted submission, to FP 51.

Note:

UI SC205(New, May 2006) was submitted to IMO FP 51 on 4 May 2006. Attached.

Approved on 2 May 2006
(6084_IGb)

FP 51/9/???
[DATE]
Original: ENGLISH

SUB-COMMITTEE ON FIRE PROTECTION
51st SESSION
Agenda Item 9

CONSIDERATION OF IACS UNIFIED INTERPRETATIONS

Unified Interpretation to SOLAS regulation II-2/20.6.2

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive Summary: This paper advises on IACS Unified Interpretation SC 205

Action to be taken: See paragraph 5

Related Documents: SOLAS Chapter II-2, FP 50/20, FP 50/21 (paragraph 20.1)

1 IACS submitted to the fiftieth session of the Sub-Committee (FP 50/20) a request of clarification on the application of SOLAS regulation II-2/20.6.2 to cargo holds, loaded with vehicles with fuel in their tanks and stowed in open or closed containers.

2. In this respect, IACS also expressed the opinion that it was not the intent of SOLAS regulation II-2/20.6.2 to require spaces mentioned under previous paragraph 1 to be provided with portable fire-fighting appliances in consideration of the following:

.1 the design of ship cargo holds (e.g., presence of cell guides, lack of continuous deck except at the bottom);

.2 the impracticality of gaining access to, and consequently the utility of, the portable fire extinguishers located according to SOLAS regulation II-2/20.6.2.1; and

.3 the questionable effectiveness of fog applicators and foam applicator as per SOLAS regulation II-2/20.6.2.2 in the spaces under consideration.

3 The Sub-Committee agreed (FP 50/21, paragraph 20.1) with the view expressed by IACS as reported in the above. UI SC 205, given at Annex was prepared on the basis of the clarification agreed by the Sub-Committee.

4 UI SC 205 is applied by IACS members from 1 July 2006 when acting as recognized organizations, authorized by flag State Administrations to act on their behalf, unless advised otherwise.

Action requested of the Sub-Committee

5. The Sub-Committee is invited to consider the foregoing discussion and take action as appropriate.

******

ANNEX

UI SC 205 to be inserted

UI SC207 "SOLAS XII/5 in terms of Structural Strength of Bulk Carriers in case of Accidental Hold Flooding"

Summary

The UI SC207 Corrigenda 2 provides editorial correction of the references made to the IACS Unified Requirement (UR).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Jan 2020)	17 January 2020	-
Corr.1 (Oct 2007)	Oct. 2007	-
New (June 2006)	June 2006	1 July 2006

- **Corr.2 (Jan 2020)**

1 Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

The GPG tasked the Hull Panel under the standing task for maintenance of IACS Resolutions to identify the ones needing update among the resolutions and recommendations which have not been updated for the last ten years.

IACS Member identified that the UI SC207 makes reference to previous version of IACS Unified Requirement (UR).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

N/A

4 History of Decisions Made:

During the HP30 Meeting, the Hull Panel Members confirmed their agreement to update the UI SC207.

One Member proposed to update the references made to the IACS Resolutions since these resolutions have been revised.

The Hull Panel discussed the subject via correspondence and unanimously agreed to

delete the revision numbers of the relevant URs in order to prevent updates due to simple revisions of these resolutions.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	April-2019 Made by: Hull Panel
Panel Approval:	11 June 2019
GPG Approval:	17 January 2020

- **Corr.1 (Oct 2007)**

No HF/TB document available.

- **New (Feb 2006)**

No HF document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC207:

Annex 1. **TB for New (June 2006)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for the Corr.1 (Oct 2007) and Corr.2 (Jan 2020).*

Hull Panel Task: 40

Technical Background

UI SC207
(NEW June 2006)

SOLAS XII/5 in terms of Structural Strength of Bulk Carriers in case of Accidental Hold Flooding
(SOLAS regulation XII/5)

In the Amendments of SOLAS Chapter XII, adopted by MSC as resolution MSC.170(79), which comes into force on 1 July 2006, the definition of Bulk Carriers has been extended from those in the SOLAS Chapter XII before the amendments and IACS Unified Requirements Z11.2.2.

According to UR Z11.2.2, bulk carriers means ships constructed generally with single deck, double bottom, hopper side tanks and topside tanks and with single or double side skin construction in cargo length area, etc. However, the new definition of the amended SOLAS XII does not refer to such cargo hold cross section configurations specified in UR Z11.2.2. In addition, for the purpose of their application regarding coming into force date, SOLAS XII uses keel laying date but IACS UR S17, S18 and S20 use contract date. As a result, IACS UR S17, S18 and S20, which have been referred to from MSC Resolution 6, do not cover all ships which shall comply with the amended SOLAS XII/ 5 in terms of application date and definition of bulk carriers. Therefore, IACS developed Unified Interpretation (UI) incorporating IACS URs S17/S18/S20 to bridge the gap between the 1 July 2006 contract for construction date associated with the amended IACS URs and the 1 July 2006 keel laying date associated with the entry into force of the revised SOLAS XII as per MSC.170(79) in order to properly address bulk carriers of double side skin construction subject to the revised SOLAS XII/5.2.

Ref.

√ SOLAS regulation XII/1.adopted as Resolution MSC.170(79)
√ SLS.14/Circ.250
√ IACS UR Z11.2.2
√ IACS Common Structural Rules for Bulk Carriers

UI SC208 "SOLAS XII/6.5.1 in terms of protection of cargo holds from loading/discharge equipment"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (June 2009)	29 July 2009[1]	-
Corr.1 (Oct 2007)	5 October 2007	-
NEW (June 2006)	23 June 2006	1 July 2006

Note:
1 A revised version of Corr.2 (June 2009), replacing the original version approved on 1 June 2009, was approved by GPG on 29 July 2009. See 'Update July 2009' underneath Corr.2 notes.

- **Corr.2 (June 2009)**

.1 Origin for Change:

☑ Based on IMO Regulation

.2 Main Reason for Change:

UI SC208 is corrected to agree with the SLS.14/Circ.250 interpretation of SOLAS.

.3 History of Decisions Made:

N/A

.4 Other Resolutions Changes

N/A

.5 Any dissenting views

N/A

.6 Dates:

Panel Submission to GPG: *14 May 2009*
GPG Approval: *1 June 2009 (ref. 9570_IGb)*

Update July 2009:
Based on client feedback to members, Corr.2 (June 2009) was re-issued to further clarify the applicability of changes made in Corr.2. In this revised version of Corr.2 an additional note was added to specify that the corrected interpretation in Corr.2 is not applicable retrospectively (i.e. to ships contracted for construction before 1 July 2009).

- Panel Submission to GPG: *16 July 2009*
- GPG Approval: *28 July 2009 (ref. 9570_IGf)*

- **Corr.1 (Oct 2007)**

No TB available - Addition of ‘Contracted for Construction’ footnote (ref. 7546a).

- **NEW (June 2006)**

See TB in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC208:

Annex 1. **TB for Original Resolution(June 2006)**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for Corr.1 (Oct 2007), Corr.2 (June 2009).*

Hull Panel Task: 41

Technical Background

UI SC208
(NEW June 2006)

SOLAS XII/6.5.1 in terms of protection of cargo holds from loading/discharge equipment
(SOLAS regulation XII/6.5.1 and SLS.14/Circ.250)

The definition of bulk carriers in the revised SOLAS XII which comes into force on 1 July 2006 is expanded from the IACS definition as described in UR Z11.2.2 in terms of the cargo hold cross section configuration. In addition, the coming into force date of revised SOLAS XII is different from that of IACS CSR. Therefore, IACS developed Unified Interpretation (UI) codifying SLS.14/Circ.250 and the approach adopted by IACS CSR for compliance with SOLAS XII/6.5.1.

Ref.

- ✓ SOLAS regulation XII/1.adopted as Resolution MSC.170(79)
- ✓ SLS.14/Circ.250
- ✓ IACS UR Z11.2.2
- ✓ IACS Common Structural Rules for Bulk Carriers

UI SC209 “SOLAS XII/6.4.3 in terms of redundancy of stiffening structural members for vessels not designed according to CSR (SOLAS regulation XII/6.4.3 and SLS.14/Circ.250)”

Summary

The UI SC 209 revision 1 provides editorial corrections to references made to the SOLAS regulation (item renumbering) and consistency with the harmonized CSR (Common Structural Rules for Bulk Carriers and Oil Tankers) and its cross references of chapters and sections.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2019)	12 December 2019	1 July 2020
New (June 2006)	No record	1 July 2006

Rev.1 (Dec 2019)

1 Origin for Change:

☒ Suggestion by IACS members

2 Main Reason for Change:

The GPG tasked the Hull Panel under the standing task for maintenance of IACS Resolutions to identify the ones needing update among the resolutions and recommendations which have not been updated for the last ten years.

IACS Member identified that the UI SC209 (New June 2006) makes reference to previous version of SOLAS regulation as well as to the CSR for Bulk Carriers which has been replaced by the harmonized CSR in 2015.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

During the HP30 Meeting the Hull Panel Members confirmed their agreement to update the UI SC209.

One Member proposed to update the references made to the SOLAS regulation and to the current version of the harmonized CSR, its chapters and sections. The Hull Panel discussed the subject via correspondence and unanimously agreed to the proposal made by the Member.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal: May 2019 Made by: Hull Panel
Panel Approval: 22 November 2019 (Ref: 19243_PHa)
GPG Approval: 12 December 2019 (Ref: 19243_IGb)

- **New (June 2006)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

In the Amendments of SOLAS Chapter XII, adopted by MSC as resolution MSC.170 (79), which comes into force on 1 July 2006, the definition of Bulk Carriers has been extended from those in the SOLAS Chapter XII before the amendments and IACS Unified Requirements Z11.2.2.

According to UR Z11.2.2, bulk carries mean ships constructed generally with single deck, double bottom, hopper side tanks and topside tanks and with single or double side skin construction in cargo length area, etc. However, the new definition of the amended SOLAS XII does not refer to such cargo hold cross section configuration specified in UR Z11.2.2.

Therefore, IACS has developed this Unified Interpretation (UI) to bridge the gap between

- the 1 April 2006 contract for construction date associated with CSR for bulk carriers and the 1 July 2006 keel laying date associated with the entry into force of the amended SOLAS XII as per MSC.170(79) and

- the definition of bulk carries according to UR Z11.2.2 and the new definition of the amended SOLAS XII as per MSC.170(79) and to give an equivalent criteria regarding lateral buckling of ordinary stiffeners for ships which shall comply with SOLAS XII/6.5.3, but are not designed according to CSR for bulk carriers Ch. 6 Sec. 3.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

- Hull Panel Task: 42

- No other records are found

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal:
Panel Approval:
GPG Approval: *(Ref.: 4154aIGa:GPG 60 FUA 23-2)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC209:

Annex 1. **TB for New (June 2006)**

See separate TB document in Annex 1.

Note: *There is no separate Technical Background (TB) document for Rev.1 (Dec 2019).*

Hull Panel Task: 42

Technical Background

UI SC209
(NEW June 2006)

SOLAS XII/6.5.3 in terms of redundancy of stiffening structural members for vessels not designed according to CSR for Bulk Carriers (SOLAS regulation XII/6.5.3 and SLS.14/Circ.250)

In the Amendments of SOLAS Chapter XII, adopted by MSC as resolution MSC.170 (79), which comes into force on 1 July 2006, the definition of Bulk Carriers has been extended from those in the SOLAS Chapter XII before the amendments and IACS Unified Requirements Z11.2.2.
According to UR Z11.2.2, bulk carries mean ships constructed generally with single deck, double bottom, hopper side tanks and topside tanks and with single or double side skin construction in cargo length area, etc. However, the new definition of the amended SOLAS XII does not refer to such cargo hold cross section configuration specified in UR Z11.2.2.

Therefore, IACS has developed this Unified Interpretation (UI) to bridge the gap between

- the 1 April 2006 contract for construction date associated with CSR for bulk carriers and the 1 July 2006 keel laying date associated with the entry into force of the amended SOLAS XII as per MSC.170(79) and

- the definition of bulk carries according to UR Z11.2.2 and the new definition of the amended SOLAS XII as per MSC.170(79)

and to give an equivalent criteria regarding lateral buckling of ordinary stiffeners for ships which shall comply with SOLAS XII/6.5.3, but are not designed according to CSR for bulk carriers Ch. 6 Sec. 3.

Ref.
- ✓ SOLAS regulation XII/6.5 adopted as Resolution MSC.170(79)
- ✓ SLS.14/Circ.250
- ✓ IACS UR Z11.2.2
- ✓ IACS Common Structural Rules for Bulk Carriers
- ✓ Principles of JBP Compliance with SOLAS XII/6.5.3 (Ref.: 4154aIGa: GPG 60 FUA 23-2)

Technical background

UI SC210(New, June 2006)

The amendments to regulation XII/6 adopted by resolution MSC.170(69) have introduced, among others (see item 15.1.5), a requirement for the minimum distance between the outer shell and the inner shell within the extent of the double-side skin construction.

The present UI has been developed in order to give guidance on how the minimum distance within the extent of the double-side skin construction shall be measured, bearing in mind that that a "*double-side skin"*, by definition, extends from the double bottom to the deck.

Submitted by Statutory Panel
31 May 2006

UI SC211 "Protection of fuel oil tanks and designation of fore peak spaces"

Summary

In Rev.1 of the UI, modifications have been made to align this UI with the amendments to UR F44 in its Rev.3.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Sep 2024)	09 September 2024	1 January 2026
Corr.1 (Oct 2007)	October 2007	-
New (June 2006)	-	-

- **Rev. 1 (Sep 2024)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

To expand the application.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

In context of the revision of UR F44 it was agreed to task a PT Text. to align the approach in UR F 44 with the IEC 60092 and with the UI SC 274. The PT considered the following objectives:

- To review associated risks and evaluate consequences of alignment of access requirements to FPT for both oil- and chemical tankers.
- To develop an updated UR F44 based on a common understanding and interpretation of the input from IACS-members.
- To review associated risks and evaluate consequences of defining compartment built on top of compartment adjacent to cargo tank, to not be defined as part of cargo area. To avoid bosun store being defined as being within cargo area, in line with multiple vessel's being built.
- To develop an updated UI SC 211 based on a common understanding and interpretation of the input from IACS-members.

Draft Rev. 3 of UR F44 was provided for an industry hearing. Comments received were considered.

5 Other Resolutions Changes:

UR F44 Rev.3.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal : 04 April 2017 (Made by: IACS Member)
Panel Approval : 13 August 2024 (Ref: PS17010dISzzl)
GPG Approval : 09 September 2024 (Ref: 18035_IGt)

- **Corr. 1 (Oct 2007)**

No HF available

- **New (June 2006)**

See TB in Part B

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC 211:

Annex 1. **TB for New (June 2006)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev. 1 (Sep 2024)**

See separate TB document in Annex 2.

***Note**: There are no separate Technical Background (TB) documents developed for Corr.1 (Oct 2007).*

Technical background

This UI has been developed to clarify that arrangement as in fig.1 safely accomplish the requirements for FOT, slop tanks or BWT with respect to the requirements on the protection of Machinery Spaces contained in SOLAS Reg. II-2/4.5.1.1.

The reasons of such interpretation are as follows:

1) In the Unified Interpretation to SOLAS II-2/Reg.4.5.1 contained in MSC/Circ.1120 there is a provision "for the purpose of this regulation" for "cofferdam".
2) As "the purpose of this regulation" means "separation of cargo oil tanks from engine room", FOT corresponds to this "cofferdam" in case of Fig. 1.
3) "Void space or BWT protecting FOT" that are arranged to meet MARPOL Annex I, Reg. 13E(1) (or revised MARPOL I/18) are for the purpose to protect the FOT, not for the purpose to isolate the slop tank from the engine room.
4) From the above, "void space or BWT protecting FOT" need not be treated as a "cofferdam" specified in SOLAS II-2, Reg. 4.5.1.

Furthermore to the items in the above, it shall be noted that such an arrangement permits compliance with the principle described in UI to SOLAS II-2/Reg.4.5.1 in MSC/Circ.1120 for the " single failure principle for corner-to-corner situation" even in case of a crack occurring at cruciform, leaked cargo oil is retained in the void space or BWT and does not leak into the engine room.

This UI is to be uniformly implemented by IACS Societies for ships contracted for construction on or after 1 July 2006. However, Societies are not precluded from applying this UI before such date.

Technical Background (TB) document for UI SC211 (Rev.1 Sep 2024)

1. Scope and objectives

a. To review associated risks and evaluate consequences of amending UI SC 211 to redefine part forward of cargo tanks to not be considered as part of cargo area.

b. To develop an updated UI SC 211 based on a common understanding and interpretation of the input from IACS-members.

2. Engineering background for technical basis and rationale

a) Industry Practice

With respect to the Cargo Area definitions based on industry practice, the following may be noted:

As per ICS for Chemical Ships:

Cargo Area: That part of the ship which contains the whole cargo system and cargo Pump rooms, and includes the full beam deck area over the length of the ship above the cargo containment system. Where fitted, the cofferdams, ballast or void spaces at the after end of the aftermost cargo space or at the forward end of the forward cargo space are excluded from the cargo area.

ICS Tanker Safety Guide (Liquified Gas):

Cargo area: That part of the ship which contains the whole cargo system, cargo pump rooms and compressor rooms, and includes the full beam deck area over the length of the ship above the cargo containment system. Where fitted, the cofferdams, ballast or void spaces at the after end of the aftermost cargo space or the forward end of the forwardmost cargo space are excluded from the cargo area.

Void space: The enclosed space in the cargo area external to a cargo containment system, not being a hold space, ballast space, fuel oil tank, cargo pump or compressor room, or any space in normal use by personnel.

Gas Ship:
Cargo Area: That part of the ship which contains the cargo containment system, cargo pump and compressor rooms, and includes deck area over the full beam and length of the ship above the foregoing. Where fitted, the cofferdams, ballast or void spaces at the after end of the aftermost hold space or the forward end of the forward most hold space are excluded from the cargo area.

b) Class inputs:

The PT members were asked to provide inputs Regarding UI SC 211 (and UI SC 201 which also is affected), and to check with the respective class what would be the preferred option to address the issue with paint store and bosun store, potentially being located within what SOLAS and IBC code refer to as cargo area.

c) Project Team meeting inputs

- Currently multiple vessels are being built with fore peak tank and / or void being located adjacent to cargo tank. This implies that the bosun store (and paint store, and other stores) are located within cargo area as per the way SOLAS and IBC code is written.

- IBC / SOLAS don't clearly mention bosun store / paint store in cargo area, so it's a matter of interpretation in case bosun store/ paint store is located within IBC/SOLAS definition of cargo area.

    - PT could define in the UI that SOLAS / IBC code states that the cargo area extends to the area above fore peak tank and void space (or other space) being located adjacent to cargo area, but spaces such as bosun store / paint store (or other relevant spaces) are not considered to be part of cargo area.

    - PT could require a cofferdam between cargo tank and spaces on forecastle space. Either as a permanent cofferdam along the cargo tank bulkhead, or from space being adjacent to cargo tank towards the safe space (less likely).

- In case a cofferdam is required, the team should consider that several vessels in all class societies have bosun store within cargo area, so the PT must then consider all vessels in operation, and potential consequences that could come from port state / vetting or other if they start to question this. Thus, it could be that PT define the bosun store / paint store on forecastle space as not part of cargo area under conditions described in the UI.

- One potential issue was also discussed in light of this:

PT did not want the indirect access from fore peak tank to open deck to be through a bosun store or another compartment where there potentially could be non-EX related equipment. The team checked, whether the below sentence is OK for this, as it says "or similar compartment". IBC Code do not accept operational procedures.

See IBC Code 3.4 which includes wording that could be considered, in addition to the text as per below:

> **3.4 Access to spaces in the cargo area**
> 3.4.1 Access to cofferdams, ballast tanks, cargo tanks and other spaces in the cargo area shall be direct from the open deck and such as to ensure their complete inspection. Access to double-bottom spaces may be through a cargo pump-room, pump-room, deep cofferdam, pipe tunnel or similar compartments, subject to consideration of ventilation aspects.

- In addition, PT discussed the following:

As the previous UI SC 211 was based on oil tankers, and did not really reflect that most designs have void space, perhaps we were to describe clearer how access to the forward void space shall be.
Vessels would typically have one of the 2 options below;
1: C/D or void/WBT between COT and FPT/void
2: FPT and void adjacent to COT.

For 2) we require access from FPT/void directly to open deck.
For 1) For zone 2 and if we read IEC, the access from bosun store is not really acceptable to be from bosun store to zone 2. Thus, we could say that the access must be from open deck through the cofferdam they already have in place. We have clearly specified how to relate to access from bosun store to void.

For FPT in figure 2 in this background document of UI SC 211, according to the UR F44, when the FPT is ballasted with the system serving other ballast tanks within the cargo area, the fore peak tank should be considered as a hazardous area, but not as a cargo area, and the fire risk of fore peak tank of oil tankers and chemical tankers ballasted by the piping in cargo area is similar. Thus, the forecastle area which is protected from the cargo tanks by deep cofferdam should be considered as a hazardous area rather than a part of cargo area.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

N/A

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/3.6
IBC Code 1.3.6

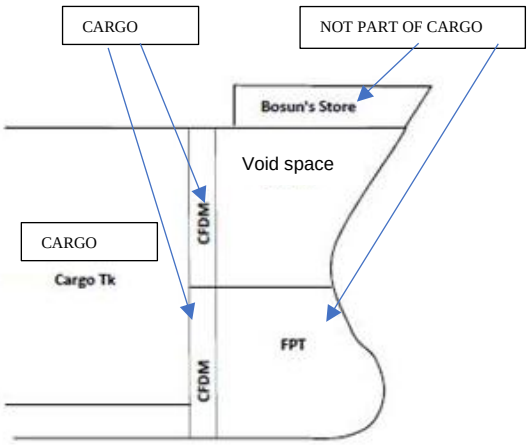
4. Summary of Changes intended for the revised Resolution:

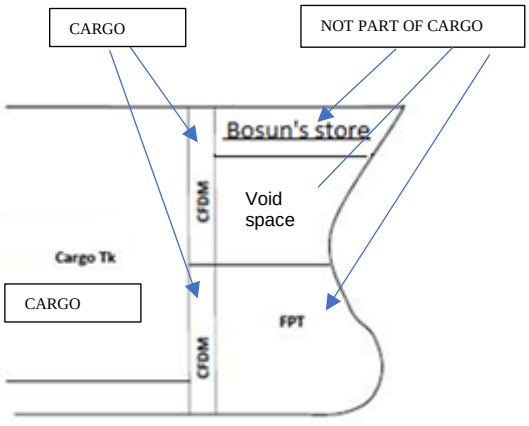
To address all the issues discussed above, the following text and the figures were proposed to be added to the UI.

Interpretation:

The following applies for the spaces referred to in SOLAS II-2/3.6 and IBC Code 1.3.6 being located adjacent to cargo tanks:
Compartments located within the length of the ship above spaces adjacent to cargo tanks are not interpreted to be part of the cargo area in case the following is met:

- *A non-hazardous space in the forecastle area which is protected from the cargo tanks by cofferdam, void space or other compartments, will not be defined as part of cargo area. Compartments located above such separating spaces (cofferdam, void, or other) will be defined as part of cargo area. Ref Fig. 2*





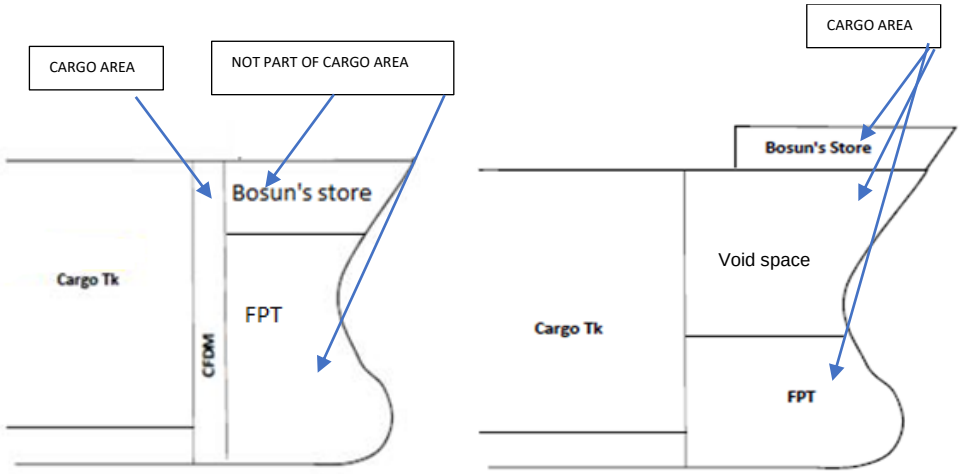


Figure 2

5. Points of discussions or possible discussions

See section 2 above

6. Attachments if any

None

UI SC212 Shipboard fittings and supporting hull structures associated with towing and mooring on conventional vessels (SOLAS regulation II-1/3-8)

Summary

The UI SC212 rev.1 developed in order to clarify new requirements of SOLAS regulation II-1/3-8, adopted by MSC Resolution MSC.474(102) and to also include modifications based on the outcome of review of MSC.1/Circ.1362/Rev.2.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2023)	22 November 2023	1 January 2024
Corr.3 (Dec 2019)	11 December 2019	-
Corr.2 (Oct 2007)	Oct 2007	-
Corr.1 (July 2007)	July 2007	-
New (Sept 2006)	Sept 2006	1 January 2007

- **Rev.1 (Nov 2023)**

1 Origin of Change:

☑ Based on IMO Regulation Res.MSC.474(102)

2 Main Reason for Change:

MSC102 adopted amendments to SOLAS Regulation II-1/3-8 entering into force for ships constructed on or after 1 January 2024, which introduced new requirements to mooring arrangement and equipment, including mooring lines, and referred to updated MSC.1/Circ.1175/Rev.1 and two new Guidelines MSC.1/Circ.1619 and Circ.1620.

IACS has made a complete revision of the existing UI SC212 on how a member class should implement the amended SOLAS Regulation II-1/3-8 and related guidelines when acting as RO on behalf of MA.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The complete revision of UI SC212 was provided by the Hull Panel. IACS submitted the paper to SDC 9 (Jan 2023) as "SDC 9/10 - Draft interpretation of requirements for

mooring arrangement and equipment in SOLAS regulation II-1/3-8” for the updated UI SC212. Drafting Group on Unified Interpretations (item 10) at SDC 9 was established for SDC 9/10. SDC 9 agreed the paper of SDC 9/10 based on modification by the Drafting Group.

A member proposed that in order to eliminate any possible misunderstanding regarding implementation date, the modified paragraph 2 should be deleted. In addition, the terms of “winch brake holding capacities” needs to be replaced with the expression “maximum brake holding load”.

Another member also suggested that the modified paragraph 5 and 6 of the draft interpretation with respect to “first annual, periodical survey & renewal survey” be re-considered.

Hull Panel made decisions that the proposal from two members will be dealt when Hull Panel adopts IACS UI SC212 once it is approved by MSC.

MSC 107 (June 2023) approved the unified interpretations contained in MSC.1/Circ.1362/Rev.2.

Hull Panel reviewed the unified interpretation in the circular and reflected the outcome from SDC 9 and MSC 107 into the IACS UI SC212.

In addition, the followings are reviewed by HP and modified in UI SC212:

- In the paragraph 2 of interpretation of MSC.1/Circ.1362/Rev.2 with respect to the application dates was reviewed and subsequently deleted to prevent potential misinterpretation.

- In the paragraph 3.1 and 4.4 of interpretation of MSC.1/Circ.1362/Rev.2, the term of “winch brake holding capacities” has been replaced with the expression “maximum brake holding load”.

- In the paragraph 5 in MSC.1/Circ.1362/Rev.2, the term of “first annual survey” has been replaced with the expression of “first annual <u>/ intermediate / renewal</u> survey”.

- In the paragraph 6 in MSC.1/Circ.1362/Rev.2, the term of “periodical survey & renewal survey” has been replaced with the expression of “<u>every</u> periodical survey & renewal survey”.

- Note.3 is specified separately for a clear application of both new building and existing ships.

- SOLAS regulation “~~II-1/1.3.3~~II-1/1.1.3.2” in MSC.1/Circ.1362/Rev.2 has been corrected as “II-1/1.3.3” which is an obvious error.

- Non mandatory terms of “recommend and should” has been modified into mandatory expression of “shall”.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal:	May 2021	Made by: Hull Panel	(Ref. PH21006_IHe)
Panel Approval:	13 October 2023		(Ref. PH21006_Ihaj)
GPG Approval:	22 November 2023		(Ref. 22089wIGs)

- **Corr. 3 (Dec 2019)**

Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

The GPG tasked the Hull Panel under the standing task for maintenance of IACS Resolutions to identify the ones needing update among the resolutions and recommendations which have not been updated for the last ten years.

IACS Member identified that the UI SC212 makes reference to previous version of IACS Unified Requirements (UR).

The document referred to UR A2 (Rev.2 or Rev.3), but this UI also applies for later revisions of UR A2. The revision numbers are therefore removed.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

During the HP30 Meeting, the Hull Panel Members confirmed their agreement to update the UI SC212.

One Member proposed to delete the references made to the IACS Resolutions since these resolutions have been revised.

The Hull Panel discussed the subject via correspondence and unanimously agreed to delete the revision numbers of the relevant URs in order to prevent updates due to simple revisions of these resolutions.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	May 2019	Made by: Hull Panel
Panel Approval:	25 November 2019	(Ref: 19244_PHa)
GPG Approval:	11 December 2019	(Ref: 19244_IGb)

- **Corr. 2 (Oct 2007)**

No HF/TB document available.

- **Corr. 1 (July 2007)**

No HF/TB document available.

- **New (Sept 2006)**

No HF available.

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Sept 2006)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) document for the Corr.1 (July 2007), Corr.2 (Oct 2007), Corr.3 (Dec 2019) and Rev.1 (Nov 2023).*

Technical Background (TB) document for UI SC212 (New September 2006)

In the Amendments of SOLAS Regulation II-1/3-8, adopted by MSC as Resolution MSC.194(80), which comes into force on 1 January 2007, towing and mooring equipment is required to be in accordance with the standards of the recognised organisation for which MSC/Circ.1175 is quoted as a reference.

IACS Unified Requirement (UR) A2 (Rev. 2) incorporates the guidance given in MSC/Circ.1175. However for the purpose of the application coming into force SOLAS Reg. II-1/3-8 uses keel laying date, but UR A2 uses contract date. Therefore, IACS developed Unified Interpretation (UI) to bridge the gap between the 1 January 2007 contract for construction date associated with the amended IACS UR A2 and the 1 January 2007 keel laying date associated with the entry into force of the revised SOLAS Reg. II-1/3-8 as per MSC.194(80) in order to properly address towing and mooring arrangements on ships subject to the revised SOLAS Reg. II-1/3-8.

Ref.

☑ SOLAS regulation II-1/3-8 adopted as Resolution MSC.194(80)
☑ IACS UR A2 (Rev. 2)

UI SC 213 "Arrangements for remotely located survival craft"

Summary

UI SC213 was updated to align with MSC.1/Circ.1490/Rev.1

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.5 (Sep 2021)	21 September 2021	1 January 2023
Rev.4 (Nov 2016)	04 November 2016	1 January 2017
Rev.3 (Dec 2015)	21 December 2015	1 January 2017
Rev.2 (Nov 2013)	27 November 2013	1 July 2014
Corr.2 (June 2011)	27 June 2011	-
Rev.1 (Jun 2008)	12 June 2008	1 July 2008
Corr.1 (Oct 2007)	05 October 2007	-
New (Aug 2006)	14 August 2006	1 January 2007

- **Rev.5 (Sep 2021)**

1 Origin of Change:

☑ Follow up from MSC 97 to align with MSC.1/Circ.1490/Rev.1.

2 Main Reason for Change:

MSC 97 agreed to the text of the revised UI with some minor modifications clarifying that the battery powered lamps should be stowed 'close to the liferaft they and embarkation ladder they are intended to serve'. IACS Safety Panel has revised the UI to align with the revised circular.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

MSC 97 made some minor amendments to the text of the IMO Circular MSC.1/Circ.1490 and reissued the circular as MSC.1/Circ.1490/Rev.1.

UI SC213 was therefore amended to align with the reissued IMO circular.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal made by : Safety Panel
Panel Approval : 06 September 2021 (Ref: SP14006bPCzl)
GPG Approval : 21 September 2021 (Ref: 21144_IGb)

- **Rev.4 (Nov 2016)**

1 Origin of Change:

☑ Follow up from SSE 3, and subsequently from MSC 96, regarding paragraph 6 of the UI which was included in square brackets in the draft amendments to MSC.1/Circ.1490 (SSE 3/16 Annex 10) submitted to MSC 97 for approval.

2 Main Reason for Change:

MSC 96 concluded that the proposal in our paper MSC 96/24/6 (to exempt the 10^0 trim condition for the calculation of length of embarkation ladders for the remotely located liferaft) was not a "minor correction" as envisioned by the Council's decision. The Committee therefore invited the co-sponsors to submit a proposal for a new output in accordance with the Committee's Guidelines, for consideration at MSC 97.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Noting that there was not enough support for this proposal amongst Member States, at MSC 96, the Safety Panel, at its sixth meeting, decided not to pursue this matter further, and delete paragraph 6 from Rev. 3 of UI SC213, thereby aligning it with the revised MSC.1/Circ.1490 under approval at MSC 97.

5 Other Resolutions Changes

None.

6 Dates:

Original Proposal made by: Safety Panel
Panel Approval: 03 October 2016 (Ref: SP12019i)
GPG Approval: 04 November 2016 (Ref: 12145cIGl)

- **Rev.3 (Oct 2015)**

.1 Origin of Change

☑ Suggestion by IACS member

.2 Main Reason for change:

To provide the specifications for self-contained battery powered lights to be used as an adequate means of illumination for the embarkation station and stowage location of remotely located survival craft.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by a member with a view towards consistent application and clarification of the requirements for self-contained battery powered lights to comply with SOLAS regulation III-16/7 for an adequate means of illumination for the embarkation station and stowage location of remotely located survival craft.

IACS members are of the view that a portable light having self-contained batteries, which are capable of illuminating for a period of 3 hours as specified in SOLAS regulation II-1/43.2.1 without midway re-charging, can be considered as an adequate means of illumination complying with SOLAS regulation III/16.7.

This revision provides the requirements necessary for self-contained battery powered lights to meet the requirements of SOLAS regulation III-16/7 and SOLAS regulation II-1/43.2.1.

Members agreed to issue a revision of current UI SC213.

.5 Other Resolutions Changes

None.

.6 Dates:

Original Proposal made by: Safety Panel
Panel Approval: November 2015 (Ref: SP14006b)
GPG Approval: 21 December 2015 (Ref: 15115fIGb)

Rev.2 (Nov 2013)

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide criteria while determining the arrangement of embarkation station and stowage location of remotely located survival craft, especially on certain types of ships where there is no transverse passage available to allow side-to-side shift of liferaft in forward area on upper deck, and to clarify the length of embarkation ladder required at the embarkation station.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a member with a view towards consistent application of the requirements (SOLAS regulations III/13.1.3 & III/31.1.4) when deviating from the normal arrangement, noting the lack of specific requirements in SOLAS regulations regarding the distance of embarkation station and stowage location of remotely located survival craft, the difficulty in arranging them in certain types of ships, and calculation of the required length of boarding ladder.

IACS members reached an agreement on some of the above issues and submitted a paper to DE 57, proposing a solution, which was unfortunately not discussed at the DE meeting due to time restrains.

Considering the importance of this issue and urgent need of the industry, members agreed to issue a revision of current UI SC213.

.5 Other Resolutions Changes

None.

.6 Dates:

Original Proposal made by: Statutory Panel
Panel Approval: 12 November 2013
GPG Approval: 27 November 2013 (Ref: 12145cIGd)

Corr.2 (June 2011)

.1 Origin of Change:

☑ Request by non-IACS entity (Marshall Islands)

.2 Main Reason for Change:

A small correction made to put UI SC213 in line with MSC.1/Circ1243.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Based on an inconsistency brought to the attention of IACS by the Marshall Islands (through the ABS Statutory Panel Member) Statutory Panel reviewed IACS UI SC 213 and unanimously agreed that a rather small correction should be made to put this UI in line with MSC.1/Circ1243.

Also Statutory Panel agreed:
- to treat this correction as a corrigendum to (not a revision of) UI SC 213;
- that it is not necessary to develop the associated HF & TB in this case; and
- that it is not absolutely necessary to submit the corrected UI SC 213 to IMO.

.5 Other Resolutions Changes:

None

.6 Dates:

Panel Approval: *12 March 2011 by Statutory Panel (Ref: 11106_PSa)*
GPG Approval: *27June 2011 (Ref:11106_IGb)*

• Rev.1 (June 2008)

See TB in Part B

• Corr.1 (Oct 2007)

Contracted for Construction - Standard footnote added (Subject No: 7546a)

• New (Aug 2006)

See TB in Part B

Part B. Technical Background

List of Technical Background (TB) documents for UI SC213:

Annex 1. **TB for New (Aug 2006)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1 (Jun 2008)**

See separate TB document in Annex 2.

◄▼►

Annex 3. **TB for Rev.2 (Nov 2013)**

See separate TB document in Annex 3.

◄▼►

Annex 4. **TB for Rev.3 (Dec 2015)**

See separate TB document in Annex 4.

◄▼►

Annex 5. **TB for Rev.5 (Sep 2021)**

See separate TB document in Annex 5.

◄▲►

Note: *There are no separate Technical Background (TB) documents developed for Corr.1 (Oct 2007), Corr.2 (June 2011) and Rev.4 (Nov 2016).*

Technical Background

Unified Interpretation SC213
"Arrangements for remotely located survival craft"
(NEW – August 2006)

This UI has been developed in order to:

- clarify whether liferaft located at aft/forward end of the ships, if such location is distant more than 100 m from the closest survival craft, are to be considered as "remotely located survival craft" ; and
- identify the safety features these locations shall be provided with.

In the development of this UI it was recognized that the area where these remotely located survival craft are stowed is not considered to be an "embarkation station".
Amendment to reg. III/32.3.3 as approved by MSC 81 (Annex 34 to MSC 81/25/add.2) has also been taken into account in the development of this UI as far as immersion suits are concerned.

Submitted by Statutory Panel Chair
13 July 2006

LR opposed at the Panel level, disagreeing with "the minimum number of 2 lifejackets" in the UI, for the reason that the circumstances is not included when members of the crew are out on deck for any reason and their means of access back to the main survival craft embarkation station is blocked. Under these circumstances, LR is of the opinion that the number of lifejackets provided at this additional survival craft should be at least the same as the capacity of this survival craft.
However, other Panel members expressed that, the minimum number of lifejackets required in the UI is only a basic requirement to be implemented by IACS members. And it is the prerogative of the Flag Administration to require an increased number of lifejackets and the number of lifejackets should be based on the expected limited number of persons who may be present at the bow during ship's operation rather than the minimum capacity of the liferaft located there.

LR GPG member still opposed "the minimum number of 2 lifejackets" contained in the UI.

Additional comments submitted by GPG Chair
14 August 2006

Technical Background

UI SC 213, Rev.1 (June 2008)

"Arrangements for remotely located survival craft"

UI SC 213 is revised for the purpose of reflecting IMO DE 51 decision on the exclusion of *knotted rope* as a means of embarkation for remotely located survival craft, i.e. a knotted rope is not accepted as controlled manner

Submitted by the Statutory Panel Chair
27 May 2008

Rev.1, June 2008

UI SC 213 (Corr.1, Oct 2007) requires remotely located survival craft to be provided with: "*an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner (e.g. knotted rope) as per reg.III/11.7*".

Based on this UI, DE 50 drafted a new Circular, which was approved at MSC 83 as MSC.1/Circ.1243. The approved Circular removed the example of the knotted rope as a means of embarkation for remotely located survival craft: "*an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner as per reg.III/11.7*"

IACS therefore submitted a paper to DE 51 (DE 51/22/2) to request clarification from IMO on whether the removal of the *knotted rope* as an example of embarkation was intended to prohibit its use or the example of a *knotted rope* was simply considered not need to be included in the Circular.

Following the discussion, **DE 51 agreed that *knotted rope* was not an acceptable means of descent to the water in a controlled manner.**

Therefore the last paragraph of the interpretation text was revised as follows:
"- an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner* as per reg.III/11.7.
*Note:
Controlled manner: a knotted rope is not acceptable for this purpose."

Permanent Secretariat note, June 2008:

UI SC213, Rev.1 was approved by GPG on 12 June 2008 (ref. 8564aIGb) with the following implementation statement:
"Rev.1 of this UI is to be uniformly implemented by IACS Societies for ships contracted for construction on or after 1 July 2008."

During discussion KR and LR had both proposed alternative implementation statements/dates and LR had proposed an amendment to the UI text but these were not supported by other members. See attached messages 8564aKRa and 8564aLRa.

Zoe Wright

From: iacs@krs.iacsmember.org
Sent: 02 June 2008 20:12
To: KR; DNV; CCS; ABS; NK; Colin Wright; IACS file store; Gil-Yong Han; Butcher Helen; BV; GL; LR; RINA; RS; John De Rose; richardleslie; Terry Perkins; Mrs. Zoe Wright; PermSec; Carsten Melchiors
Subject: 8564aKRa Maintenance of IACS resolutions - Revision of UI SC213(SP8011d)

Date: 2 June 2008

TO: IACS GPG Chairman
CC: IACS GPG Members
CC: IACS Permanent Secretary
From: Kim Jong-hyun, KR GPG Member
Our Ref: KRG080106

Subject: 8564aKRa Maintenance of IACS resolutions - Revision of UI SC213(SP8011d)

1. With reference to IGa of 28 May 2008, the draft UI circulated with IGa is acceptable to KR with the comments below regarding the implementation statement.

2. As indicated in the TB, the UI was submitted to IMO and MSC 83 issued it as MSC/Circ.1243 on 29 October 2007 without example reference to knotted rope. IACS later sought clarification on the use of the knotted rope and the DE 51 agreed that the knotted rope is not an acceptable means (22 Feb 2008).

3. This decision at DE 51 had immediate effect and it was desirable to withdraw the rejected part of the UI as soon as possible after DE 51 decision. With the implementation statement of draft UI("from 1 July 2008 based on contract date"), however, the implementation dates between the two inconsistent instruments (i.e MSC circular and IACS UI) is considered too wide.

4. Right after DE 51, KR submitted questions to some Administrations on the implementation of the DE 51 decision (eg. from the issuance date of MSC/Circ.1243 or from the decision of DE 51, etc). The Administrations who replied so far have indicated that the knotted rope should not be allowed with the immediate effect (or in some cases, until next annual survey) even for the existing ships.

5. Therefore, to avoid inconsistency of implementation dates or, at least, to reduce the time-gap of implementation dates of the two instruments (at least by two or three years), KR suggests to modify the implementation statements as below:

Option 1: "Rev.1 of this UI is to be uniformly implemented by IACS Societies to the ships constructed on or after 1 July 2008. The compliance of Rev. 1 of this UI for ships constructed prior to 1 July 2008 is to be verified by an attending Surveyor at the first annual survey after 1 July 2008." or

Option 2: "Rev.1 of this UI is to be uniformly implemented by IACS Societies for ships constructed on or after 1 July 2008"

The existing Note No.2 needs to be deleted.

6. KR prefers Option 1.

Best regards,

Kim Jong-hyun
KR IACS GPG Member

Zoe Wright

From: Petrov, Konstantin [Konstantin.Petrov@lr.org]

Sent: 04 June 2008 16:04

To: carstenmelchiors@iacs.org.uk; AIACS@eagle.org; classnkiacs@classnk.or.jp; colinwright@iacs.org.uk; efs@iacs.org.uk; gilyonghan@iacs.org.uk; HelenButcher@iacs.org.uk; IACS; iacs@bureauveritas.com; iacs@ccs.org.cn; iacs@dnv.com; iacs@gl-group.com; iacs@rina.org; iacs@rs-head.spb.ru; johnderose@iacs.org.uk; krsiacs@krs.co.kr; paulsadler@iacs.org.uk; richardleslie@iacs.org.uk; terryperkins@iacs.org.uk; zoe wright at permsec

Subject: 8564aLRa: Maintenance of IACS resolutions - Revision of UI SC213 (SP8011d)

To : The Chairman
cc : GPG Members
cc : Permanent Secretary

EA/KAP/2541

Subject: 8564aLRa: Maintenance of IACS resolutions - Revision of UI SC213 (SP8011d)

1. Reference is made to IGa of 27 May 2008.

2. I appreciate Mr. Kim's additional information on the views of certain flags regarding the use of knotted rope. Considering the decision of DE as recorded in the DE 51 report (attached and highlighted) as well as the lack of direct promulgation by IMO of this decision, I would suggest that the footnote is replaced by the reference to DE 51 decision in the text of the UI so that the UI is amended as follows (attached):

"…In accordance with the decision of IMO DE Sub-Committee as recorded in the report of its 51st session, paragraph 22.7, the knotted rope is not accepted as a means of decent to the water in a controlled manner."

3. Under the circumstances I would be inclined to agree on the implementation date for new and existing ships which would take the implementation beyond the next session of DE (DE52) where this amended UI will be considered, i.e. 1 July 2009.

Regards,
Konstantin Petrov
LR IACS GPG Member

Technical Background (External)

UI SC 213, Rev.1 (June 2008)

"Arrangements for remotely located survival craft"

UI SC 213 is revised for the purpose of reflecting IMO DE 51 decision on the exclusion of *knotted rope* as a means of embarkation for remotely located survival craft, i.e. a knotted rope is not accepted as controlled manner

Rev.1, June 2008

UI SC 213 (Corr.1, Oct 2007) requires remotely located survival craft to be provided with: "*an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner (e.g. knotted rope) as per reg.III/11.7*".

Based on this UI, DE 50 drafted a new Circular, which was approved at MSC 83 as MSC.1/Circ.1243. The approved Circular removed the example of the knotted rope as a means of embarkation for remotely located survival craft: "*an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner as per reg.III/11.7*"

IACS therefore submitted a paper to DE 51 (DE 51/22/2) to request clarification from IMO on whether the removal of the *knotted rope* as an example of embarkation was intended to prohibit its use or the example of a *knotted rope* was simply considered not need to be included in the Circular.

Following the discussion, **DE 51 agreed that *knotted rope* was not an acceptable means of descent to the water in a controlled manner.**

Therefore the last paragraph of the interpretation text was revised as follows:

"- an embarkation ladder or other means of embarkation enabling descent to the water in a controlled manner* as per reg.III/11.7.

*Note:

Controlled manner: a knotted rope is not acceptable for this purpose."

Technical Background (TB) document for UI SC213 (Rev.2 Nov 2013)

1 Scope and objectives

This revision has the intent to provide criteria while determining the arrangement of embarkation station and stowage location of remotely located survival craft, especially on certain types of ships where normal arrangement is impracticable.

2 Engineering background for technical basis and rationale

1 In the application of SOLAS regulation III/31.1.4 and UI SC213 (rev.1), the issue of arrangement of embarkation station and stowage location of remotely located liferaft has caused confusion due to the following facts:

.1 for some ships, including container ships and bulk carriers, the liferaft as required by SOLAS regulation III/31.1.4 could be stowed on forecastle deck, as there may not be a practical transverse passageway to allow its side-to-side shift in forward area on upper deck; and

.2 at the same time, with the prohibition of the use of knotted ropes, embarkation ladders having considerable volume are quite difficult to arrange on forecastle deck, and instead, are installed in forward area on upper deck at both sides of the ship.

2 The arrangements discussed in paragraph 1 above then give rise to the question of how to regulate the distance between embarkation station and stowage location of the liferaft. No explicit requirement has been found in SOLAS convention and related instruments in this regard. The only regulation deemed relevant and applicable is SOLAS regulation III/13.1.3, which states that:

"1 Each survival craft shall be stowed:

...

.3 in a state of continuous readiness so that two crew members can carry out preparations for embarkation and launching in less than 5 min."

3 IACS opines that embarkation station should be arranged as close as practicable to such a liferaft, and considers SOLAS regulation III/13.1.3 also provides the ultimate goal for the arrangement of the liferaft in relation to its embarkation stations, i.e. whatever the design is, they shall be able to fulfil the functional requirement of "two crew members can carry out preparations for embarkation and launching in less than 5 min". In other words, SOLAS regulation III/13.1.3 provides a time limit, instead of specifiying a distance, to govern various arrangements.

4 Furthermore, IACS does not find any prohibition on the arrangement of the liferaft and its embarkation stations on different decks, where this is workable and practically necessary. However, IACS believes that this should be acceptable only when it is not possible to arrange the liferaft and embarkation station on the same deck, and then should only be permitted if it does not necessitate traversing a stairway with the liferaft carried by crew members. Adequate means of illumination complying with SOLAS regulation III/16.7 should also be provided. Lifejackets, immersion suits and means of embarkations may be stowed at either stowage location of the liferaft or embarkation station, since they are at different decks. The painter is to be long enough to reach the relevant embarkation station.

5. In order to provide consistency in the determination of the length of the liferaft embarkation ladder, IACS is of the opinion that this should be calculated by applying an

adverse list of 20 degrees, to the loading condition taken from the approved loading manual which gives the lightest draft at the embarkation station. It is not necessary to apply a further 10 degree adverse trim as this can result in unnecessarily long and unmanageable embarkation ladders.

3 Source / derivation of the proposed IACS Resolution

SOLAS regulations III/31.1.4 and III/13.1.3

4. Summary of Changes intended for the revised Resolution

Embarkation station should be arranged as close as practicable to remotely located liferaft to fulfil the functional requirement of SOLAS regulation III/13.1.3 “two crew members can carry out preparations for embarkation and launching in less than 5 min”.

Where it is unreasonable and impractical to arrange embarkation station and stowage position of remotely located liferaft on the same deck of some types of ships, they could be located on different decks, provided that it does not necessitate traversing a stairway between different decks with the liferaft carried by crew members and the requirements regarding the arrangement of lifejackets, immersion suits, means of embarkations and the length of painter are satisfied.

The length of the embarkation ladder used to board this liferaft (remotely located survival craft) is calculated by applying an adverse list of 20 degrees, to the loading condition taken from the approved loading manual which gives the lightest draft at the embarkation station.

5 Points of discussions or possible discussions

None

6 Attachments if any

None

Technical Background (TB) document for UI SC213 (Rev.3 Dec 2015)

1. Scope and objectives

UI SC 213 (Rev.3 Dec 2015) is revised to provide the specifications for self-contained battery powered lights to be used as an adequate means of illumination for the embarkation station and stowage location of remotely located survival craft.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

UI SC 213 (Rev 2. Nov 2013) provides that:

2. 2 adequate means of illumination complying with reg. III/16.7, either fixed or portable, which shall be capable of illuminating the liferaft stowage position as well as the area of water into which the liferaft should be launched. Portable lights, when used, shall have brackets to permit their positioning on both sides of the vessel;

Based on this it is agreed that a portable light having self-contained batteries, which are capable of illuminating for a period of 3 hours as specified in SOLAS regulation II-1/43.2.1 without midway re-charging, can be considered as an adequate means of illumination complying with SOLAS regulation III/16.7.

Following discussion in the Safety Panel it was agreed to amend UI SC 213 with the addition of paragraph 3 to provide the specifications for self-contained battery powered lights to be used to comply with this requirement.

UI SC213 Rev.3 was submitted to SSE 3 for consideration of the subcommittee after approval from GPG.

5. Points of discussions or possible discussions

Refer to the Section 4 above.

6. Attachments if any

N/A.

Technical Background (TB) document for UI SC213 Rev.5 (Sep 2021)

1. Scope and objectives

UI SC213 was revised to clarify that the battery powered lamps should be stowed ‘close to the liferaft they and embarkation ladder they are intended to serve’.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

None.

4. Summary of Changes intended for the revised Resolution:

UI SC 213 (Rev.5 Sep 2021) amends paragraph 4 to include the text ‘and shall be stowed close to the liferaft and embarkation ladder they are intended to serve’.

In developing this revision of SC 213, reference to a launching station was not included in para. 5.2 of UI because launching station is where preparation and launching of survival craft takes place and therefore SOLAS Regulation III/16.7 already implies that this station is required to be illuminated.

IACS noticed duplication of requirement in para. 2.2 and para. 5.2 with respect to illumination of liferafts stowage position but did not make this change in UI in order to align it with the IMO MSC.1/Circ. 1490 Rev.1

UI SC213 Rev.5 aligns the text of the UI with MSC.1/Circ.1490/Rev.1

5. Points of discussions or possible discussions

Refer to the Section 4 above.

6. Attachments if any

None.

UI SC214 – New July 2006
Technical Background

The UI has been developed with the aim of clarifying the criteria to be adopted to consider portions of open decks utilized for the storage of gas bottles as “well ventilated” spaces in the light of SOLAS reg. II-2/4.3. The UI also clarifies that these portions of open decks need not be categorized, for the purposes of SOLAS reg. II-2/9, as enclosed spaces.

Submitted by Statutory Panel Chairman
14 July 2006

Permanent Secretariat Note:

Subject number 6077b - agreed by GPG and Council on 30 July 2006.
UI to be submitted to FP51.

UI SC 215(New, Feb 2007)
Technical Background

SOLAS Regulation III/11.7 requires that an embarkation ladder, complying with the requirements of paragraph 6.1.6 of Chapter VI of the LSA Code, is to be provided at each embarkation station or at every two adjacent embarkation stations for survival craft launched down the side of the ship.

SOLAS Regulation III/31.1.3 allows cargo ships of less than 85 m in length other than oil tankers, chemical tankers and gas carriers, in lieu of meeting the requirements of paragraph 1.1 or 1.2 of Regulation 31, to carry on each side of the ship, sufficient inflatable or rigid liferafts and rescue boat as required by Regulations III/31.1.3.1-1.3.4.

SOLAS Regulation III/16.1 specifies some exceptional circumstances for launching and embarking appliance arrangements.

In order to provide an harmonized application of regulation III/16.1, UI SC XXX was developed to specify that ships as defined in SOLAS III/31.1.3 and which are fitted with non-davit launched liferafts as per regulation III/16.1 shall be provided with an embarkation ladder at each side of the ship.

UI SC 215 was submitted to DE 51 (refer to DE 51/XX).

Technical Background

UI SC216 (New), August 2007

FSS Code – Water-based fire-extinguishing systems

Members dealt with cases where spaces having different fire risk on passenger ships (e.g. accommodation spaces, deep fat coking equipment, machinery spaces of category A and associated high fire risk areas) were protected by a single fixed fire fighting system providing a so called "multi-area protection".

It was noted that, in the framework of its work item *Performance testing and approval standards for fire safety systems* the IMO S-C on FP already accomplished the task pertinent to the revision of the following mandatory instruments:

- Water mist fire-extinguishing systems (MSC/Circ.668/728)
- Fixed local application fire-extinguishing systems for machinery spaces of category A (MSC/Circ.913)
- Water mist fire-extinguishing systems in accommodation and service spaces (Resolution A.800(19))

and that, according to the decision taken by the S-C at its 50th session (ref. paragraph 4.26 of FP 50/21), any further proposed amendments which are not included in the aforementioned annexes should first be approved by the Committee for their inclusion in this work.

Taking into account the above decision, it was not possible for IACS to bring the matter to the attention of the Sub-Committee with the view of having it discussed during the revision of the above-mentioned mandatory instruments.

Therefore, UI SC 216 has been developed as to establish a harmonized approach by Members to this particular issue.

The UI was submitted to IMO by document FP 52/12/xxx.

UI SC217 "Nozzles installation for fixed water based local application fire-fighting systems for use in category A machinery spaces (MSC/Circ. 913)"

Summary

This Corrigenda 2 to IACS UI SC 217 aims to indicate that despite the fact that MSC.1/Circ.1387 generally supersedes MSC/Circ.913, the latter remains valid for the approval of new fixed water based local application fire-fighting systems previously tested in accordance with MSC/Circ.913.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Aug 2022)	25 August 2022	-
Corr.1 (Sept 2007)	September 2007	-
New (Aug 2007)	14 Aug 2007	01 April 2008

- **Corr.2 (Aug 2022)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

MSC/Circ. 913 is superseded by MSC.1/Circ.1387 on 10 December 2010.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

GPG 85 FUA 9
Minutes of Statutory Panel 11th Meeting, paragraph 5.1.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: June 2019	Made by: Safety Panel member
Panel Approval	: 12 July 2022	(Ref: PS19002eISg)
GPG Approval	: 25 August 2022	(Ref: 19001tIGf)

- **Corr.1 (Sep 2007)**

No records are available

- **New (Aug 2007)**

Please refer to Annex 1 for TB file

Part B. Technical Background

List of Technical Background (TB) documents for UI SC217:

Annex 1. **TB for New (Aug 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.2 (Aug 2022)**

See separate TB document in Annex 2.

Note: There is no separate Technical Background (TB) document available for Corr.1 (Sep 2007).

Technical Background - INTERNAL

UI SC217 (NEW), August 2007

UI covering cases where single row nozzles/single nozzles are utilized in systems complying with MSC/Circ. 913

The expression 'width and length', in paragraph 3.4.2.4 in relation to the nozzle spacing, is somewhat anomalous and is open to interpretation.

It is concluded that the over-riding intent of the Circular is that the protected area is completely shrouded in water/water-mist in the manner of testing and it is considered that the end nozzles be placed at least at the periphery of the protected area. Some submissions have the end nozzles 1/4 spacing inside of the protected area.

The concession of the single line of nozzles is given on the understanding that the nozzle spacing is halved. There is no nozzle beyond the last nozzle however.

Reservation by NK:

1. Accepted protected areas for nozzles in single row arrangement or single nozzle, as specified in paragraph 3.4.2.4 in the appendix of the annex to MSC/Circ.913, are inconsistent with the accepted protected areas for nozzles in grid arrangement because of the following difference in basic concept:
   (1) accepted protected areas for nozzles in grid arrangements are specified on the basis of test results;
   (2) however, accepted protected areas for nozzles in single row or single nozzle are specified in practical manner.

2. For example, figure 1 shows accepted protected areas in accordance with the [draft] unified interpretation. In this case:
   (1) single nozzle can protect an area of D/2 x D/2, regardless of how it was tested;
   (2) however, single row arrangement of 2 nozzles which are tested in accordance with paragraph 3.4.2.2 can protect only an area of D/2 x D/2; and
   (3) single row arrangement of 2 nozzles which are tested in accordance with paragraph 3.4.2.1 can not protect any area.

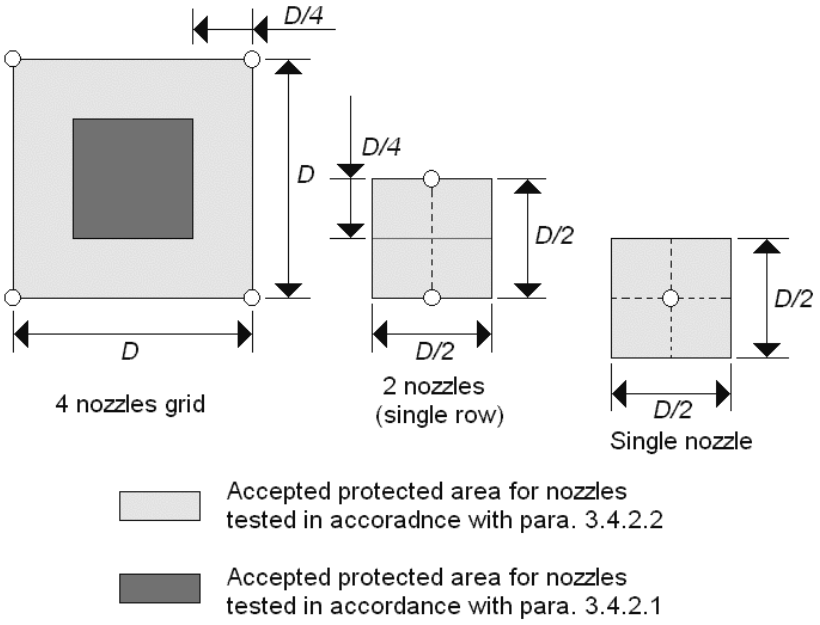


Figure 1

3. From the point of view that paragraph 3.4.2.1 is only applicable to accepted protected areas based on test results, the accepted protected areas of single nozzle and single row nozzles should be decided in the same manner, e.g. if the coverage of single nozzle is +/- D/4 from nozzle position, the coverage of single row shall be defined using the same coverage. Accordingly, accepted protected areas for single row arrangement of 2 nozzles can be given as shown in Figure 2, regardless of how each nozzle was tested.

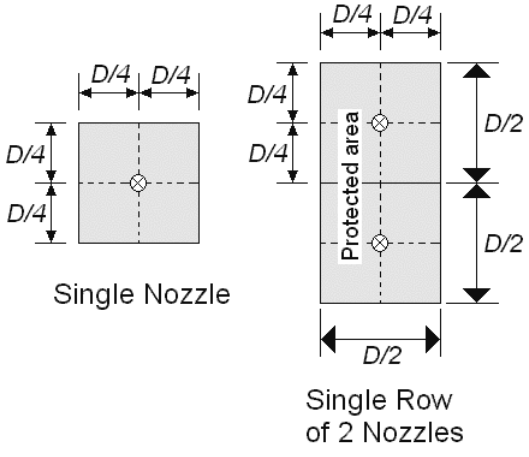


Figure 2

4. If it is understood that the accepted protected areas for nozzles in grid arrangements are specified on the basis of test results are composed so that deserted areas based on grid coverage concept and not effective areas due to diffusion of mist are deducted form basic coverage area of single nozzle (D x D), an interpretation as

shown in Figure 3 will be a possible solution for making a compromise with 2 different concepts of test results based accepted protected areas and practical acceptable protected areas.

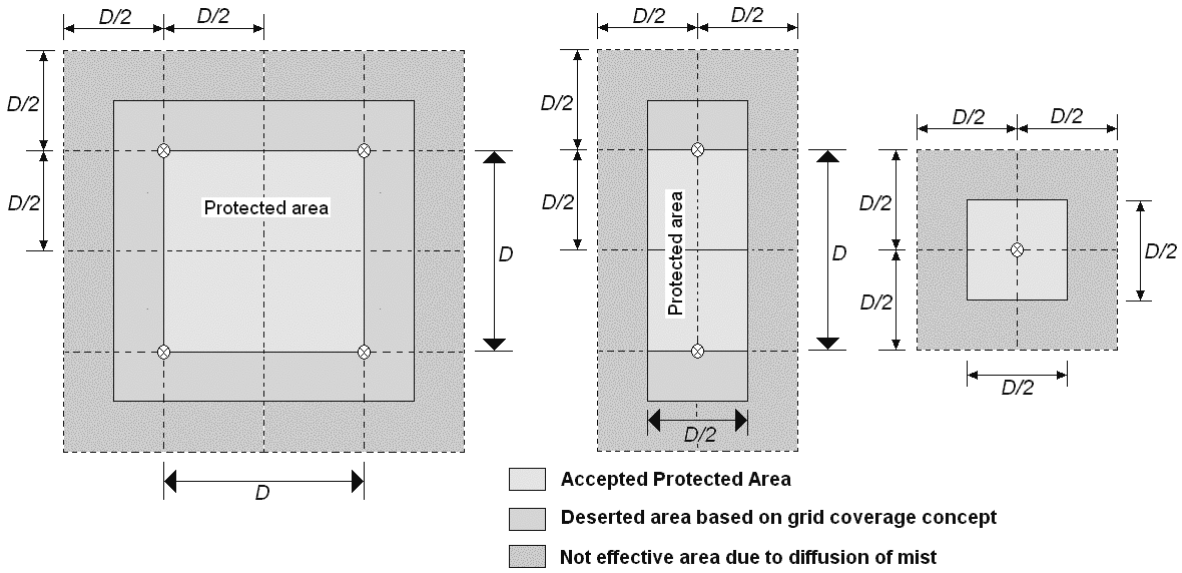


Figure 3

5. NK has raised above discrepancy but no practical comments/discussion given by members so far. Under such circumstances, NK has only way to make the reservation on this matter.

Submitted by Statutory Panel Chair
28 June 2007

Permanent Secretariat note (August 2007)

- Approved by GPG with ¾ majority (NK did not agree) on 14 August 2007, 7586aIGb.
- UI SC217 to be submitted to IMO FP52.

Technical Background (TB) document for UI SC217 (Corr.2 Aug 2022)

1. Scope and objectives

The UI was reviewed when it reached its 10th anniversary. During the review it was recognised that further clarification was needed to describe the acceptable properties of the liner.

2. Engineering background for technical basis and rationale

See section 5 below.

3. Source/derivation of the proposed IACS Resolution

"Polyester and vinyl ester coatings" by William R Slama, Journal of Protective Coatings & Linings, May 1996.

4. Summary of Changes intended for the revised Resolution:

A new paragraph was introduced in the UI providing further clarification on the expected properties for a liner.

5. Points of discussions or possible discussions

The Panel discussed the need to include text which could not be interpreted as accepting a spray-on coating rather than a liner.

There was also discussion on the need to cover thermal expansion and the stresses introduced from tension and/or compression.

> Thermal expansion is more related to the coefficient of thermal expansion, not to the elasticity. The linings' coefficient of thermal expansion is commonly ranged (36--72)*10^{-6} mm/mm/°C, which is greater than that of the steel substrate, which is about 11*10^{-6} mm/mm/°C. See attachment.
>
> It was noted that an elastic lining should be capable of enduring yield deformation of the steel substrate, i.e. plastic deformation to some extent. It is known that the yield deformation of steel substrate is much lower than liner material generally used in these applications (PTFE, Rubber). The adhesive used to attach the liner to steel substrate should be selected such that it is capable of bonding steel and liner under the conditions relevant for the application of the liner (e.g. temperature and mechanical stresses that the adhesive will be exposed to).

Developing the above discussion the Panel also discussed the need to include specific criteria for elongation. One member provided information which could be used to support such criteria, however a majority considered that this was not needed due to the different linings which could be used for which different criteria might be relevant.

The Panel considered the need to include a reference to specific acceptable national or international standards. Although two standards were identified by one member as

being relevant, NACE TM0374-2002: Laboratory Methods for the Evaluation of Protective Coatings and Lining Materials on Metallic Substrates in Immersion Service; and ISO 16961:2015: Petroleum, petrochemical and natural gas industries — Internal coating and lining of steel storage tanks, a majority of the Panel were of the view that such a reference was not needed.

During the discussion regarding the clarification included in the UI that "the requirement for the elasticity of a lining to be not less than the supporting boundary plating is to prevent debonding at the interface between the lining and the lined surface", some members would have preferred that the UI included additional text to state the conditions which had to be met to satisfy the requirement. There was general agreement that the requirement is met when it is demonstrated that the lining remains intact without damage when the supporting boundary plating, to which the lining is applied, is subjected to tension, compression and bending up to its yield point and that stress is removed, however a majority preferred not to include text stating this in the UI.

6. Attachments if any

None

SC 218 "Fire Testing of Equivalent Water-Based Fire Extinguishing Systems"

Summary

This revision reflects the amendments made to the Circular MSC/Circ.1165 vide MSC.1/Circ.1237 and MSC.1/Circ.1269.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2022)	13 July 2022	1 July 2023
New (Oct 2007)	Oct 2007	1 July 2008

- **Rev.1 (July 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

Circular MSC/Circ.1165 has been amended by MSC.1/Circ.1237 and MSC.1/Circ.1269. Since this UI is referring to the text of MSC/Circ.1165, the referred text has now been aligned with the amended version of the circular.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

GPG 85 FUA 9. Minutes of Statutory Panel 11th Meeting, paragraph 5.1. Due to the minor nature of changes, it was decided that this revision need not be sent to IMO.

5 Other Resolutions Changes:

None

6 Any hindrance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: July 2019	(Made by: Safety Panel member)
Panel Approval	: 27 June 2022	(Ref: PS19002eISe)
GPG Approval	: 13 July 2022	(Ref: 19001tIGb)

- **New (Oct 2007)**

Refer to Annex 1 for TB file.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC218:

Annex 1. **TB for New (Oct 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (July 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for SC 218 New (Oct 2007)

It has been recognised that the 150 mm freeboard requirement of IMO MSC/Circ.1165, annex B, 4.5.1 (second part) cannot be achieved for the top 3 m2 top tray as the total height of this particular tray is only 100 mm.

With 50 mm fuel on water, this freeboard will be 50 mm (measured from the notch or the heptane level). This typo has for instance been corrected in the new draft standard for inside air foam (IMO FP correspondence group, USCG draft report to FP52).

Also, guidance from the new draft standard for inside air foam on how the top tray should be filled, when the fuel should be ignited and when to measure the pre-burn are specified to clarify flowing fire test scenarios.

Submitted by Statutory Panel Chairman
17 September 2007

Permanent Secretariat note, October 2007:

New UIs SC218 and SC219 were approved by GPG on 12 October 2007 with an implementation date of 1 July 2008, (ref. 7586bIGb).
UIs will be submitted to IMO FP 52.

Technical Background (TB) document for SC 218 Rev.1 (July 2022)

1. Scope and objectives

Review of the Unified interpretation SC 218.

2. Engineering background for technical basis and rationale

UI SC218 provides interpretation of paragraph 4.5.1 of Appendix B of MSC/Circ.1165 concerning level of fuel on a water base and freeboard during a test of an Equivalent Water-Based Fire Extinguishing Systems. The UI clarifies height of the freeboard of top tray considering total height of the tray.

MSC/Circ.1165 has been amended by MSC.1/Circ.1237 and MSC.1/Circ.1269.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

Figure 1 is replaced according to MSC.1/Circ.1237. Text of paragraph 4.5.1 is revised according to MSC.1/Circ.1269. The size of the top tray (3 m^2) has been deleted.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

SC 219 "Fire Testing of Equivalent Water-Based Fire Extinguishing Systems"

Summary

This revision reflects the amendments made to the Circular MSC/Circ.1165 vide MSC.1/Circ.1237 and MSC.1/Circ.1269.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2022)	13 July 2022	1 July 2023
New (Oct 2007)	Oct 2007	1 July 2008

- **Rev.1 (July 2022)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

Circular MSC/Circ.1165 has been amended by MSC.1/Circ.1237 and MSC.1/Circ.1269. Since this UI is referring to the text of MSC/Circ.1165, the referred text has now been aligned with the amended version of the circular.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

GPG 85 FUA 9. Minutes of Statutory Panel 11th Meeting, paragraph 5.1. Due to the minor nature of changes, it was decided that this revision need not be sent to IMO.

5 Other Resolutions Changes:

None

6 Any hindrance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: July 2019	(Made by: Safety Panel member)
Panel Approval	: 27 June 2022	(Ref: PS19002eISe)
GPG Approval	: 13 July 2022	(Ref: 19001tIGb)

- **New (Oct 2007)**

Refer to Annex 1 for TB file.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC219:

Annex 1. **TB for New (Oct 2007)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (July 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for SC 218 New (Oct 2007)

It has been recognised that the 150 mm freeboard requirement of IMO MSC/Circ.1165, annex B, 4.5.1 (second part) cannot be achieved for the top 3 m2 top tray as the total height of this particular tray is only 100 mm.

With 50 mm fuel on water, this freeboard will be 50 mm (measured from the notch or the heptane level). This typo has for instance been corrected in the new draft standard for inside air foam (IMO FP correspondence group, USCG draft report to FP52).

Also, guidance from the new draft standard for inside air foam on how the top tray should be filled, when the fuel should be ignited and when to measure the pre-burn are specified to clarify flowing fire test scenarios.

Submitted by Statutory Panel Chairman
17 September 2007

Permanent Secretariat note, October 2007:

New UIs SC218 and SC219 were approved by GPG on 12 October 2007 with an implementation date of 1 July 2008, (ref. 7586bIGb).
UIs will be submitted to IMO FP 52.

Technical Background (TB) document for SC 218 Rev.1 (July 2022)

1. Scope and objectives

Review of the Unified interpretation SC 219.

2. Engineering background for technical basis and rationale

UI SC219 provides interpretation of paragraph 4.5.4.1 of Appendix B of MSC/Circ.1165 concerning duration of test of an Equivalent Water-Based Fire Extinguishing Systems.

The UI clarifies conditions of test.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

Text of paragraph 4.5.4.1 is revised according to MSC.1/Circ.1269. The size of the top tray (3 m^2) has been deleted.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC220 “Special requirements for ro-ro passenger ships”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Mar 2017)	25 March 2017	-
Corr.1 (Sept 2010)	21 September 2016	-
Rev.1 (Feb 2010)	19 February 2010	-
NEW (Oct 2007	16 October 2007	15 April 2008

- **Corr.2 (Mar 2017)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

In order to correct the title of IACS UI for providing more clarification regarding a criteria of ship types, where this UI shall be applied.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The inquiry was raised by an IACS member to seek the IACS safety panel member’s view regarding the application of SOLAS Reg.II-1/20-2.1 and Reg. II-1/17-1.1.1 in conjunction with IACS UI SC220.

IACS UI SC220 was developed to interpret SOLAS Reg.II-1/20-2.1 (applicable for ships constructed on or after 1st July 1997 but before 1st January 2009) and SOLAS Reg. II-1/17-1.1.1 (applicable for ships constructed on or after 1st January 2009) which applies to ro-ro passenger ships.

However, according to the previous title of IACS UI SC220 “Special requirements for vehicle ferries, ro-ro ships and other ships of similar type”, the criteria of ship types, where this UI shall be applied, can be interpreted in many different ways so further clarifications or corrections on the title of UI is necessary for providing more clarification.

For instance, from the title of SOLAS Reg.II-1/20-2.1 and SOLAS Reg. II-1/17-1.1.1, both regulations are only applicable to ro-ro passenger ships, but it can be misinterpreted that IACS UI SC220 is applicable to not only ro-ro passenger ships but

also ro-ro cargo ships and other cargo ships of similar type because “ro-ro ships” in lieu of “ro-ro passenger ships” is used in the title of this UI.

In this regard, IACS Safety Panel agreed that, despite the types of ships referred to in the title of SC220, SOLAS Reg.II-1/20-2.1 and 17-1.1.1 specify the scope of application to only ro-ro passenger ships which equally applies to SC220 as an UI cannot extend the scope of application.

Accordingly, the title of IACS UI SC220 was corrected in order to reflect IACS understanding and provide more clarification.

.5 Other Resolutions Changes:
None

.6 Dates:
Original Proposal: 10 October 2016 Made by: Safety Panel
Panel Approval: 16 January 2017 (Ref: PS16002w)
GPG Approval: 25 March 2017 (Ref: 16113eIGc)

- **Corr.1 (Sept 2016)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

During the preparation and review of the draft submission paper to SDC 4, minor editorials were made in the IACS UI SC220.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made

None.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 05 September 2016, made by Survey Panel
Panel Approval: 05 September 2016 (Ref: PS16016_)
GPG Approval: 21September 2016 (Ref: 16157bIGb)

- **Rev.1 (Feb 2010)**

.1 Origin for Change:

☑ Based on IMO Regulation *(SOLAS Chapter II-1, Regs.15 and 17-1 as per MSC.194(80) and MSC.216(82))*

.2 Main Reason for Change:

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82) and this affects the references for, and content of, UI SC220.

.3 History of Decisions Made:

1. SOLAS Reg.II-1/17.1 as per the 96 Amendment (MSC.Res.57(67)) the content of which was quoted at the beginning of original SC220 was removed as this Regulation is no longer considered necessary to interpret in light of the revisions contained in MSC.194(80) and MSC.216(82).

2. The original SOLAS Reg.II-1/17-1 (96 Amendments) has been deleted, but its content has been reflected in SOLAS Reg.II-1/15 (MSC.194(80) and MSC.216(82)). Editorial modifications to original SC220 were therefore made to reflect these amendments.

3. SOLAS Reg.II-1/20-2.1 (94/95 Amendments) has been moved to Reg. II-1/17-1.1.1 by MSC.194(80) and by MSC.216(82). The second paragraph of the interpretation (b) of original SC220 was amended taking into account that the Amendments set out in annex 2 of MSC.194(80) and MSC.216(82) have entered into force on 1 January 2009.

.4 Other Resolutions Changes

None

.5 Any dissenting views

None

.6 Dates:

Original Proposal: *22 July 2009, made by Statutory Panel*
Panel Approval: *January 2010*
GPG Approval: *19 February 2010 (ref. 10001_IGe)*

- **New (Oct 2007)**

Re-categorisation of UI LL32 – see TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC220:

Annex 1. **TB for Original Resolution (Oct 2007)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 2.

◄▲►

Note: There is no separate Technical Background (TB) document for Corr.1 (Sept 2016) and Corr.2 (Mar 2017).

Part B. Technical Background

List of Technical Background (TB) documents for UI SC220:

Annex 1. **TB for Original Resolution (Oct 2007)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Feb 2010)**

See separate TB document in Annex 2.

◄▲►

Note: There is no separate Technical Background (TB) document for Corr.1 (Sept 2016)

Technical Background

UI SC220 (NEW, Oct 2007)

As it was interpreting SOLAS regulation II-1/17-1.1 and II-1/20-2.1 rather than Load Line Convention, existing UI LL 32 was withdrawn and replaced by a new UI SC.

Moreover, considering that most of hatches covered by sub-paragraph (b) of the existing UI would be subject to the requirements of SOLAS regulation II-1/20-2.1 and coaming height of 380 mm would not be accepted, the Statutory Panel agreed the content of this paragraph should be modified as to render it applicable to ships constructed before 1 July 1997 only (those not subject to such a regulation).

Submitted by Statutory Panel Chairman
27 September 2007

Permanent Secretariat note, October 2007:
Approved by GPG on 16 October 2007 (ref. 7667_IGb) with some further editorial clarifications and an implementation date of 15 April 2008.

Technical Background for UI SC220 Rev.1, Feb 2010

1. Scope and objectives

Chapter II-1 of SOLAS has been amended by MSC.194(80) and MSC.216(82) and this affects the references for, and content of, UI SC220. UI SC220 is to be amended to reflect the amendment to SOLAS Ch.II-1 made by MSC.194(80) and MSC.216(82).

2. Engineering background for technical basis and rationale

1. SOLAS Reg.II-1/17.1 as per the 96 Amendment (MSC.Res.57(67)) the content of which was quoted at the beginning of original SC220 was removed as this Regulation is no longer considered necessary to interpret in light of the revisions contained in MSC.194(80) and MSC.216(82).
2. The original SOLAS Reg.II-1/17-1 (96 Amendments) has been deleted, but its content has been reflected in SOLAS Reg.II-1/15 (MSC.194(80) and MSC.216(82)). Editorial modifications to original SC220 were therefore made to reflect these amendments.
3. SOLAS Reg.II-1/20-2.1 (94/95 Amendments) has been moved to Reg. II-1/17-1.1.1 by MSC.216(82). The second paragraph of the interpretation (b) of original SC220 was amended taking into account that the Amendments set out in annex 2 of MSC.194(80) and MSC.216(82) have entered into force on 1 January 2009.

3. Source / derivation of the proposed IACS Resolution

IACS Statutory Panel agreed to the amendment to UI SC220.

4. Summary of Changes intended for the revised Resolution:

1. The text of SOLAS Reg.II-1/17.1 as per the 96 Amendment (MSC.Res.57(67)) was removed.
2. Editorial modifications were made in light of the original SOLAS Reg.II-1/17-1 (96 Amendments) being reflected in SOLAS Reg.II-1/15 (MSC.194(80) and MSC.216(82)).
3. The second paragraph of the interpretation (b) of original SC220 was amended taking into account that the Amendments set out in annex 2 of MSC.194(80) and MSC.216(82) have entered into force on 1 January 2009.

5. Points of discussions or possible discussions

None

6. Attachments if any

N.A.

UI SC221 "Separation of Galley Exhaust Ducts from Spaces (Reg II-2/9)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Sep 2017)	25 September 2017	-
New (Oct 2007)	October 2007	1 January 2008

- **Del (Sep 2017)**

GPG has agreed to withdraw UI SC221 (New Oct 2007). SOLAS II-2/Reg. 9.7.2.5, as amended, contains the overall substances of UI SC 221.

No TB is expected for this deletion.

GPG Approval:25 September 2017 (Ref: 17115_IGc)

- **New (Oct 2007)**

Refer to Annex 1 for TB document.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC221:

Annex 1. **TB for New (Oct 2007)**

See separate TB document in Annex 1.

◄▼►

Technical Background

UI SC221 (NEW, Oct 2007)

SOLAS regulations II-2/9.7.2.1, 9.7.2.2 and 9.7.5.2.1 provide the fire insulation requirements for trunks and ducts which pass through an enclosed space.

To provide for a greater extent of uniformity in the application of the above regulations to trunks and ducts which pass through an enclosed space via sharing a surface or surfaces that are contiguous with an enclosed space as illustrated below, the UI was developed.

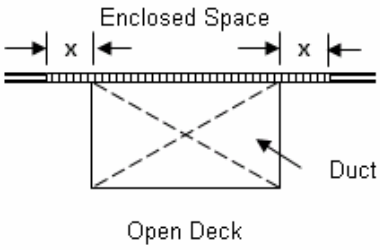


Figure 1

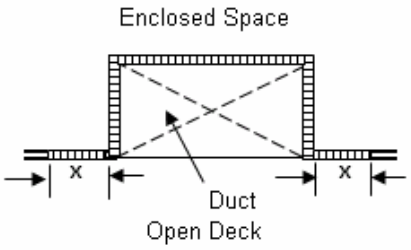


Figure 2

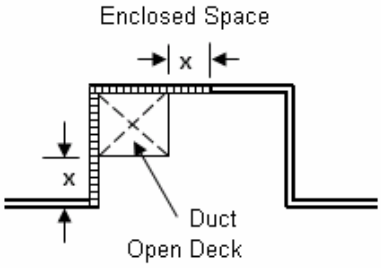


Figure 3

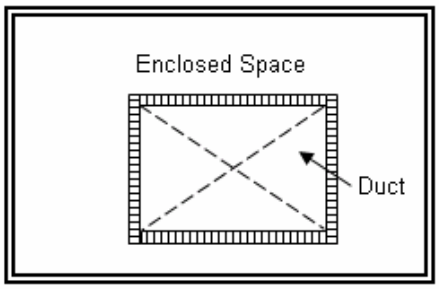


Figure 4

= fire insulation

x = 450 mm

Examples of galley ducts contiguous to enclosed space

Submitted by Statutory Panel Chairman
8 October 2007

Permanent Secretariat note (Nov 2007):
Approved by GPG 31 October 2007 (ref. 7674_IGb).
UI will be submitted to FP52.

UI SC 223 "For Application of SOLAS Regulation II-1/3-2 Performance Standard for Protective Coatings (PSPC) for Dedicated Seawater Ballast Tanks in All Types of Ships and Double-side Skin Spaces of Bulk Carriers, adopted by Resolution MSC.215(82)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Oct 2014)	26 October 2014	-
Rev.3 (Sept 2013)	30 September 2013	1 January 2014
Corr.1 (June 2012)	26 June 2012	-
Rev.2 (July 2011)	26 July 2011	1 July 2012
Rev.1 (July 2010)	27 July 2010	1 July 2011
Corr.2 (Apr 2009)	14 Apr 2009	-
Corr.1 (July 2008)	10 July 2008	-
New (June 2008)	30 June 2008	1 July 2008

- **Corr.1 (October 2014)**

.1 Origin for Change:

☑ Suggestion by a Member

.2 Main Reason for Change:

To change reference to 'A.744(18)' to the 'A.1049(27) (2011 ESP Code), as amended' in IACS UI SC223 & UI SC259, noting that references to A.744(18) in Resolution MSC.215(82) for PSPC-WBT and MSC.288(87) for PSPC-COT has already been replaced by MSC.341(91) and MSC.342(91), respectively.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The correction pointed out by a member was confirmed by Safety Panel chairman. Permsec prepared the draft corrigenda.

.5 Other Resolutions Changes

UI SC259

.6 Dates:

Original proposal: by a Member on 12 September 2014
GPG Approval: 26 October 2014 (Ref: 14160_IGb)

- **Rev. 3 (Sept 2013)**

.1 Origin of Change:

☑ Based on IMO Decision (*DE57* and *MSC92)*

.2 Main Reason for Change:

Reviewing the outcome of MSC 92 (Document MSC 92/WP.1/Add.1 Para. 13.4), the following decisions of the committee are noted:

13.4.1
not to agree to the proposal (MSC 92/13/4, paragraph 4) to add additional text at the end of the interpretation concerning water-soluble salt limit;

13.4.2
not to agree to the proposal (MSC 92/13/4, paragraph 5) to add an additional sentence at the end of the interpretation concerning shop primer;

13.4.3
the decision of the committee to agree to delete interpretation 1 to paragraph 3.4 of PSPC 4, table 1, section 3 (Secondary surface preparation) on the use of methods such as, but not limited to, UHP Water Jetting may be considered for Secondary Surface Preparation, where it can be demonstrated that the surface conditions specified by PSPC Table 1, section 3, can be achieved before the application of the main coatings.

13.4.4
the decision of the committee to agreed to the proposal (MSC 92/13/4, paragraph 7) to modify paragraphs 4.1 and 4.3 of the interpretation concerning assistant coating inspectors to read as follows:

> "4.1 If the coating inspectors require assistance from other persons to perform part of the inspections, those persons shall perform the inspections under the coating inspector's supervision and shall be trained to the coating inspector's satisfaction."
>
> "4.3 Training records shall be available for verification."

In addition to that, it is recommended to amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column “Specific Activities” in row 7.1.

13.4.5
not to agree to the proposal (MSC 92/13/4, paragraph 8) to add an additional paragraph to the interpretation concerning verification of the application of the PSPC.

13.6 and 13.7

to note the decision of DE 57 not to include in the unified interpretation text referring to section 8 (Alternative systems) of the PSPC BWT and PSPC COT .

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Noting the decisions of the committee at MSC 92 (Document MSC 92/WP.1/Add.1 Para. 13.4), following decisions has been made:

13.4.1
No changes necessary.

13.4.2
No changes necessary.

13.4.3
Consequently, as decided by the committee this part will be deleted from IACS UI SC223.

However, it is realized that such deletion in fact bans certain Countries from building ships under the IMO PSPC regime, in case such countries for environmental or health reasons decided to prohibit dry grit blasting during second stage building in open air, by law or local regulations.

It remains the believe of SG/Coatings that deleting this interpretation is not in line with the invitation of IMO to encourage the development of novel technologies. It also remains the believe of SG/Coatings that it does not matter HOW a Standard is achieved, just THAT the Standard is achieved. Moreover, in case such Standard, or even a higher Standard, can be achieved by less foot print on the environment by other methods, such method(s) should not be rejected without strong arguments.

13.4.4
Text of UI SC 223 is to be adjusted.

In addition to that, SG/Coatings recommends to amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column “Specific Activities” in row 7.1.

13.4.5
No changes necessary.

13.6 and 13.7
Related section is to be deleted.

However, IACS SG/Coatings refers to the IMO PSPC BWT and PSPC COT,

QUOTE// ‘INVITES Governments to encourage the development of novel technologies aimed at providing for alternative systems and to keep the Organization advised of any positive results.’

and further the

QUOTE // ‘ it is not intended to exclude suitable alternative coating systems, providing a performance at least equivalent to that specified in this Standard is demonstrated. Acceptance criteria for alternative systems are provided in section 8.’//UNQUOTE Based on that, the IMO PSPC BWT and PSPC COT does provide room for the use of coating and/or coating systems not applied in accordance with Table 1 of the PSPC, provided they have proved equivalency by test methods provided by the right columns (acceptance criteria for alternative systems) of acceptance criteria in the ANNEX of the PSPC BWT and PSPC COT.

Based on IACS’ own experience and on feedback from the Industry however, Section 8, in particular 8.1 of the PSPC BWT and PSPC COT, defining ‘Alternative Systems’;

QUOTE//All systems that are not an epoxy-based system applied according to table 1 of this Standard are defined as an alternative system//UNQUOTE,

was found to be vague and IACS SG/Coatings considers that a Uniform Interpretation is still deemed necessary.

With reference to 13.7, it is not clear on which base the committee concluded to delete the subject Uniform Interpretation.

.5 Other Resolutions Changes:

Amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column “Specific Activities” in row 7.1.

.6 Dates:

Original Proposal: *August 2013 made by SG/Coatings*
GPG Approval: *30 September 2013 (Ref: 13094oIGf)*

- **Corr. 1 (June 2012)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

To clarify that paragraph 1.3.5 in PSPC 4 is applicable to coating pre-qualification test commenced on or after 1 July 2012.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Suggestion from a GPG member was agreed by correspondence.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *12 June 2012 Made by a GPG member*
GPG Approval: *26 June 2012 (Ref: 11090aIGb)*

- **Rev 2 (July 2011)**

.1 Origin of Change:

☑ Request by non-IACS entity (*Shipyard and Manufacturer)*
☑ Suggestion by IACS member
☑ Based on IMO Decision (*DE 53/26, paragraph 17.7)*

.2 Main Reason for Change:

This set of the revision consists of the following elements:

1. Matters relevant to "Assistants to the coating inspector" (Annex 2a) (COAT4009) (Task DE 53 IACS Observer Recommendation 10)
2. Matters relevant to "Maximum DFT for test panels" (Annex 2b) (COAT3004) (Task 25)
3. Solvent fee Epoxy coating system (Annex 2c) (COAT10000) (Task 35)
4. Acceptance of other methods for Secondary Surface Preparation (Annex 2d)
5. Acceptance of Soluble Salt Meter as equivalent (Annex 2e) (SP11012c) (the long-standing Task 8 – Maintenance of IACS Resolutions)

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Many of the elements of the change have been raised prior to and after the re-activation of the EG Coatings in October 2009. Through the discussions at the EG Coating meeting in March 2010, Statutory Panel meeting in March 2011 and correspondence, a final consolidated text was prepared.

.5 Other Resolutions Changes:

It is decided to withdraw PR 34 with effect from 1 July 2012.

.6 Dates:

Original Proposal: *3 September 2010 Made by the EG/Coating; and 4th May 2011 made by the Statutory Panel*
GPG Approval: *26 July 2011 (Ref: 11090_IGg)*

- **Rev 1 (July 2010)**

.1 Origin of Change:

☑ Other (Inquiry from industry)

.2 Main Reason for Change:

Questions have been raised by the industry about acceptance of equivalency of non zinc containing or not silicate based shop primers as defined by the IMO PSPC Table, Section 2.3.

After extensive discussion the Group agreed to apply the equivalency acceptance criteria given in the prequalification test alternative system in Appendix 1 and Appendix 2 to Annex 1 to MSC.215(82) Column B for such non zinc containing or not silicate based shop primers.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

See .2 above

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *14 June 2010 Made by the EG/Coating (Ref. 10078cECa)*
GPG Approval: *27 July 2010 (Ref: 10078cIGc)*

- **Corr. 2 (Apr 2009)**

Correction to SOLAS reference in the implementation statement (Ref. 8535gABa).

No TB document available.

- **Corr. 1 (July 2008)**

Correction of reference in Section 1.5 of Method B: 5 years field exposure (Ref. 8535bIGd).

No TB document available.

- **New (June 2008)**

New UI developed for the application of IMO PSPC, incorporating the contents of UI SC222 “Stripe coats and salt measurement”.

No TB document available.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC223:

Annex 1. **TB for Rev.1 (July 2010)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.2 (July 2011)**

See separate TB document in Annex 2a, 2b, 2c, 2d and 2e.

◄▼►

Note: There are no separate Technical Background (TB) documents for New (June 2008), Corr.1 (July 2008), Corr.2 (Apr 2009), Corr.1 (June 2012), Rev.3 (Sept 2013) and Corr.1 (Oct 2014).

Technical Background for UI SC223 Rev.1, July 2010

1. Scope and objectives

To revise UI SC223 to include a unified interpretation (UI) on the meaning of the term 'equivalency' for zinc containing inhibitor free zinc silicate based shop primers as defined by Section 2.2 of Table I under 2.3 of the IMO Res. MSC.215(82) Annex I known as the IMO PSPC Performance Standard for ballast tanks.

To find mutual agreement on the interpretation of the wording 'or equivalent' for zinc containing inhibitor free zinc silicate based shop primers as defined by the IMO PSPC Table 1, Section 2 under 2.3

2. Engineering background for technical basis and rationale

Table 1, Section 2 under 2.3 of the IMO PSPC specifically defines 'Zinc containing Inhibitor Free Zinc Silicate based shop primers' to be used or equivalent. Some IACS Members are of the opinion that Epoxy based, zinc or non-zinc containing shop primers can be considered equivalent. Other IACS Members are of the opinion that the zinc silicate based shop primers can not be considered equivalent to epoxy based shop primers.

Inherently, according to Section 8 of the IMO PSPC, acceptance of 'equivalency' or not, determines whether or not coatings shall be considered 'alternative systems' which have to meet the acceptance criteria in right columns of tables in Appendix 1 and Appendix 2 to Annex 1 to the IMO PSPC.

3. Source / derivation of the proposed IACS Resolution

IMO PSPC Table 1, Section 2 under 2.3
IACS UI SC223
IACS PR 34

4. Summary of Changes intended for the revised Resolution

Interpretation on the acceptance criteria given in the pre-qualification test alternative system in appendix 1 to MSC.215 (82) (so called column B) for accepting non-zinc-silicate shop primer was produced.

5. Points of discussions or possible discussions

1. At initial discussion, five members considered that so far as the shop primer passes the acceptance criteria given in the pre-qualification test for epoxy based system in Appendix 1 to MSC.215 (82) (so called column A); the other members considered that any system not based on "Zinc" and then "Silicate" would not be qualified to use this criterion as such product is apparently inferior to the zinc-silicate shop primer.
2. In this regard, the Group noted the definition of "equivalents" given in SOLAS regulation I/5, i.e., "at least as effective as that required by the present regulations".
3. Another discussion the Group had was the way to provide clearer criterion on the equivalency.
4. General view of the Group was that, while a shop primer (e.g., an Epoxy-iron based shop primer in this instance) may pass the pre-qualification test, a zinc-silicate shop primer is more durable than an epoxy-iron based shop primer.

5. After extensive discussion, the Group agreed to apply the acceptance criteria given in the pre-qualification test alternative system in Appendix 1 and Appendix 2 to MSC.215 (82) (so called column B) for accepting non-zinc-silicate shop primer.

6. Attachments if any

None

Technical Background for UI SC223 Rev.2, July 2011 (Annex 2a)

1. Scope and objectives

In order to response a question made by IMO at DE 52 on the “Assistant Inspector”, the EG Coating has addressed the issue.

2. Engineering background for technical basis and rationale

The matter was discussed in the EG Coating between DE 52 and DE 53 and an submission was made DE 53 as IACS paper DE 53/17/2 suggesting to rephrase the term as “Assistants to coating inspector” given in section 4.2 under PSPC 6.

3. Source / derivation of the proposed IACS Resolution

IACS UI SC223
IMO Submission paper DE 53/17/2 (IACS)
Report of DE 53 (DE 53/26) paragraph 17.6
IACS Observer’s recommendation at DE 53.

4. Summary of Changes intended for the revised Resolution

As given above 2.

5. Points of discussions or possible discussions

As given above 2.

6. Attachments if any

None

Technical Background for UI SC223 Rev.2, July 2011 (Annex 2b)

1. Scope and objectives

To revise UI SC223 and PR 34 to address the issue of dry film thickness (DFT).

2. Engineering background for technical basis and rationale

The Performance standard for protective coatings (PSPC), as given in resolution MSC.215(82), gives in Annex 1 a test procedures for coating qualification. In this procedure the requirements for the dry film thickness (DFT) is given as a minimum value. During the laboratory testing of the coatings, very high values are easily achieved to avoid having measurements below the minimum value. The question has therefore been raised as to whether, during testing, a maximum value for the average DFT should be specified.

The objective is to find mutual IACS agreement on a maximum average DFT value for the test panels and to include the interpretation in UI SC 223 and PR 34.

3. Source / derivation of the proposed IACS Resolution

IACS UI SC223
IACS PR 34

4. Summary of Changes intended for the revised Resolution

The following is inserted in PSPC 4 as new section 1.3.5 to provide maximum thickness of DFT.

". 1.3.5 For the coating pre-qualification test, the measured average dry film thickness (DFT) on each prepared test panels shall not exceed a nominal DFT (NDFT) of 320 microns plus 20% unless a paint manufacturer specifies a NDFT greater than 320 microns. In the latter case, the average DFT shall not exceed the specified NDFT plus 20% and the coating system shall be certified to the specified NDFT if the system passes the tests according to Annex 1 of MSC 215(82). The measured DFT shall meet the "90/10" rule and the maximum DFT shall be below the maximum DFT value specified by the manufacturer"

5. Points of discussions or possible discussions

A possible consequence of a Type Approval based on test reports where a coating has been tested with very high DFT values is that the coating might fail if tested closer to the nominal dry film thickness.

Acceptance of testing on lower values than the IMO requirements was discussed, but it was concluded that the "90/10" rule should be followed as specified.

6. Attachments if any

None

Technical Background for UI SC223 Rev.2, July 2011 (Annex 2c)

1. Scope and objectives

The Performance standard for protective coatings (PSPC), as given in resolution MSC.215(82), gives the definition of alternative systems. It is clarified in principle that PSPC invites Governments to encourage the development of novel technologies aimed at providing for alternative systems. The definition of alternative systems described in section 8 of PSPC reflects such principle. There, however, is a misunderstanding on definition of alternative systems caused by misinterpretation of sentences of PSPC. Therefore, the clear interpretation of the definition corresponding to principles of PSPC is required.

The objective is to make clearer and easier interpretation of definition of alternative systems in order to remove further controversial issues.

2. Engineering background for technical basis and rationale

Alternative systems are defined in PSPC as below:

> *" 8 ALTERNATIVE SYSTEMS*
> *8.1 All systems that are not an epoxy-based system applied according to table 1 of this Standard are defined as an alternative system.*
> *8.2 This Standard is based on recognized and commonly used coating systems. It is not meant to exclude other, alternative, systems with proven equivalent performance, for example non epoxy-based systems.*
> *8.3 Acceptance of alternative systems will be subject to documented evidence that they ensure a corrosion prevention performance at least equivalent to that indicated in this Standard.*
> *8.4 As a minimum, the documented evidence shall consist of satisfactory performance corresponding to that of a coating system which conforms to the coating standard described in section 4, a target useful life of 15 years in either actual field exposure for 5 years with final coating condition not less than "GOOD" or laboratory testing. Laboratory test shall be conducted in accordance with the test procedure given in annex 1 to this Standard. "*

According to above section, normal coating systems, i.e. not alternative systems, are epoxy-based systems applied according to table 1 of this Standard.

This means alternative systems are

- epoxy-based systems not applied according to table 1 of this Standard
- non epoxy-based systems applied according to table 1 of this Standard
- or non epoxy-based systems not applied according to table 1 of this Standard.

If 3.4 of Appendix 1 and 2 of PSPC quoted below is referred to, the definition would be more comprehensible.

> *"3.4 Alternative systems not necessarily epoxy-based and/or not necessarily applied according to table 1 of this Standard shall satisfy the criteria for alternative systems as indicated in the table above."*

In case a coating system is defined as an alternative system, the coating system should satisfy the criteria for alternative systems described in the table of Appendix 1 and 2 through a pre-qualification test. The alternative system should be type approved according to the same process of normal coating systems including the results of the pre-qualification test.

For example, one coat solvent free epoxy coating system is classified as an alternative system because the coating system is an epoxy-based system but is not applied according to table 1 of PSPC. The coating system would be type approved if it passes the pre-qualification test satisfying the criteria for alternative systems.

In general, solvent-borne epoxy paints are commonly used coating systems for water ballast tank in shipbuilding industries in the world (these systems require two coat system at least). Considering solid volume and rheological properties, solvent-borne paint is necessarily applied by at least 2 coats to build sufficient dry film thickness for target useful life recommended in PSPC, whereas 1 coat is enough for solvent-free paint to achieve the thickness due to its high solid volume and rheological superiority, i.e. sag resistance.

There are some evidences showing that application of one coat solvent-free epoxy paint system has no problem in technical aspect.

First of all, a technical paper published by Samsung Heavy Industries at NACE conference, Corrosion 2010, shows performance of one coat solvent-free epoxy system is better than that of two coat solvent-borne epoxy paint. Table 1 shows the summary of test results.

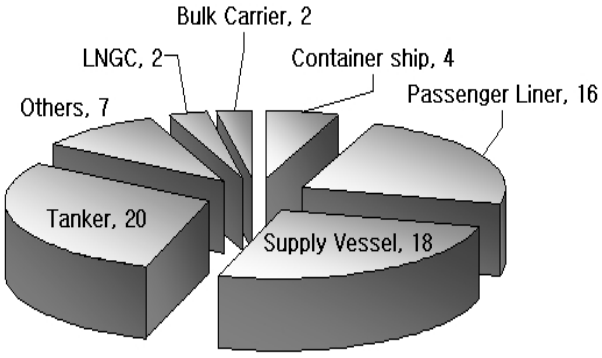
Table 1. Comparison of performance between solvent free and solvent borne epoxy system

Category	Item	Solvent Free	Solvent Borne
Corrosion Resistance	Cyclic test	Equivalent	Equivalent
	WBT simulation test	Equivalent	Equivalent
	Crack resistance test	Better	Not Good at high DFT
Build-up Property	Edge Retention test	Over 100% (on 3C)	Over 100% (on 3C)
	Sag Property (DFT)	800~1200 ㎛	410~510 ㎛
General Inspection	Porosity test	Equivalent	Equivalent
	Holiday test	No pin hole	No pin hole

Source : NACE Corrosion 2010, Paper No. 10015 HIGH PERFORMACE AND ENVIRONMENTALLY FRIENDLY COATING SYSTME FOR WATER BALLAST TANK OF SHIP IN THE SHIPBUILDING INDUSTRIES

Secondly, this one coat system for solvent-free paint has already been applied to lots of various types of ships especially on the area of water ballast tanks. Table 2 shows track record of 1 coat solvent-free paint system quoted from KOSHIPA's presentation material presented in EG coating meeting in March, 2010.

Table 2. Track record of one coat solvent-free epoxy systems



~ August,	
Total	69
Container ship	4
Passenger Liner	16
Supply Vessel	18
Tanker	20
LNGC	2
Bulk Carrier	2
Others	7

Finally, in March 2009, U.S. Navy (Naval Sea Systems Command) announced a new corrosion policy that NAVSEA officials have mandated that all seawater ballast tanks on submarines, surface ships, and aircraft carriers in service must be coated with rapid-cure, single coat paint by September 30, 2009. It means all coatings for seawater ballast tanks of U.S. navy's ships have changed from traditional three coat system to one coat system. There are many kinds of rapid cure, single coat paints mentioned in the announcement and solvent-free epoxy paint is one of them. (Source : http://corrdefense.nace.org/corrdefense_summer_2009/top_story2.asp hyperlinked)

In this respect, the one coat solvent-free epoxy paint system could be a good alternative to the current multi-coat solvent-borne epoxy paint system.

A main point of one coat system is how to apply the system satisfactorily. It is advised that careful consideration will be given for the application of one coat solvent-free epoxy system once the paint is type approved. Especially, some issues such as how to get uniformity of dry film thickness will be carefully approached. These issues will be solved by collaboration among all concerned parties with interest.

3. Source / derivation of the proposed IACS Resolution
IACS UI SC223

4. Summary of Changes intended for the revised Resolution
A new section "PSPC 8 ALTERNATIVE SYSTEMS" has been created.

5. Points of discussions or possible discussions

- Clearer interpretation for definition of alternative systems shall be provided with UI SC 223. Thereby, epoxy-based systems which are not applied according to table 1 of PSPC, for example, one coat solvent-free epoxy system, shall be defined as an alternative system.
- Type approval certificate for alternative system should be issued if the alternative system passes the pre-qualification test according to Annex 1 of PSPC satisfying criteria for alternative systems.
- It is recommended that application of type approved alternative systems is demonstrated before its practical application in order to check workability, coating quality, worker's skill and so on.

6. Attachments if any
None

Technical Background for UI SC223 Rev.2, July 2011 (Annex 2d)

1. Scope and objectives

To revise UI SC223 to include a unified interpretation (UI) on the application of other methods of surface preparation than Dry Grit Blasting and/or power tooling during Secondary Surface Preparation as defined by Section 3 of Table I under 3.2, 3.3 and 3.4 of the IMO Res. MSC.215(82) Annex I known as the IMO PSPC Performance Standard for ballast tanks.

To find mutual agreement on the acceptance of other methods for Secondary Surface Preparation as defined by the IMO PSPC Table 1, Section 3, under 3.2, 3.3 and 3.4.

2. Engineering background for technical basis and rationale

Subject Table 1, Section 3 requires Cleanliness and Roughness Profile Grades defined by Footnoted ISO Standard 8501-1/2:1988 which Sa2 and Sa 2.5 Grades could be interpreted as a reference to Dry Grit Blasting only.

Section 3.3 of same Table 1 refers to the power tooling Standard St3 **or** 'better' **or** SA 2.5 where practicable, which wording 'better' is not defined.

For reasons of safety, health and protection of the environment, Dry Grit Blasting during Secondary Surface Preparation in open air is no longer promoted and in some parts of the world, even by law, not allowed any longer. Additionally, for same reasons, some owners, builders and/or coating producers voluntarily prefer to adopt other methods of secondary surface preparation above Dry Grit Blasting and/or Power Tooling.

Experience and research has learned that other methods, such as, but not limited to the existing Wet Abrasive Grit Blasting, UHP Water Jetting, MBX Bristle Blast Power Tooling, Sponge Jetting and Multiple Laser Treatment systems under development, may provide equal or even better surface conditions as required by Table 1, Section 3, however more safe and with less impact on health and the environment than Dry Grit Blasting during Secondary Surface Preparation.

Grade St3 or 'better' refers to Power Tooling or better, which is not clearly defined. Power tooling is known to be a method, able to produce the desired Cleanliness Grade. However, same method, in many cases is known to destroy the existing roughness profile if applied incorrectly (by polishing). In that respect, other methods such as mentioned above, could be considered 'better'.

3. Source / derivation of the proposed IACS Resolution

- IMO PSPC Table 1, Section 3, 3.2, 3.3 and 3.4 of the IMO Res. MSC.215(82) Annex I known as the IMO PSPC Performance Standard for ballast tanks.
- IACS UI SC223

4. Summary of Changes intended for the revised Resolution

Based on above motivations it is the intention to add following unified interpretation:

“Methods such as, but not limited to UHP Water Jetting may be considered for Secondary Surface Preparation, where it can be demonstrated that the surface conditions specified by PSPC Table 1, Section 3 can be achieved. “

5. Points of discussions or possible discussions

Some members interpreted the Cleanliness Grades Sa2 and Sa 2.5 as synonymous to Dry Grit Blasting only.

1. Contradictory, some members referred to Section 6 of the footnoted ISO Standard 8501-1:1988 which states: “Other methods, such as wet blast cleaning, produce surfaces that may differ in appearance, colour, etc, but the photographs can still be used to give an indication of the preparation grade.”
2. Also contradictory, some members took position that, in case Dry Grit Blasting only would be meant by the PSPC Table 1 Section 3, it should have referred to the ISO Standard 8504-2:2000 (Abrasive Blast Cleaning) instead of the footnoted Standard ISO 8501-1:1988 (Blast Cleaning)
3. Some members expressed their concerns about the quality of the roughness profile after UHP Water Jetting, which profile is required to provide enough anchorage for the first and subsequent coatings to be applied.
4. Other members argued that the majority of the roughness profile is produced during Primary Surface Preparation (in the automatic blasting/shop priming cabinet) which dry shot blasted profile is fully recovered if UHP Water Jetting is applied during Secondary Surface Preparation.
5. Further some members argued, that latest research by the industry has learned that, while a ‘better’ roughness profile may be achieved by Dry or Wet Grit Blasting compared to UHP Water Jetting, the performance of coatings after UHP Water Jetting is found equal or even better, which is believed to be caused by elimination of embedded grit particles caught in the profile and by better removal of soluble salts from the surface
6. Some members argued that thru innovations in the coating industry, today some ballast tank coatings are specifically designed for application after UHP Water Jetting. Therefore, these coating producers recommend other profile requirements as believed to be defined by the PSPC Table 1 under 3.4 stating; a profile requirement between 30-75 Microns, otherwise as recommended by the coating producer.
7. Some members took position that no other options as, ‘other methods such as, but not limited to UHP Water Jetting, are left, in case Dry Grit Blasting during secondary surface preparation is simply not allowed by national or local mandatory regulations.
8. All members unanimously agreed, that it is considered a duty of Class Societies to promote such other methods than Dry Grit Blasting, in case it is proved that such other methods have less impact on health, safety and/or environment.

Therefore, some members argued that such other methods should also be allowed, in case owners, builders or coating producers, for same reasons of health, safety and/or environment, voluntarily would prefer to adopt such other methods for secondary surface preparation.

6. Attachments if any

None

Technical Background for UI SC223 Rev.2, July 2011 (Annex 2e)

1. Scope and objectives

In order to response the inquiry raised by manufacturer HedoN Electronic Developments B.V., the Statutory Panel has addressed the issue.

2. Engineering background for technical basis and rationale

It was decided to update UI SC223 in accordance with the IMO's decision as contained in MSC.1/Circ.1381 such that Footnote 8 would read:

8 Conductivity measured in accordance with the following standards:

.1 ISO 8502-9:1998. Preparation of steel substrate before application of paints and related products – Test for the assessment of surface cleanliness; or

.2 NACE SP0508-2010 Item no.21134. Standard practice methods of validating equivalence to ISO 8502-9 on measurement of the levels of soluble salts.

3. Source / derivation of the proposed IACS Resolution

MSC.1/Circ.1381

4. Summary of Changes intended for the revised Resolution

As given above 2.

5. Points of discussions or possible discussions

As given above 2.

6. Attachments if any

None

TECHNICAL BACKGROUND

UIS SC224, LL74 AND MPC95 (NEW, AUGUST 2008)
"Measurement Of Distances"

1. Scope and objective

Several requirements in IMO instruments require a minimum distance between the inner and outer skins for protecting the spaces inside the inner skins (e.g. SOLAS regulation II-1/9, MARPOL Annex I regulation 12A and 19, IBC Code para.2.6.1 and IGC Code para.2.6.1.) However, it is not clear from which surface of the inner skins the minimum distance should be measured.

Objective is to clarify the measurement of distances between the inner and outer skins for protecting the spaces inside the inner skins by developing new UIs.

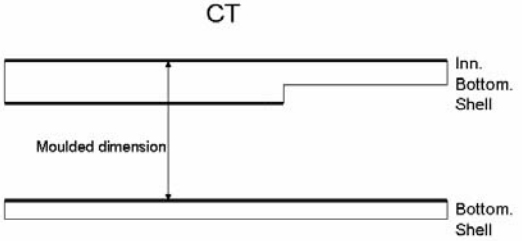
2. Points of discussions

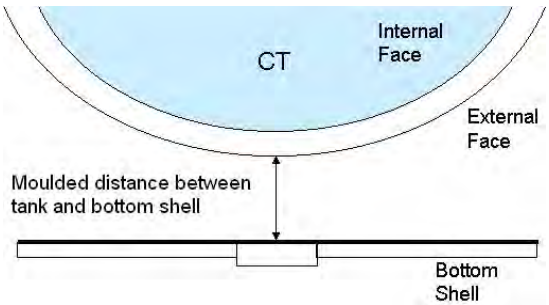
To obtain a unified interpretation for the measurement of such a distance above para.1, it was agreed to develop new UIs by Statutory Panel without any objection. In addition, NK proposed that the minimum distance should be determined by measurements between the moulded lines of inner and outer skins for the following reasons, and no Member objected to them.

1. The majority of principal particulars of ships are defined on the basis of moulded shapes;
2. In damage stability calculations, all distances may be measured between moulded lines;
3. At the basic design stage, it is practical to determine distances by measurements between moulded lines because thickness of some plating is not finalized and therefore distances may be variable; and
4. As there are structural members already inside double skin spaces, the decline in safety protection by having the plate thickness within the double skin space would be negligible.

Based on the above consensus and recognition Members also supported CCS proposal to expand the application of the UI to ship (or subdivision or waterline) length as there is no clear explanation in ICLL, SOLAS or IS Code on such length with regard to whether they should be moulded length or if plate thickness should be considered.
However, the length as defined in ICLL regulation 3(1) is not moulded length

Furthermore, members confirmed that
1: this UI can apply only to tanks for negligible thickness difference such as integral tank type whose boundaries are hull structure
2: For independent cargo tank type, dimensions to the external face of the tanks should be measured as moulded dimensions.





(Independent cargo tank type)

3. Extent of Approval by Working Group

The draft UIs are accepted [unanimously].

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
22 July 2008

Permanent Secretariat note (August 2008):
GPG approved new UIs SC224, LL74 and MPC95 on 12 August 2008 (ref. 8630_IGb) with an implementation date of 1 April 2009.

UI SC225 “The occupied volume by flooded water of a flooded space in the SOLAS Chapter II-1 (Regulation 2(14))”

Summary

The UI has been updated to refer to the associated IMO Circular.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Mar 2021)	11 March 2021	-
New (Sep 2008)	23 September 2008	1 April 2009

- **Corr.1 (Mar 2021)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

The contents of the UI has been used in an IMO circular and a note to this effect has been added.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The amendment was proposed by an IACS member as part of the review of IACS Resolutions after 10 years.

The amendment was unanimously agreed by the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

The basic principles relating to MASS as agreed by GPG (Refer to C5.2.1 of IACS Procedures Volume 1) have been taken into account while developing this revision. No hinderance to MASS was identified.

7 Dates:

Original Proposal: 30 December 2020 (Made by: IACS member)
Panel Approval: 5 February 2021 (Ref: PS19002qISb)
GPG Approval: 11 March 2021 (Ref: 19001jIGc)

- **New (Sep 2008)**

1 Origin of Change:

Information not available

2 Main Reason for Change:

Original version proposed.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

With regard to whether net capacity (i.e. capacity with reduction of volume of inside structural members) or moulded capacity shall be used to determine the volume of flooded water in the damage stability calculation under Regulation 2(14) (the definition of permeability) of SOLAS II-1 as contained in resolution MSC.194(80), IACS members reached the agreement that moulded capacity should be the basis for calculating the flooded water volume, i.e., the immersed volume of a space shall be the under water moulded volume of that space multiplied by the permeability. In order to uniformly implement the inherent requirement of the definition of permeability, a UI has been developed to give a common ground on this issue.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable at time of original development.

7 Dates:

Original Proposal: Not known (Made by: Assumed IACS member)
Panel Approval: 25 August 2008
GPG Approval: 23 September 2008

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC225:

Annex 1. **TB for New (Sep 2008)**

See separate TB document in Annex 1.

◄▲►

Note: *There are no separate Technical Background (TB) documents for Corr.1 (Mar 2021).*

Technical Background

UI SC225 (NEW), September 2008

The occupied volume by flooded water of a flooded space in the SOLAS Chapter II-1 (Regulation 2(14))

With regard to whether net capacity (i.e. capacity with reduction of volume of inside structural members) or moulded capacity shall be used to determine the volume of flooded water in the damage stability calculation under Regulation 2(14) (the definition of permeability) of SOLAS II-1 as contained in resolution MSC.194(80), IACS members reached the agreement that moulded capacity should be the basis for calculating the flooded water volume, i.e., the immersed volume of a space shall be the under water moulded volume of that space multiplied by the permeability. In order to uniformly implement the inherent requirement of the definition of permeability, a UI has been developed to give a common ground on this issue.

Submitted by Statutory Panel Chairman
25 August 2008

Permanent Secretariat note:
Approved by GPG 23 September 2008 (8643_IGc) with an implementation date of 1 April 2009.

UI SC 226 "IACS Unified Interpretations (UI) on the application of SOLAS regulations to conversions of Single-Hull Oil Tankers to Double-Hull Oil Tankers or Bulk Carriers"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2012)	04 December 2012	1 January 2014
New (Nov 2008)	13 November 2008	-

- **Rev 1 (May 2011)**

.1 Origin of Change:

☑ MSC and MEPC issued MSC-MEPC.2/Circ.10 which took into account most of the provisions in UI SC 226 (New, Nov 2008).

.2 Main Reason for Change:

To be consistent with MSC-MEPC.2/Circ.10.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

1. After meeting some resistance from the EC and a few EU Member States on the original version of SC 226 submitted by DE 52/17/1, IACS submitted DE 53/16 which, after taking into account comments made at DE 52, presented the Nov 2008 version of SC 226 together with the TB for each interpretation contained therein. EU Member States concerns raised at DE 53 focused on the extent of application and lack of clarity of bridge visibility limits (SOLAS V), the structural and stability requirements (SOLAS XII) and the need retroactively fit a free-fall life boat on a converted bulk carrier. Due to a lack of time, DE 53 decided to continue discussions at DE 54.
2. EU Member States presented arguments in DE 54/5/1 on concerns raised verbally at DE 53 plus additional issues to which IACS countered with DE 54/5/3. IACS arguments prevailed and the agreed Circular was sent to MSC 89 for approval.
3. MSC 89 and, after NAV 57 concurred with DE 54 on bridge visibility, MEPC 62 approved MSC-MEPC.2/Circ.10. Norway reserved their position with respect to the fitting of free-fall lifeboats in that ships converted into bulk carriers are allowed to maintain their existing lifeboat arrangements.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *May 2011 Made by Statutory Panel*
Panel Approval: *24 October 2012 by Statutory Panel*
GPG Approval: *04 December 2012 (Ref: 10061_IGj)*

- **New (Nov 2008)**

.1 Origin of Change:

☑ INTERCARGO email containing questions concerning the certification of conversion of VLCCs to VLOCs (circulated by GPG email 7658_IGa, 14 Sep 2007)

.2 Main Reason for Change:

N.A.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

1. IACS sought clarification from SLF S/C (SLF 48/17/1, July 2005) on "alterations and modifications of a major character" for application of the PMA requirements under SOLAS II-I/3-6 and on the SOLAS chapter II-1 regulations concerning the ship structure, subdivision and stability, machinery and electrical installations as to what constitutes major alterations and modifications other than those related to stability and subdivision as contained in MSC/Circ.650 and MSC.1/Circ.1246. SLF sent the request to DE for a decision.
2. Based on IACS submissions to DE 51 (DE 51/20 and DE 51/20/1), MSC approved MSC.1/Circ.1284 in December 2008 which addresses the application of SOLAS II-1/1.3, concerning repairs, alterations and modifications of a major character; the applicability of SOLAS II-1/3-6 (PMA) to single-hull tankers converted to double-hull tankers; and the term "*substantial new structures*".
4. However, IACS request to consider the application of the entirety of SOLAS in a holistic manner required IACS (and a Member State) to submit a proposal for a new work program item to MSC. IACS (and the Republic of Korea) submitted a proposed new work item as per MSC 85/23/7.
5. IACS submitted the original version of SC 226 by DE 52/17/1 for consideration.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *November 2008 Made by Statutory Panel*
GPG Approval: *13 November 2012 (Ref: 7658aIGz)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC226:

Annex 1. **TB for New (Nov 2008)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1 (Dec 2012)**

See separate TB document in Annex 2.

◄▼►

TECHNICAL BACKGROUND

UI SC226 (NEW, November 2008)

IACS Unified Interpretations for the application of SOLAS regulations to conversions of Single Hull Tanker to Double Hull Tanker or Bulk Carrier/Ore Carrier

Para No.	SOLAS Reg.	Technical Background
SC226.1	II-1/1.3 (As amended by MSC.216(82))	For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions. The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation. The interpretation is in accordance with DE 51/28/Annex 14 for **Single-Hull Tanker to Double-Hull Tanker and has been extended for Single-Hull Tanker to Bulk Carrier/Ore Carrier**. ***Ref.:*** *DE 51/28 Annex 14*
SC226.2	II-1/3.2, 2&3.2, 4 (As amended by MSC.216(82))	• **For Single-Hull Tanker to Double-Hull Tanker** It is not be practicable to apply the IMO PSPC to existing dedicated water ballast tanks and not reasonable to require partial application of the IMO PSPC even to new structures unless they constitute completely "new dedicated water ballast tanks". • **For Single-Hull Tanker to Bulk Carrier/Ore Carrier** It is not be practicable to apply the IMO PSPC to existing dedicated water ballast tanks and not reasonable to require partial application of the IMO PSPC even to new structures unless they constitute completely "new dedicated ballast tanks" or completely "new double-side skin spaces on double-side skin bulk carriers".
SC226.3	II-1/3-6 (As amended by MSC.194(80))	The interpretation is in accordance with DE 51/28/Annex 14 for **Single-Hull Tanker to Double-Hull Tanker and has been extended to Single-Hull Tanker to Bulk Carrier/Ore Carrier**.
SC226.4	II-1/3-8 (As amended by MSC.194(80))	As per SOLAS II-1 reg.1.3.

Para No.	SOLAS Reg.	Technical Background
SC226.5	II-1/Part B & Part B-1 (As amended by MSC.216(82))	• **For Single-Hull Tanker to Double-Hull Tanker** As provided by the footnote in SOLAS II-1 Part B Reg. 4, cargo ships that comply with subdivision and damage stability regulations in other instruments developed by the IMO are excluded from applying Parts B-1. The intact stability criteria in MARPOL I/27 is considered to be more robust than that contained in SOLAS B-1/5-1. • **For Single-Hull Tanker to Bulk Carrier/Ore Carrier** As provided by the footnote in SOLAS II-1 Part B Reg. 4, cargo ships that comply with subdivision and damage stability regulations in other instruments developed by the IMO are excluded from applying Part B-1. In the case where deck is loaded with cargoes, the UI LL 65 should be referred to for compliance with damage stability requirements.
SC226.6	II-2/1.3	For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions. The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation.
SC226.7	III/1.4.2	For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions. The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation.
SC226.8	III/31.1.8	• **For Single-Hull Tanker to Double-Hull Tanker** SOLAS III Reg. 31.1.8 applies to bulk carriers only. • **For Single-Hull Tanker to Bulk Carrier/Ore Carrier** The basis for application of free-fall life boats to new bulk carriers built on/after 1 July 2006 is recognized. However, this UI is based on the conditions contained in SOLAS Chapter III Reg. 1.4.2. To do otherwise, would require an amendment to SOLAS.

Para No.	SOLAS Reg.	Technical Background
SC226.9	V/22	It is noted that there is no regulation in SOLAS V which address modifications of a major character. • **For Single-Hull Tanker to Double-Hull Tanker or Single-Hull Tanker to Bulk Carrier/Ore Carrier** This UI considers the principle in regulation V/22.3 where, for ships constructed prior to 1 July 1998, the level of visibility shall be retained as a minimum at the same level prior to conversion as given in SOLAS V reg. 22.2.
SC226.10	XII/4	If the breadth of the wing tank is less than B/5, cargo hold will be flooded by applying transverse extent of damage as per ICLL reg.27.
SC226.11	XII/5.1 & 5.2	If the breadth of the wing tank is less than B/5, cargo hold will be flooded as per assumptions made in SOLAS XII reg.4. Additionally UI SC 207 is to be complied with **for Single-Hull Tanker to Bulk Carrier/Ore Carrier**. ***Ref.****: UI SC 207: Structural Strength of Bulk Carriers in case of Accidental Hold Flooding*
SC226.12	XII/6.1	This regulation applies to existing ships constructed before 1 July 1999 with single-side skin structures. Also, a conversion from a **Single-Hull Tanker to Bulk Carrier/Ore Carrier** is required to comply with SOLAS XII/4 as per the interpretation to SOLAS XII/4.
SC226.13	XII/6.2	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as major conversion hence regulations in this chapter shall be complied with where relevant. ***Ref.****: Draft circular of DE 51/28 Annex 14*
SC226.14	XII/6.3 As amended by MSC.216(82) Annex 1	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.
SC226.15	XII/6.4 As amended by MSC.216(82) Annex 1	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as major conversion hence regulations in this chapter shall be complied with where relevant. Additionally UI SC 208 and UI SC 209 are to be complied with. ***Ref.:*** *1. UI SC 208: Protection of cargo holds from loading/discharge equipment* *2. UI SC 209: Redundancy of stiffening structural members for vessels not designed according to Common Structural Rules for Bulk Carriers*
SC226.16	XII/7.1	This regulation applies to existing ships constructed before 1 July 1999 with single side skin structures.

Para No.	SOLAS Reg.	Technical Background
SC226.17	XII/7.2	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.
SC226.18	XII/8	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.
SC226.19	XII/9	This regulation applies to existing ships constructed before 1 July 1999 with single-side skin structures. Also, a conversion from a **Single-Hull Tanker to Bulk Carrier/Ore Carrier** is required to comply with SOLAS XII/4 as per the interpretation to SOLAS XII/4.
SC226.20	XII/10	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.
SC226.21	XII/11	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.
SC226.22	XII/12	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant. ***Ref.:*** *UI SC 180*
SC226.23	XII/13	Conversion from **single-hull tanker to bulk carrier/ore carrier** is considered as a major conversion hence regulations in this chapter shall be complied with where relevant. ***Ref.:*** *UI SC 179*
SC226.24	XII/14	This regulation applies to existing bulk carriers which cannot meet the requirements for withstanding of any one cargo hold as specified in Reg.5.1. Also, a conversion from a **Single-Hull Tanker to Bulk Carrier/Ore Carrier** is required to comply with SOLAS XII/4 as per the interpretation to SOLAS XII/4.

Submitted by Statutory Panel Chair
25 October 2008

Permanent Secretariat note (November 2008):
Approved by GPG 13 November 2008 (ref. 7658aIGz).

Technical Background (TB) document of UI SC226 (Rev.1 Dec 2012)

1. Scope and objectives

Revise SC 226 in light of MSC-MEPC.2/Circ.10.

2. Engineering background for technical basis and rationale

Refer to IACS submission DE 53/16.

3. Source / derivation of the proposed IACS Resolution

Input from Hull Panel as revised/enhanced by the Statutory Panel.

4. Summary of Changes intended for the revised Resolution

Revisions in Rev.1 have been made to be consistent with MSC-MEPC.2/Circ.10 except where compliance with SOLAS III/31 is deferred to the Administration.

5. Points of discussions or possible discussions

There was significant discussion and variation of views on the extent to which the following text should be made mandatory (excluding the text in square brackets) or should be deferred to the Administration for a decision (including the text in square brackets):

> *"For single-hull oil tanker conversion into bulk carrier,[it is recommended that] SOLAS regulation III/31.1.8 is to be met as for new ships, except where the space available for fitting and/or launching a free-fall lifeboat in accordance with regulation III/31.1.2.1 is not adequate, in which case the existing arrangements for lifeboats are acceptable subject to compliance with SOLAS regulation III/1.4.2."*

6. Attachments if any

DE 53/16

INTERNATIONAL MARITIME ORGANIZATION

IMO

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SUB-COMMITTEE ON SHIP DESIGN AND EQUIPMENT
53rd session
Agenda item 16

DE 53/16
13 August 2009
Original: ENGLISH

INTERPRETATION OF APPLICATION OF SOLAS, MARPOL AND LOAD LINE REQUIREMENTS FOR MAJOR CONVERSIONS OF OIL TANKERS

Relevant IACS Unified Interpretations of the SOLAS Convention

Submitted by the International Association of Classification Societies (IACS)

SUMMARY

Executive summary:	Further to document DE 52/17/1, this document advises the Sub-Committee about IACS Unified Interpretations for the application of SOLAS regulations to major conversions of single-hull tankers to double-hull tankers or bulk carrier/ore carriers
Strategic direction:	2
High-level action:	2.1.1
Planned output:	2.1.1.2 and 2.1.1.4
Action to be taken:	Paragraph 3
Related documents:	DE 52/17/1 and DE 52/21

Introduction

1 Paragraphs 17.5 and 17.6 of document DE 52/21 refer to the Sub-Committee's consideration of document DE 52/17/1 (IACS), in which IACS presented, at annex to its document, IACS Unified Interpretations on the application of the relevant SOLAS regulations to major conversions of single-hull tankers to double-hull tankers or bulk carrier/ore carriers. This consolidated IACS UI is now available on the IACS website (www.iacs.org.uk) as UI SC 226.

2 However, the annex to document DE 52/17/1 inadvertently omitted the technical background/explanation relating to each of the Unified Interpretations. With the aim of facilitating the consideration of this issue, and noting that document DE 52 decided to defer consideration of the interpretations to a time when the item had been included in the provisional agenda of the Sub-Committee, and that this issue has now been added as a substantive item to the agenda of document DE 53; IACS submits at annex to this document the Unified Interpretations together with the technical background/explanation for each interpretation. It is confirmed that the only changes in the annex to this document, as compared to the annex to document DE 52/17/1, are that the annex to this document provides the accompanying technical backgrounds/explanations.

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

CLIMATE CHANGE: A CHALLENGE FOR IMO TOO!

Action requested of the Sub-Committee

3 The Sub-Committee is invited to consider the IACS Unified Interpretations provided at annex and their accompanying technical backgrounds/explanations, and take action as appropriate.

***

ANNEX

IACS UNIFIED INTERPRETATIONS (UI) FOR THE APPLICATION OF SOLAS REGULATIONS TO CONVERSIONS OF SINGLE-HULL TANKER TO DOUBLE-HULL TANKER OR BULK CARRIER/ORE CARRIER

UI SC 226
(November 2008)

Note:

This UI is to be applied by IACS Members and Associates when acting as recognized organizations, authorized by flag State Administrations to act on their behalf, unless otherwise advised, from 1 January 2009.

Reference table of the clarification of the applicability of SOLAS regulations

No.	Reg.	Title/Content	Note
1	II-1/1.3	Alterations and modifications of a major character	As amended by MSC.216(82)
2	II-1/3.2, 2 and 3.2, 4	Protective coatings of dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers	As amended by MSC.216(82)
3	II-1/3-6	Access to and within spaces in, and forward of, the cargo area of oil tankers and bulk carriers	As amended by MSC.194(80)
4	II-1/3-8	Towing and Mooring Equipment	As amended by MSC.194(80)
5	II-1/Part B and Part B-1	Part B: Subdivision and stability Part B-1: Stability	As amended by MSC.216(82)
6	II-2/1.3	Repairs, alterations, modifications and outfitting	
7	III/1.4.2	Alterations and modifications of a major character	
8	III/31.1.8	Free-fall lifeboats	
9	V/22	Navigation bridge visibility	
10	XII/4	Damage stability requirements applicable to bulk carriers	
11	XII/5.1 and 5.2	Structural strength of bulk carriers	
12	XII/6.1	Structural and other requirements for bulk carriers	
13	XII/6.2	Structural and other requirements for bulk carriers	
14	XII/6.3	Structural and other requirements for bulk carriers	As amended by MSC.216(82), Annex 1
15	XII/6.4	Structural and other requirements for bulk carriers	As amended by MSC.216(82), Annex 1
16	XII/7.1	Survey and maintenance of bulk carrier	
17	XII/7.2	Survey and maintenance of bulk carrier	
18	XII/8	Information on compliance with requirements for bulk carriers	
19	XII/9	Requirements for bulk carriers not being capable of complying with regulation 4.3 due to the design configuration of their cargo holds	
20	XII/10	Solid bulk cargo density declaration	
21	XII/11	Loading instrument	
22	XII/12	Hold, ballast and dry space water ingress alarms	
23	XII/13	Availability of pumping systems	
24	XII/14	Restrictions from sailing with any hold empty	

SOLAS chapter II-1, regulation 1.3 (as amended by MSC.216(82))

Regulation 1 Application

3 All ships which undergo repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to these ships. Such ships, if constructed before the date on which any relevant amendments enter into force, shall, as a rule, comply with the requirements for ships constructed on or after that date to at least the same extent as they did before undergoing such repairs, alterations, modifications or outfitting. Repairs, alterations and modifications of a major character and outfitting related thereto shall meet the requirements for ships constructed on or after the date on which any relevant amendments enter into force, in so far as the Administration deems reasonable and practicable.

Interpretation

The date on which such a modification occurs for purposes of determining the applicability of requirements for ships constructed on or after the date on which any relevant amendments enter into force shall be:

- the date on which the contract is placed for the conversion; or
- in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

For single-hull tanker to double-hull tanker or single-hull tanker to bulk carrier/ore carrier, i.e.:

1 Conversions of single-hull tankers to double-hull tankers are regarded as modifications of a major character for the purposes of SOLAS chapter II-1.

2 Repairs, alterations and modifications of a major character include:

.1 Substantial alteration of the dimensions of a ship, for example:

Lengthening of a ship by adding a new midbody. The new midbody shall comply with SOLAS chapter II-1.

.2 A change of ship type, for example:

A tanker converted to a bulk carrier. Any structure, machinery and systems that are added or modified shall comply with SOLAS chapter II-1, taking into account the interpretation of regulations 3-2.2 and 3-2.4.

Technical background

For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application of regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions.

The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation.

The interpretation is in accordance with DE 51/28, annex 14 for single-hull tanker to double-hull tanker and has been extended for single-hull tanker to bulk carrier/ore carrier,

Ref.

DE 51/28, annex 14

SOLAS chapter II-1, regulations 3-2.2 and 3-2.4 (as amended by MSC.216(82))

Regulation 3-2 Protective coatings of dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers

2 All dedicated seawater ballast tanks arranged in ships and double-side skin spaces arranged in bulk carriers of 150 m in length and upwards shall be coated during construction in accordance with the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers, adopted by the Maritime Safety Committee by resolution MSC.215(82), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I.

and

4 Maintenance of the protective coating system shall be included in the overall ship's maintenance scheme. The effectiveness of the protective coating system shall be verified during the life of a ship by the Administration or an organization recognized by the Administration, based on the guidelines developed by the Organization.*

Interpretation

For single-hull tanker to double-hull tanker

SOLAS regulation II-1/3-2 (MSC.216(82)) only applies to dedicated water ballast tanks if constructed with all structural members being entirely new. If converting existing spaces into water ballast tanks with part of the existing structural members remaining in place, revised SOLAS regulation II-1/3-2 (MSC.216(82)) need not be applied.

For single-hull tanker to bulk carrier/ore carrier

SOLAS regulation II-1/3-2 (MSC.216(82)) only applies to dedicated water ballast tanks and double-side skin space of bulk carriers if constructed with all structural members being entirely new. If converting existing spaces into dedicated water ballast tanks or double-side skin space of Bulk Carrier with part of the existing structural members remains in place, revised SOLAS regulation II-1/3-2 (MSC.216(82)) need not be applied.

Technical background

For single-hull tanker to double-hull tanker

It is not practicable to apply the IMO PSPC to existing dedicated water ballast tanks and not reasonable to require partial application of the IMO PSPC, even to new structures, unless they constitute completely "new dedicated water ballast tanks".

For single-hull tanker to bulk carrier/ore carrier

It is not practicable to apply the IMO PSPC to existing dedicated water ballast tanks and not reasonable to require partial application of the IMO PSPC, even to new structures unless they constitute completely "new dedicated ballast tanks" or completely "new double-side skin spaces on double-side skin bulk carriers".

SOLAS chapter II-1, regulation 3-6 (as amended by MSC.194(80))

Regulation 3-6 Access to and within spaces in, and forward of, the cargo area of oil tankers and bulk carriers

Regulation text is not inserted here.

Interpretation

For single-hull tanker to double-hull tanker

Permanent means of access contained in table 1 of the Technical provisions for means of access for inspections (resolution MSC.158(78)) need not apply. However, if, in the course of conversion, substantial new structures are added, these new structures shall comply with the regulation.

The term "substantial new structures" means hull structures that are entirely renewed or augmented by new double bottom and/or double side construction (e.g., replacing the entire structure within cargo area or adding a new double bottom and/or double side section to the existing cargo area).

Additionally, an approved access manual shall be provided.

For single-hull tanker to bulk carrier/ore carrier

Permanent means of access contained in table 2 of the Technical provisions for means of access for inspections (resolution MSC.158(78)) need not apply. However, if, in the course of conversion, substantial new structures are added, these new structures shall comply with the regulation.

The term "substantial new structures" means hull structures that are entirely renewed or augmented by new double bottom and/or double-side skin construction (e.g., replacing the entire structure within cargo area or adding a new double bottom and/or double-side section to the existing cargo area).

Additionally, an approved access manual shall be provided.

Technical background

The interpretation is in accordance with document DE 51/28, annex 14 for single-hull tanker to double-hull tanker and has been extended to single-hull tanker to bulk carrier/ore carrier.

SOLAS chapter II-1, regulation 3-8 (as amended by MSC.194(80))
Regulation 3-8 Towing and Mooring Equipment *Regulation text is not inserted here.*
Interpretation <u>For single-hull tanker to double-hull tanker or single-hull tanker to bulk carrier/ore carrier</u> When existing equipment or fittings are only relocated, this regulation applies only to their supporting structures. Except where equipment and fittings for mooring/towing are totally replaced or modified, indication of Safe Work Load and provision of towing and mooring arrangements plan is not required.
Technical background As per SOLAS II-1, regulation1.3.

SOLAS chapter II-1, Part B and Part B-1 (as amended by MSC.216(82) – to be implemented from 1 January 2009)

Part	Reg.	Title	Applicable to
B	4	General	Cargo ships and passenger ships, but shall exclude those cargo ships which are shown to comply with subdivision and damage stability regulations in other instruments developed by IMO.
B-1	5	Intact stability information	Cargo ships and passenger ships
B-1	5-1	Stability information to be supplied to the master	Cargo ships and passenger ships
B-1	6	Required subdivision index *R*	Cargo ships and passenger ships
B-1	7	Attained subdivision index *A*	Cargo ships and passenger ships
B-1	7-1	Calculation of the factor *pi*	Cargo ships and passenger ships
B-1	7-2	Calculation of the factor *si*	Cargo ships and passenger ships
B-1	7-3	Permeability	Cargo ships and passenger ships

Regulation texts are not inserted here.

Interpretation

For single-hull tanker to double-hull tanker

As oil tankers shall comply with MARPOL Annex I, regulation 27 (intact stability) and regulation 28 (damage stability), SOLAS chapter II-1, Parts B and B-1 may be excluded.

For single-hull tanker to bulk carrier/ore carrier

For bulk carrier/ore carrier which is assigned a B reduced freeboard, ICLL 1966, regulation 27 (damage stability) or ICLL Protocol 1988, regulation 27 (damage stability) is applicable. As such, SOLAS chapter II-1, Parts B and B-1 may be excluded.

For bulk carrier/ore carrier which is assigned a B freeboard, SOLAS chapter II-1, Parts B and B-1 are applicable.

Technical background

For single-hull tanker to double-hull tanker

As provided by the footnote in SOLAS II-1, Part B, regulation 4, cargo ships that comply with subdivision and damage stability regulations in other instruments developed by IMO are excluded from applying Part B-1. The intact stability criteria in MARPOL I/27 are considered to be more robust than those contained in SOLAS chapter II-1, regulation B-1/5-1.

For single-hull tanker to bulk carrier/ore carrier

As provided by the footnote in SOLAS chapter II-1, Part B, regulation 4, cargo ships that comply with subdivision and damage stability regulations in other instruments developed by IMO are excluded from applying Part B-1. In the case where deck is loaded with cargoes, the UI LL 65 should be referred to for compliance with damage stability requirements.

SOLAS chapter II-2, regulation 1.3

Regulation 1.3 Repairs, alterations, modifications and outfitting

3.1 All ships which undergo repairs, alterations, modifications and outfitting related thereto shall continue to comply with at least the requirements previously applicable to these ships. Such ships, if constructed before 1 July 2002, shall, as a rule, comply with the requirements for ships constructed on or after that date to at least the same extent as they did before undergoing such repairs, alterations, modifications or outfitting.

3.2 Repairs, alterations and modifications which substantially alter the dimensions of a ship or the passenger accommodation spaces, or substantially increase a ship's service life and outfitting related thereto, shall meet the requirements for ships constructed on or after 1 July 2002 in so far as the Administration deems reasonable and practicable.

Interpretation

The date on which such a modification occurs for purposes of determining the applicability of requirements for ships constructed on or after the date on which any relevant amendments enter into force shall be:

- the date on which the contract is placed for the conversion; or
- in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

For single-hull tanker to double-hull tanker

New and converted parts shall comply with the latest applicable requirements.

For single-hull tanker to bulk carrier/ore carrier

New and converted parts shall comply with the latest applicable requirements.

Technical background

For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions.

The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation.

SOLAS chapter III, regulation 1.4.2

Regulation 1.4.2 Application

4 For ships constructed before 1 July 1998, the Administration shall:

.1 ……; and

.2 ensure that when life-saving appliances or arrangements on such ships are replaced or such ships undergo repairs, alterations or modifications of a major character which involve replacement of, or any addition to, their existing life-saving appliances or arrangements, such life-saving appliances or arrangements, in so far as is reasonable and practicable, comply with the requirements of this chapter. However, if a survival craft other than an inflatable liferaft is replaced without replacing its launching appliance, or *vice versa*, the survival craft or launching appliance may be of the same type as that replaced.

Interpretation

The date on which such a modification occurs for purposes of determining the applicability of requirements for ships constructed on or after the date on which any relevant amendments enter into force shall be:

- the date on which the contract is placed for the conversion; or
- in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

For single-hull tanker to double-hull tanker

This shall be considered as a major conversion.

For single-hull tanker to bulk carrier/ore carrier

This shall be considered as a major conversion.

Technical background

For identifying relevant regulations to be applied for a major modification, the principle of ship constructed date is used as a basis to clarify the application regulations for conversion cases noted. The basis for identifying the date of the conversion draws upon MARPOL regulations for major conversions.

The condition "*assembly has commenced comprising at least 50 tonnes, or one per cent of the lightship weight*" used for "*similar stage of construction*" in SOLAS has not been applied in this interpretation as it is not considered appropriate and could provide a loophole to circumvent the interpretation.

SOLAS chapter III, regulation 31.1.8

Regulation 31 Survival craft and rescue boat

1.2 *In lieu* of meeting the requirements of paragraph 1.1, cargo ships may carry:

.1 one or more free-fall lifeboats, complying with the requirements of section 4.7 of the Code, capable of being free-fall launched over the stern of the ship of such aggregate capacity as will accommodate the total number of persons on board; and

.2 in addition, one or more inflatable or rigid liferafts complying with the requirements of section 4.2 or 4.3 of the Code, on each side of the ship, of such aggregate capacity as will accommodate the total number of persons on board. The liferafts on at least one side of the ship shall be served by launching appliances.

and

1.8 Notwithstanding the requirements of paragraph 1.1, bulk carriers as defined in regulation IX/1.6 constructed on or after 1 July 2006 shall comply with the requirements of paragraph 1.2.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

Not applicable.

Technical background

For single-hull tanker to double-hull tanker

SOLAS chapter III, regulation 31.1.8 applies to bulk carriers only.

For single-hull tanker to bulk carrier/ore carrier

The basis for application of free-fall life boats to new bulk carriers built on or after 1 July 2006 is recognized. However, this UI is based on the conditions contained in SOLAS chapter III, regulation 1.4.2. To do otherwise would require an amendment to SOLAS.

SOLAS chapter V, regulation 22

Regulation 22 Navigation bridge visibility

Regulation text is not inserted here.

Interpretation

For single-hull tanker to double-hull tanker

In ballast loading condition, the visibility standard applicable to the ship prior to conversion is acceptable as equivalent to the ballast loading condition after the conversion. Visibility forward needs to comply with if any changes are made to the fore end structural arrangement. This need not only be related to the fitting of a full forecastle, but could also be affected by aspects such as increasing the sheer and/or step in the upper deck.

For single-hull tanker to bulk carrier/ore carrier

In ballast loading condition, the visibility standard applicable to the ship prior to conversion is acceptable as equivalent to the ballast loading condition after the conversion. Visibility forward needs to comply with if any changes are made to the fore end structural arrangement. This need not only be related to the fitting of a full forecastle, but could also be affected by aspects such as increasing the sheer and/or step in the upper deck.

Technical background

It is noted that there is no regulation in SOLAS chapter V which addresses modifications of a major character.

For single-hull tanker to double-hull tanker or single-hull tanker to bulk carrier/ore carrier

This UI considers the principle in regulation V/22.3 where, for ships constructed prior to 1 July 1998, the level of visibility shall be retained as a minimum at the same level prior to conversion as given in SOLAS chapter V, regulation 22.2.

SOLAS regulation XII/4

Damage stability requirements applicable to bulk carriers

2 Bulk carriers of 150 m in length and upwards of double-side skin construction in which any part of longitudinal bulkhead is located within B/5 or 11.5 m, whichever is less, inboard from the ship's side at right angle to the centreline at the assigned summer load line, designed to carry solid bulk cargoes having a density of 1,000 kg/m^3 and above, constructed on or after 1 July 2006 shall, when loaded to the summer load line, be able to withstand flooding of any one cargo hold in all loading conditions and remain afloat in a satisfactory condition of equilibrium, as specified in paragraph 4.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

When the breadth of wing tanks is less than B/5 or 11.5 m, whichever is less, this requirement applies to the relevant cargo hold(s) in way of that wing tank.

Technical background

If the breadth of the wing tank is less than B/5, cargo hold will be flooded by applying transverse extent of damage as per ICLL regulation 27.

SOLAS regulations XII/5.1 and 5.2
Structural strength of bulk carriers

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, designed to carry solid bulk cargoes having a density of 1,000 kg/m^3 and above constructed on or after 1 July 1999, shall have sufficient strength to withstand flooding of any one cargo hold to the water level outside the ship in that flooded condition in all loading and ballast conditions, taking also into account dynamic effects resulting from the presence of water in the hold, and taking into account the recommendations adopted by the Organization

2 Bulk carriers of 150 m in length and upwards of double-side skin construction, in which any part of longitudinal bulkhead is located within B/5 or 11.5 m, whichever is less, inboard from the ship's side at right angle to the centreline at the assigned summer load line, designed to carry bulk cargoes having a density of 1,000 kg/m^3 and above constructed on or after 1 July 2006, shall comply with the structural strength provisions of paragraph 1.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

When the breadth of wing tanks is less than B/5 or 11.5 m, whichever is less, this requirement applies to the relevant cargo hold(s) in way of that wing tank.

Technical background

If the breadth of the wing tank is less than B/5, cargo hold will be flooded as per assumptions made in SOLAS chapter XII, regulation 4. Additionally, UI SC 207 is to be complied with for single-hull tanker to bulk carrier/ore carrier.

Ref.

UI SC 207: Structural Strength of Bulk Carriers in case of Accidental Hold Flooding

SOLAS regulation XII/6.1

Structural and other requirements for bulk carriers

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, carrying solid bulk cargoes having a density of 1,780 kg/m^3 and above, constructed before 1 July 1999, shall comply with the following requirements in accordance with the implementation schedule specified in regulation 3:

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation is not applicable.

Technical background

This regulation applies to existing ships constructed before 1 July 1999 with single-side skin structures.

Also, a conversion from a single-hull tanker to bulk carrier/ore carrier is required to comply with SOLAS regulation XII/4 as per the interpretation to SOLAS regulation XII/4.

SOLAS regulation XII/6.2

Structural and other requirements for bulk carriers

2 Bulk carriers of 150 m in length and upwards constructed on or after 1 July 2006, in all areas with double-side skin construction shall comply with the following requirements:

.1 Primary stiffening structures of the double-side skin shall not be placed inside the cargo hold space.

.2 Subject to the provisions below, the distance between the outer shell and the inner shell at any transverse section shall not be less than 1,000 mm measured perpendicular to the side shell. The double-side skin construction shall be such as to allow access for inspection as provided in regulation II-1/3-6 and the Technical Provisions referring thereto.

.1 The clearances below need not be maintained in way of cross ties, upper and lower end brackets of transverse framing or end brackets of longitudinal framing.

.2 The minimum width of the clear passage through the double-side skin space in way of obstructions such as piping or vertical ladders shall not be less than 600 mm.

.3 Where the inner and/or outer skins are transversely framed, the minimum clearance between the inner surfaces of the frames shall not be less than 600 mm.

.4 Where the inner and outer skins are longitudinally framed, the minimum clearance between the inner surfaces of the frames shall not be less than 800 mm. Outside the parallel part of the cargo hold length, this clearance may be reduced where necessitated by the structural configuration, but, in no case, shall be less than 600 mm.

.5 The minimum clearance referred to above shall be the shortest distance measured between assumed lines connecting the inner surfaces of the frames on the inner and outer skins.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation applies. For permanent means of access, the requirements contained in table 2 of the Technical provisions for means of access for inspections (resolution MSC.158(78)) shall not apply to tankers converting from single-hull to double-hull. However, if, in the course of conversion, substantial new structures are added, these new structures shall comply with the regulation. The term "substantial new structures" means hull structures that are entirely renewed or augmented by new double bottom and/or double side construction (e.g., replacing the entire structure within cargo area or adding a new double bottom and/or double-side section to the existing cargo area). Additionally, an approved access manual shall be provided.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as major conversion, hence regulations in this chapter shall be complied with where relevant.

Ref.

Draft circular of document DE 51/28, annex 14.

SOLAS regulation XII/6.3 (MSC.216(82), annex 1)

Structural and other requirements for bulk carriers

3 The double-side skin spaces, with the exception of top-side wing tanks, if fitted, shall not be used for the carriage of cargo.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation applies.

Technical background
Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion hence regulations in this chapter shall be complied with where relevant.

SOLAS regulation XII/6.4 (MSC.216(82), annex 1)

Structural and other requirements for bulk carriers

4 In bulk carriers of 150 m in length and upwards, carrying solid bulk cargoes having a density of 1,000 kg/m^3 and above, constructed on or after 1 July 2006:

.1 the structure of cargo holds shall be such that all contemplated cargoes can be loaded and discharged by standard loading/discharge equipment and procedures without damage which may compromise the safety of the structure;

.2 effective continuity between the side shell structure and the rest of the hull structure shall be assured; and

.3 the structure of cargo areas shall be such that single failure of one stiffening structural member will not lead to immediate consequential failure of other structural items potentially leading to the collapse of the entire stiffened panels.

Interpretation

<u>For single-hull tanker to double-hull tanker</u>

Not relevant.

<u>For single-hull tanker to bulk carrier/ore carrier</u>

The newly constructed parts of converted bulk carriers of 150 m in length and upwards, carrying solid bulk cargoes having a density of 1,000 kg/m^3 and above, constructed on or after 1 July 2006 shall comply.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as major conversion, hence regulations in this chapter shall be complied with where relevant. Additionally, UI SC 208 and UI SC 209 are to be complied with.

Ref.

UI SC 208: Protection of cargo holds from loading/discharge equipment

UI SC 209: Redundancy of stiffening structural members for vessels not designed according to Common Structural Rules for Bulk Carriers

SOLAS regulation XII/7.1

Survey and maintenance of bulk carriers

1 Bulk carriers of 150 m in length and upwards of single-side skin construction, constructed before 1 July 1999, of 10 years of age and over, shall not carry solid bulk cargoes having a density of 1,780 kg/m^3 and above unless they have satisfactorily undergone either:

.1 a periodical survey, in accordance with the enhanced programme of inspections during surveys required by regulation XI-1/2; or

.2 a survey of all cargo holds to the same extent as required for periodical surveys in the enhanced programme of inspections during surveys required by regulation XI-1/2.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation is not applicable.

Technical background

This regulation applies to existing ships constructed before 1 July 1999 with single-side skin structures.

SOLAS regulation XII/7.2

Survey and maintenance of bulk carriers

2 Bulk carriers shall comply with the maintenance requirements provided in regulation II-1/3-1 and the Standards for owners' inspection and maintenance of bulk carrier hatch covers, adopted by the Organization by resolution MSC.169(79), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

SOLAS regulation XII/8

Information on compliance with requirements for bulk carriers

1 The booklet required by regulation VI/7.2 shall be endorsed by the Administration or on its behalf, to indicate that regulations 4, 5, 6 and 7, as appropriate, are complied with.

2 Any restrictions imposed on the carriage of solid bulk cargoes having a density of 1,780 kg/m^3 and above in accordance with the requirements of regulations 6 and 14 shall be identified and recorded in the booklet referred to in paragraph 1.

3 A bulk carrier to which paragraph 2 applies shall be permanently marked on the side shell at midships, port and starboard, with a solid equilateral triangle having sides of 500 mm and its apex 300 mm below the deck line, and painted a contrasting colour to that of the hull.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

SOLAS regulation XII/9

Requirements for bulk carriers not being capable of complying with regulation 4.3 due to the design configuration of their cargo holds

For bulk carriers constructed before 1 July 1999 being within the application limits of regulation 4.3, which have been constructed with an insufficient number of transverse watertight bulkheads to satisfy that regulation, the Administration may allow relaxation from the application of regulations 4.3 and 6 on condition that they shall comply with the following requirements:

.1 for the foremost cargo hold, the inspections prescribed for the annual survey in the enhanced programme of inspections during surveys required by regulation XI-1/2 shall be replaced by the inspections prescribed therein for the intermediate survey of cargo holds;

.2 are provided with bilge well high water level alarms in all cargo holds, or in cargo conveyor tunnels, as appropriate, giving an audible and visual alarm on the navigation bridge, as approved by the Administration or an organization recognized by it in accordance with the provisions of regulation XI-1/1; and

.3 are provided with detailed information on specific cargo hold flooding scenarios. This information shall be accompanied by detailed instructions on evacuation preparedness under the provisions of section 8 of the International Safety Management (ISM) Code and be used as the basis for crew training and drills.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation is not applicable.

Technical background

This regulation applies to existing ships constructed before 1 July 1999 with single-side skin structures.

Also, a conversion from a single-hull tanker to bulk carrier/ore carrier is required to comply with SOLAS regulation XII/4 as per the interpretation to SOLAS regulation XII/4.

SOLAS regulation XII/10

Solid bulk cargo density declaration

1 Prior to loading bulk cargo on bulk carriers of 150 m in length and upwards, the shipper shall declare the density of the cargo, in addition to providing the cargo information required by regulation VI/2.

2 For bulk carriers to which regulation 6 applies, unless such bulk carriers comply with all relevant requirements of this chapter applicable to the carriage of solid bulk cargoes having a density of 1,780 kg/m^3 and above, any cargo declared to have a density within the range 1,250 kg/m^3 to 1,780 kg/m^3 shall have its density verified by an accredited testing organization.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

SOLAS regulation XII/11

Loading instrument

(Unless provided otherwise, this regulation applies to bulk carriers regardless of their date of construction.)

1 Bulk carriers of 150 m in length and upwards shall be fitted with a loading instrument capable of providing information on hull girder shear forces and bending moments, taking into account the recommendation adopted by the Organization.

2 Bulk carriers of 150 m in length and upwards constructed before 1 July 1999 shall comply with the requirements of paragraph 1 not later than the date of the first intermediate or periodical survey of the ship to be carried out after 1 July 1999.

3 Bulk carriers of less than 150 m in length constructed on or after 1 July 2006 shall be fitted with a loading instrument capable of providing information on the ship's stability in the intact condition. The computer software shall be approved for stability calculations by the Administration and shall be provided with standard conditions for testing purposes relating to the approved stability information.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

SOLAS regulation XII/12

Hold, ballast and dry space water ingress alarms

(This regulation applies to bulk carriers regardless of their date of construction.)

1 Bulk carriers shall be fitted with water level detectors.

2 The audible and visual alarms specified in paragraph 1 shall be located on the navigation bridge:

.1 in each cargo hold, giving audible and visual alarms, one when the water level above the inner bottom in any hold reaches a height of 0.5 m and another at a height not less than 15% of the depth of the cargo hold but not more than 2 m. On bulk carriers to which regulation 9.2 applies, detectors with only the latter alarm need be installed. The water level detectors shall be fitted in the aft end of the cargo holds. For cargo holds which are used for water ballast, an alarm overriding device may be installed. The visual alarms shall clearly discriminate between the two different water levels detected in each hold;

.2 in any ballast tank forward of the collision bulkhead required by regulation II-1/12, giving an audible and visual alarm when the liquid in the tank reaches a level not exceeding 10% of the tank capacity. An alarm overriding device may be installed to be activated when the tank is in use; and

.3 in any dry or void space other than a chain cable locker, any part of which extends forward of the foremost cargo hold, giving an audible and visual alarm at a water level of 0.1 m above the deck. Such alarms need not be provided in enclosed spaces the volume of which does not exceed 0.1% of the ship's maximum displacement volume.

3 Bulk carriers constructed before 1 July 2004 shall comply with the requirements of this regulation not later than the date of the annual, intermediate or renewal survey of the ship to be carried out after 1 July 2004, whichever comes first.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

Ref.

UI SC 180

SOLAS regulation XII/13

Availability of pumping systems

(This regulation applies to bulk carriers regardless of their date of construction.)

1 On bulk carriers, the means for draining and pumping ballast tanks forward of the collision bulkhead and bilges of dry spaces any part of which extends forward of the foremost cargo hold shall be capable of being brought into operation from a readily accessible enclosed space, the location of which is accessible from the navigation bridge or propulsion machinery control position without traversing exposed freeboard or superstructure decks. Where pipes serving such tanks or bilges pierce the collision bulkhead, valve operation by means of remotely operated actuators may be accepted as an alternative to the valve control specified in regulation II-1/12, provided that the location of such valve controls complies with this regulation.

2 Bulk carriers constructed before 1 July 2004 shall comply with the requirements of this regulation not later than the date of the first intermediate or renewal survey of the ship to be carried out after 1 July 2004, but, in no case, later than 1 July 2007.

Interpretation

For single-hull tanker to double-hull tanker

Not relevant.

For single-hull tanker to bulk carrier/ore carrier

This regulation shall be applied.

Technical background

Conversion from single-hull tanker to bulk carrier/ore carrier is considered as a major conversion, hence regulations in this chapter shall be complied with where relevant.

Ref.
UI SC 179

SOLAS regulation XII/14
Restrictions from sailing with any hold empty Bulk carriers of 150 m in length and upwards of single-side skin construction, carrying cargoes having a density of 1,780 kg/m^3 and above, if not meeting the requirements for withstanding flooding of any one cargo hold as specified in regulation 5.1 and the Standards and criteria for side structures of bulk carriers of single-side skin construction, adopted by the Organization by resolution MSC.168(79), as may be amended by the Organization, provided that such amendments are adopted, brought into force and take effect in accordance with the provisions of article VIII of the present Convention concerning the amendment procedures applicable to the Annex other than chapter I, shall not sail with any hold loaded to less than 10% of the hold's maximum allowable cargo weight when in the full load condition, after reaching 10 years of age. The applicable full load condition for this regulation is a load equal to or greater than 90% of the ship's deadweight at the relevant assigned freeboard.
Interpretation <u>For single-hull tanker to double-hull tanker</u> Not relevant. <u>For single-hull tanker to bulk carrier/ore carrier</u> This regulation is not applicable.
Technical background This regulation applies to existing bulk carriers which cannot meet the requirements for withstanding any one cargo hold as specified in regulation 5.1. <u>Also, a conversion from a single-hull tanker to bulk carrier/ore carrier is required to comply with SOLAS regulation XII/4 as per the interpretation to SOLAS regulation XII/4</u>.

UI SC 227 "The dedicated seawater ballast tanks in SOLAS Chapter II-1 (Regulation 3-2)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Nov 2016)	09 November 2016	01 July 2017
Rev.1 (May 2011)	09 May 2011	As defined in Reg.3-2.1 SOLAS II-1
New (Jan 2009)	08 January 2009	-

- **Rev 2 (Nov 2016)**

.1 Origin of Change:

☑ Based on IMO Circ.1539 (PA 9.10 from the IACS Observer's Report from MSC 96)

.2 Main Reason for Change:

IMO Circ.1539 approved by MSC 96 is noted:

The following tanks should not be considered to be dedicated seawater ballast tanks and should, therefore, be exempted from the application and requirements of the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)), provided the coatings applied in the tanks described in subparagraphs .2 and .3 below are confirmed by the coating manufacturer to be resistant to the media stored in these tanks and provided such coatings are applied and maintained according to the coating manufacturer's procedures.

.1 ballast tanks identified as "Spaces included in Net Tonnage" in the International Tonnage Certificate (1969);

.2 seawater ballast tanks in passenger ships also designated for the carriage of grey water or black water; and

.3 seawater ballast tanks in livestock carriers also designated for the carriage of livestock dung.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

UI SC 227(Rev.1) was submitted by IACS to IMO, and was discussed on DE 56,MSC 90,SDC 3,MSC96.According to IMO Circ.1539 finally approved by MSC 96,text of UI SC 227 is to be adjusted.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: PA 9.10 from the IACS Observer's Report from MSC 96
Panel Approval: 17 October 2016 (Ref: PS15004_ISt)
GPG Approval: 09 November 2016 (Ref: 15145gIGf)

- **Rev 1 (May 2011)**

.1 Origin of Change:

☑ Request by non-IACS entity (Uljanik shipyard)
☑ Suggestion by an IACS member
☑ Based on IMO Regulation (MSC.215(82), SOLAS II-1/3-2)

.2 Main Reason for Change:

The Uljanik shipyard raised the question regarding possible application of the BWT PSPC requirements to the dung/WB tanks on livestock carriers.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

EG/Coating discussed this issue and passed it onto the Statutory Panel through GPG. The proposed revision of UI SC227 was discussed and agreed by the Statutory Panel through correspondence and 12th Statutory Panel Meeting.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 25 June 2010 Made by GPG
Panel Approval: 20 April 2011 by Statutory Panel (Ref: 11069_PSa)
GPG Approval: 9 May 2011 (Ref: 11069_IGb)

- **New (Jan 2009)**

New UI developed by Statutory Panel & EG/Coating and approved by GPG on 8 January 2009 (ref. 7612cIGi) and submitted to DE52.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC227:

Annex 1. **TB for New (Jan 2009)**

See separate TB document in Annex 1.

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Annex 2. **TB for Rev.1 (May 2011)**

See separate TB document in Annex 2.

◄▼►

Annex3. **TB for Rev.2 (Oct 2016)**

See separate TB document in Annex 3.

◄▼►

Technical Background

UI SC227 (New, January 2009)

"The dedicated seawater ballast tanks in SOLAS Chapter II-1, Regulation 3-2"

1. Scope and objective

The Performance standard for protective coatings (PSPC), as given in resolution MSC.215(82), applies to "dedicated" seawater ballast tanks in all new ships of 500 GT and greater.

It is noted that the amendments to SOLAS II-1/3-2 (resolution MSC.216(82)) and the PSPC (resolution MSC.215(82)) do not define "dedicated" seawater ballast tanks.

Resolution MSC.215(82) refers to the definition of ballast tank as contained in resolutions A.798(19) and A.744(18). Both Assembly resolutions define a ballast tank as "a tank which is used solely for water ballast" and do not offer insight as to the meaning of "dedicated" seawater ballast tanks.

Confirmation of the IMO Sub-Committee on Ship Design and Equipment is being sought on the application of PSPC to tanks that are not dedicated solely to the carriage of seawater ballast and, in particular, to tanks in offshore supply vessels which normally transport brackish or fresh drilling water from shore to an offshore rig, but may, on an occasion, be required to take on seawater ballast in these tanks for purposes of trim and stability.

Paragraph 6.9 of document DE 49/20 indicates that the Sub-Committee agreed that for combined tanks the coating standard would be recommendatory, not mandatory, but that this matter should be further considered in more detail once the performance standards for coatings for dedicated seawater ballast tanks had been finalized.

IACS submitted its paper (DE 51/22/1) to DE 51 seeking clarification on this issue, which was agreed by DE 51, and was further requested by DE 51 to develop a UI for DE 52 consideration.

2. Points of discussions

IACS agrees with the preliminary view rendered by DE 49 and considers that the PSPC should not be mandatory for tanks which normally carry brackish or fresh drilling water from shore to offshore rigs, since drilling water would, in this case, be considered as cargo even though these tanks may carry seawater as ballast in pre-defined circumstances (e.g., some tanks may be used for ballasting on the return journey).

Further, IACS considers that a suitable means to control and document tanks which are not "dedicated" seawater ballast tanks is that the volume of such tanks is not excluded as ballast spaces in the determination of the net tonnage under the 1969 ITC.

However, EG/Coating raised a question whether sea water ballast tanks in passenger vessels also designated for the carriage of grey water should be identified as “dedicated sea water ballast tank” just because the tanks are not part of the net tonnage calculation.

EG/Coating reached an agreement that sea water ballast tanks in passenger vessels also designated for the carriage of grey water is not a dedicated ballast tank as it may carry a mixture of fresh water, salt water and drains from spaces such as showers, galleys etc. Its contents are often more onerous in terms of corrosion than seawater and as a result coatings applied in these tanks have a better performance than those applied in accordance with the PSPC for dedicated ballast tanks.

Accordingly, IACS decided to add the following in the draft UI as one of the tank which are not identified as “dedicated ballast tank”:
“ 2. Sea water ballast tanks in passenger vessels also designated for the carriage of grey water ”

3. Extent of Approval by Working Group

The draft UIs are accepted [unanimously].

4. Source/derivation of proposed interpretation

N.A.

5. Decision by voting

[N.A.]

Submitted by Statutory Panel Chairman
12 November 2008
Further comments by EG/Coating Chairman
26 December 2008

Permanent Secretariat note (January 2009):
New UI SC227 was approved by GPG on 8 January 2009 (ref. 7612cIGi) and submitted to DE52.

Technical Background for UI SC227 Rev.1, May 2011

1. Scope and objectives

To consider whether or not the dung/WB tanks on livestock carriers and the grey/black water tanks onboard passenger/cruise ship tanks are regarded as dedicated seawater ballast tanks in terms of application of SOLAS Regulation II-1/3-2 and amend IACS UI SC227 as appropriate.

2. Engineering background for technical basis and rationale

In judging the application of PSPC (resolution MSC.215(82)), whether or not the tanks are assigned as “dedicated seawater ballast tanks” and included in the net tonnage is considered as the generic criteria to determine whether the tank solely carries ballast water versus a tank which carries ballast water and other liquids at different times.

However, the dung/WB tanks on livestock carriers and the grey/black water tanks onboard passenger/cruise ships carrying a mixture of fresh water, salt water and drains from spaces such as showers, galleys etc., have contents often more onerous in terms of corrosion than seawater and as a result coatings applied in these tanks, such as Phenolic Epoxy, have a better performance than those applied in accordance with PSPC for dedicated ballast tanks. In this regard, the dung/WB tanks on livestock carriers and the grey/black water tanks onboard passenger/cruise ship, despite that such tanks are excluded from the Net Tonnage (i.e, subject to PSPC) tanks, are not considered as dedicated seawater ballast tanks.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

The UI is amended as follows:
The following tanks are not considered to be dedicated seawater ballast tanks and are therefore exempted from the requirements of PSPC:
1. Ballast tank identified as "Spaces included in Net Tonnage" in the 1969 ITC Certificate;
2. Sea water ballast tanks in passenger vessels also designated for the carriage of grey water <u>or black water;</u>
<u>3. Sea water ballast tanks in livestock carriers also designated for the carriage of dung.</u>

5. Points of discussions or possible discussions

Whether or not the sea water ballast tanks in livestock carriers are included in Net Tonnage was discussed. The Statutory Panel finally agreed that they are excluded from the Net Tonnage.

6. Attachments if any

None

Technical Background (TB) document for UI SC227 (Rev.2 Nov 2016)

1. Scope and objectives

In order to response the outcome of MSC 96 (MSC.1/Circ.1539), the Safety Panel has addressed the issue.

2. Engineering background for technical basis and rationale

Reviewing the outcome of MSC 96 (MSC.1/Circ.1539), text of UI SC 227 is to be adjusted.

3. Source / derivation of the proposed IACS Resolution

IACS UI SC227
IMO Submission paper DE 56/13/2(IACS)
Report of DE 56 (DE 56/25) paragraph 13.6, 13.7, 13.8
Report of MSC90(MSC 90/28) paragraph 9.38
IMO Submission paper SDC 3/14/10(IACS)
MSC.1/Circ.1539.

4. Summary of Changes intended for the revised Resolution

The UI is amended as follows:

The following tanks shall not be considered to be dedicated seawater ballast tanks and shall therefore be exempted from the application and requirements of the Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers (resolution MSC.215(82)), provided the coatings applied in the tanks described in paragraphs 2. and 3. below are confirmed by the coating manufacturer to be resistant to the media stored in these tanks and provided such coatings are applied and maintained according to the coating manufacturer's procedures.

5. Points of discussions or possible discussions

As given above 2.

6. Attachments if any

None

Technical Background

UR M10 (Rev. 3, Sept 2008) and UI SC 228 (New, Dec 2008)

Existing SOLAS Regulation Analysis

SOLAS Reg. II-1/27.5 requires:

Main turbine propulsion machinery and, where applicable, main internal combustion propulsion machinery and auxiliary machinery shall be provided with automatic shutoff arrangements in the case of failures ....which could lead rapidly to .... serious damage or explosion. The administration may permit overriding automatic shutoff devices.

SOLAS Reg. II-1/31.2.10 requires:

Automation systems shall be designed in a manner which ensures that threshold warning of impending or imminent slowdown or shutdown of the propulsion machinery is given to the officer in charge of the navigational watch in time to assess the navigational circumstances in an emergency. In particular, the system shall control, monitor, alert and take safety action to slow down or stop propulsion while providing the officer in charge of the navigational watch an opportunity to manually intervene, except for those case where manual intervention will result in total failure of the engine and/or propulsion equipment within a short time, for example in the case of overspeed.

SOLAS Reg. II-1/31.3 requires:

Where the main propulsion and associated machinery, including sources of main electrical supply, are provided with various degrees of automatic or remote control and are under continuous manual supervision from a control room the arrangements and controls shall be so designed, equipped and installed that the machinery operation will be as safe and effective as if it were under direct supervision; for this purpose regulations 46 to 50 shall apply as appropriate. Particular consideration shall be given to protect such spaces against fire and flooding.

SOLAS Reg. II-1/47.2 requires:

Internal combustion engines of 2,250 kW and above or having cylinders of more than 300 mm bore shall be provided with crankcase oil mist detectors or engine bearing temperature monitors or equivalent devices.

Summarising SOLAS:

Engines are to be fitted with safety system shutting off the engines to prevent serious damage or explosion and overrides may be permitted.

The safety system, either in attended or unattended machinery spaces, is to alert and take action (alarm + slow down or stop) but, when action is taken on the propulsion system, the watch officer is to be given an opportunity to intervene (alarm + override), except for those case where manual intervention will result in total failure of the engine and/or propulsion equipment within a short time.

For periodically unattended machinery, engines larger than a given size are to be equipped with oil mist detectors or bearing temperature monitors or equivalent devices (SOLAS does not specify which action they are to initiate); the same applies to machinery systems under automatic or remote control or under remote manual supervision.

Existing IACS UR Analysis

- IACS UR M10 in item 10.8 gives a requirement applicable to oil mist detectors (including type testing to UR M67), but does not require an oil mist detector (OMD) to be fitted.

- IACS UR M35 Table 1 (slow speed main engines in unattended machinery spaces) requires an OMD to be installed and give alarm and **slow** down.

- IACS UR M35 Table 2 (medium speed main engines in unattended machinery spaces) requires an OMD to be installed and give alarm and **shut** down.

- (IACS UR M36 Table 1 (auxiliary engines in unattended machinery spaces) requires an OMD to be installed and give alarm and shut down).

- IACS UR M67 gives standard type testing conditions for OMD.

Summarising IACS URs:
OMD (or equivalent arrangements) is to be fitted only to engines when installed in an unattended machinery space.
The actions to be taken are described in M35, M36.
The alarm system is to be in accordance with M29.
The safety system is to be in accordance with M30.
The OMD is to be type tested in accordance with M.67

Assessment of ISO TC8/SC1 WD 7240-26 "Fire detection and alarm systems - Point type oil mist detectors"
This document has been considered.
Summary of review:
It addresses requirements applicable to oil mist detectors to be used in open spaces for fire detection systems in buildings and vessels. (It is not deemed applicable to oil mist detectors to be used in engine crankcases, even if some part could be used as guidance).

Summarising findings – changes to M10 and new SC228
It is recognized that:
1. An OMD is a safety device and this also applies to bearing temperature devices and equivalent devices where fitted instead of an OMD.
2. Where OMD arrangements or alternative arrangements are used to initiate slow down, an alarm is to be given before intervention of the safety system.
3. Where OMD arrangements or alternative arrangements are used to initiate shut down, the alarm may be given upon intervention of safety system.
4. Where arrangements are provided for overriding a safety system, they are to be such that inadvertent operation is prevented.
5. Visual indication is to be given at the relevant control station(s) when a safety override is operated.
6. The consequences of overriding a safety system are to be established and documented.

The Rev.3 of UR M10 and a new UI SC228 has been prepared to address the above.

Submitted by Machinery Panel Chairman
30 July 2008

Permanent Secretariat note (January 2009):

- UR M10 Rev.3 was approved, with the following implementation statement, by GPG on 11 September 2008 (ref. 6098_IGj):

  "Note:
  1) The requirements of M10 Rev. 3 are to be uniformly implemented by IACS Societies for engines:
  i) when an application for certification of an engine is dated on or after 1 January 2010; or
  ii) which are installed in new ships for which the date of contract for construction is on or after 1 January 2010.
  2) The "contract for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural requirement (PR) No.29."

- After initial review by GPG new UI SC228 was returned to Machinery Panel to clarify a possible discrepancy between the UI text and revised UR M10.8, before being approved by GPG on 22 December 2008 (ref. 6098_IGl).

Technical Background

UI SC232 (NEW, May 2009) – "Steam Boilers and Boiler Feed Systems"

Machinery Panel Task no. PM5306: Interpretation of SOLAS Chapter II-1/Regulation 32.4 – Duplication of feed water pipes

SOLAS Reg. II-1/32.4 - *Steam boilers and boiler feed systems*

"4. Every steam generating system which provides services essential for the safety of the ship, or which could be rendered dangerous by the failure of its feedwater supply, shall be provided with not less than two separate feedwater systems from and including the feed pumps, noting that a single penetration of the steam drum is acceptable. Unless overpressure is prevented by the pump characteristics, means shall be provided which will prevent overpressure in any part of the systems."

Summarising SOLAS:

- SOLAS II-1/32.4 specifically uses the phrase "every steam generating system", it does not use the term "boiler" as used in the other paragraphs of II-1/32. Where a vessel is fitted with two boilers, the phrase "steam generating system" refers to the combination of the two boilers making up the "steam generating system". If each of two adequately sized boilers are fitted with a single feed water pipe, there are in fact two separate feed water systems for the "steam generating system".

- SOLAS II-1/32.2 requires safety arrangements which will cut off the fuel supply and give an alarm in the case of low water level., air supply failure or flame failure, *for boilers intended to operate without manual supervision* Accordingly, the loss of the single feed water pipe to a boiler would not necessarily render the steam generating system "dangerous" to the vessel or crew

Summary of review:

There is a consensus that where there is an accepted level of redundancy in a steam generating system only one supply pipe to each boiler from two feed pumps can be installed, on the basis that the pipe is a *non active component* of the system.

Summarising findings:

Boilers in a steam generating system, <u>without</u> redundancy installed for propulsion or essential auxiliary purposes two independent feed water pipes are required.

For boilers under manual control it can be assumed that an equivalent level of redundancy and safety will be provided.

Submitted by Machinery Panel Chairman
4 February 2009

Permanent Secretariat note (May 2009):

New UI SC232 was approved by GPG on 13 May 2009 (ref. 9522_IGe) with an implementation date of 1 January 2010.

UI SC233 "LSA Code – lifeboat exterior colour"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Nov 2012)	08 November 2012	1 July 2013
New (Feb 2009)	24 February 2009	1 July 2010

- **Rev 1 (November 2012)**

.1 Origin of Change:

☑ IACS Observer's report on DE56 - Recommendation 3.2

.2 Main Reason for Change:

To bring UI SC233 in line with MSC.1/Circ.1423.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Following the approval of recommendation 3.2 in IACS observer's report to DE56, Statutory panel reviewed and revised UI SC233. The draft revision of the UI was unanimously agreed in the Statutory panel. Also it was agreed that a HF&TB was not necessary to be developed in the Panel.

Permanent Secretariat prepared a simple HF (in consultation with the Statutory Panel Chairman) to record this revision.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *February 2012 Made by Permanent Representative to IMO*
Panel Approval: *19 October 2012 (By Statutory Panel)*
GPG Approval: *08 November 2012 (Subject: 12188_IGb)*

- **New (Feb 2009)**

GPG Subject No: 9525_IGb

Refer TB document in Part B Annex 1.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC233:

Annex 1. **TB for New (Feb 2009)**

See separate TB document in Annex 1.

—

Note: There is no separate Technical Background (TB) document has been prepared for Rev.1 (Nov 2012)

Technical Background

UI SC233 (New, Feb 2009)
"LSA Code – lifeboat exterior colour"

LSA Code item 1.2.2.6 as amended by MSC Res. 207(81) reads:
"be of international or vivid reddish orange, or a comparably highly visible colour on all parts where this will assist detection at sea;"

Lifeboat manufacturers occasionally suggest using white as the colour on the exterior of the lifeboats claiming this to be fully in compliance with the 'highly visible colour' requirement of the above said regulation.

A 'highly visible colour' should as a minimum be of a kind that clearly separates itself from its surroundings in such a way that it brings attention to itself. In a sea-state environment colours such as orange-reddish or yellow possess these qualities while a white coloured object normally will be very difficult to distinguish from its surroundings due to the characteristics of e.g. stirred seas.

The above is applicable to the exterior of the canopy and the hull (in order to ensure that the lifeboat is visible if it capsizes) of both fully enclosed and partially enclosed lifeboats.

Submitted by Statutory Panel Chairman
6 February 2009

Permanent Secretariat note (Feb 2009):
New UI SC233 was approved by GPG on 24 February 2009 (ref. 9525_IGb) with an implementation date of 1 July 2010.

UI SC234 / LL76 / MPC96 "Initial Statutory Surveys at New Construction"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Dec 2014)	12 December 2014	1 July 2015
Rev.1 (Feb 2014)	18 February 2014	1 July 2014
Corr.1 (Jul 2010)	-	-
NEW (Apr 2009)	14 April 2010	1 July 2010

- **Rev.2 (Dec 2014)**

.1 Origin of Change:

☑ Based on the amendments of IMO Regulation (Res. A.1053 (27)) as set by Res. A1076(28)

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement contained in the IMO Resolution A.1076(28) which amends the IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007.
These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27) as amended by IMO Res. A.1076(28).

Survey Panel amended the text of IACS document to make it consistent with the requirements of the amendments of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision under PSU14010.

Survey Panel during the 20th Meeting agreed small changes of the Annex to UI.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 19 April 2014 by Survey Panel Chairman
Survey Panel Approval: 04 September 2014 (20th Survey Panel Meeting)
GPG Approval: 12 December 2014 (Ref: 13245aIGc)

- **Rev.1 (Feb 2014)**

.1 Origin of Change:

☑ Based on IMO Regulation (Res. A.1053 (27))

.2 Main Reason for Change:

To update IACS UI SC234, LL76 & MPC96 in order to make it consistent with the requirement of IMO Resolution A.1053 (27).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UIs SC234, LL76 & MPC 96 was originally developed based on the IMO Resolution A.997 (25) SURVEY GUIDELINES UNDER THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION, 2007. These HSSC Guidelines have been continually amended/updated and the current version is A.1053 (27).

Survey Panel amended the text of IACS document to make it consistent with the requirements of IMO Resolution A.1053 (27) and updated relevant survey requirements as necessary. Survey Panel carried out the present revision by group works where all Panel members actively took part to review the requirements of current UIs SC234/ LL76/ MPC 96 with the provisions of A.1053 (27).

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 30 May 2013 by Survey Panel Chairman
Survey Panel Approval: 15 November 2013
GPG Approval: 18 February 2014 (Ref: 13245_IGc)

- **Corr.1 (Jul 2010)**

.1 Origin of Change:

☑ Other *(IMO Secretariat)*

.2 Main Reason for Change:

UI SC234/LL76/MPC96 was submitted to IMO as an Annex to FSI 18/13. During IMO's processing of the submission they noticed that in para 5 the stated order of the tables in Appendix 1 of the UI was different from the actual order.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

-

.4 History of Decisions Made:

Noting the feedback from IMO, Permsec decided to prepare a corrected version of UI SC234/LL76/MPC96 in order to revise the list of tables in para 5 of the UI.

.5 Other Resolutions Changes:

N/A

.6 Dates:

Corrected file circulated to members: *21 July 2010 (Ref. 9529_IAf)*

- **NEW (Apr 2009)**

See TB document in Part B.

Part B. Technical Background

List of Technical Background (TB) documents for UI SC234/LL76/MPC96:

Annex 1. **TB for Original Resolution (Apr 2009)**

See separate TB document in Annex 1.

◄▼►

Note: *There is no separate Technical Background (TB) documents for Corr.1 (Jul 2010), Rev.1 (Feb 2014) and Rev.2 (Dec 2014).*

TECHNICAL BACKGROUND

UI SC234, LL76 and MPC96 (New, April 2009)
"Initial Statutory Surveys at New Construction"

1. Introduction

The IACS EG/NCSR was guided by the objectives in the Form A which had been approved by the GPG.

Following on from the introduction of UR Z23 it was noted that the UR concentrated on hull surveys of new construction and only dealt with the statutory aspects where they coincided.

The EG was tasked to develop an IACS UI for initial statutory surveys at new construction addressing all other aspects of statutory certification during new construction which are not addressed in the UR Z23 on the basis of A.948(23) and to suggest any modifications to A.948(23) for the following:

- International Load Line Certificate (1966)
- Cargo Ship Safety Equipment Certificate
- International Oil Pollution Prevention Certificate

During the development of this UI, A.948(23) was superseded by A.997(25) and the requirements have been amended to comply with A.997(25)

This UI applies to surveys held at new construction and is not applicable to conversions and other initial surveys.

This UI does not cover the requirements for type approval or certification at vendor's works and for which evidence of acceptance is to be provided as indicated in the survey tables.

The purpose of this UI for Initial Statutory surveys during new construction:

a) is to verify that ships are constructed in accordance with the relevant Statutory requirements as part of the new building process;

b) aims to ensure unified application of the applicable requirements of A.997(25);

c) gives guidance on the specific requirements involved in the initial statutory surveys as detailed in A.997(25).

In developing this UI it is assumed that:-

a) delegation of authority from the flag state for the initial statutory surveys is a prerequisite for the verification of Statutory Regulations by the classification society;

b) compliance with the UI does not remove the responsibility from the shipbuilder to demonstrate that a satisfactory level of quality has been achieved;

c) the shipbuilder should bring to the attention of the classification society any deviations from the statutory regulations found during construction.

2. Background

Following the approval of the Form A the EG met several times and has progressed the task by consensus.

It was not the task of the EG to provide interpretations of the technical requirements of the statutory regulations which are covered by the Plan Approval process and other IACS Working Groups, but to provide clear and unified interpretations for the survey procedures required to ensure compliance with the regulations

Initial discussion centred on the scope of the Task and how to approach the work. It was agreed that the survey requirements in A.997(25) gave a comprehensive list of requirements for initial surveys however it was agreed that there was a need to demonstrate the survey procedures and actions required to be taken to comply these requirements. Detailed discussions were held around the current working practices for testing the statutory items to confirm that they met the intent of the requirements of A.997(25).

The members of the group reviewed the requirements of A.997(25) and prepared a unified interpretation of the requirements using the format of the table for *Shipboard and Shipyard Inspections* from the RINA *Rules for Testing and Certification of Marine Materials and Equipment.*

The EG considered the requirements for the Ship Construction File in the Draft Goal Based Standards and did not feel that there was any reference to the surveys items in Appendix 1 as these are predominately related to Hull Integrity and are covered in UR Z23.

Submitted by EG/NCSR Chairman
27 February 2009

Permanent Secretariat note (April 2009):

The new UI was approved by GPG, with an implementation date of 1st July 2010, on 14 April 2009 (ref. 9529_IGd) together with Rev.2 of UR Z23.

UI SC235 "Navigation bridge visibility to ship's side"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (June 2013)	20 June 2013	-
Corr.1 (Dec 2011)	12 Dec 2011	-
New (Jan 2011)	26 Jan 2011	1 January 2011

- **Corr.2 (June 2013)**

.1 Origin of Change:

☑ Other *(MSC.1/Circ. 1350/Rev.1 of 4 December 2012)*

.2 Main Reason for Change:

To amend paragraphs 3 and 4 of UI SC 235 to be in line with the relevant texts of MSC.1/Circ. 1350/Rev.1.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The IACS Observer's Report on the 91st session of the Maritime Safety Committee (MSC 91) recommended IACS Statutory Panel to review the approved MSC.1/Circ.1350/Rev.1 with a view to updating as appropriate the texts of UI SC 235. GPG approved the recommendation and Statutory Panel agreed:

1) to align the texts of paragraphs 3 and 4 of UI SC 235 to the relevant paragraphs 3 and 4 of MSC.1/Circ.1350/Rev.1;
2) to refer to the IMO source, MSC.1/Circ.1350/Rev.1, as set out in Section C5.3.3 of IACS Procedures Volume 1; and
3) to retain as footnote the text that describes the specific type of ships fall into paragraph 3 of UI SC235, i.e. "*ships that are designed such that, in normal operations, they come along side, or operate in close proximity to, other vessels or offshore structures at sea".*

.5 Other Resolutions Changes

None.

.6 Dates:

Original Proposal: 13 March 2013 Made by: Statutory Panel
Panel Approval: 26 May 2013
GPG Approval: 20 June 2013 (Ref: 13146_IGb)

- **Corr.1 (Dec 2011)**

.1 Origin of Change:

☑ Other (*IACS Observer's Report on the 57th session of the Sub-Committee on Safety of Navigation (NAV 57)*)

.2 Main Reason for Change:

To add UI SC139 to UI SC235 (which is aligned with MSC.1/Circ.1350) as a new paragraph 4.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Para 2.1 of the IACS Observer's Report on the 57th session of the Sub-Committee on Safety of Navigation (NAV 57) recommends IACS Statutory Panel to review UI SC139 in light of MSC.1/Circ.1350 with a view to develop an appropriate submission/agreed position for NAV 58. GPG approved the recommendation and Statutory Panel unanimously agreed:

1) to add the UI SC139 to the current UI SC235 (which is aligned with MSC.1/Circ.1350) as a new paragraph 4; and

2) to treat the above addition as a correction (not a revision) of UI SC235, i.e. the all modifications introduced by the Statutory Panel are caused by the need to put the corrected UI SC235 in line with MSC.1/Circ.1350 only.

GPG approved the correction of UI SC235 and deletion of UI SC139.

PermSec developed the history file to record the changes.

.5 Other Resolutions Changes

UI SC139 deleted.

.6 Dates:

Original Proposal: *14 November 2011* Made by: *Statutory Panel*
GPG Approval: *12 December 2011 (Ref: 11060bIGd)*

- **New (Jan 2011)**

.1 Origin of Change:

☑ Based on IMO Regulation (*Chapter V, Regulation 22.1.6*)

.2 Main Reason for Change:

To provide clarification on the meaning of the requirement “The ship’s side shall be visible from the bridge wing” contained in SOLAS regulation V/22.1.6, with a view to achieving a common understanding in the implementation of this regulation.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This UI was developed by the Statutory Panel based on the understanding that it is reasonable and safe to accept the practice of seafarer’s leaning over the side of bridge wing, etc. for normal cargo ships/passenger ships while still meeting the intention of the regulation. However, particular types of ships, such as tug/tow boats, Offshore Supply Vessels (OSVs), rescue ships, work ships (e.g. floating crane vessels), etc., offer unique problems if a literal application of the regulation is applied.

The draft version of the UI was submitted to IMO NAV 55 for consideration.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *25 September 2008* Made by: *Statutory Panel*
Panel Approval: *21 February 2010*
GPG Approval: *26 January 2011 (Ref: 9574_IGl)*

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1 **TB for UI SC235 New (Jan 2011)**

See separate TB document in Annex 1.

◄▼►

There is no separate Technical Background (TB) document available for UI SC235 (Corr.1 Dec 2011) and (Corr.2 June 2013).

Technical Background for UI SC235 New, Jan 2011

1. Scope and objectives

To provide clarification on the meaning of the requirement “The ship’s side shall be visible from the bridge wing” contained in SOLAS regulation V/22.1.6, with a view to achieving a common understanding in the implementation of this regulation.

2. Engineering background for technical basis and rationale

The basic intention of SOLAS regulation V/22.1.6 is for a navigating officer to be able to see the ship’s side from the bridge wing so as to facilitate the ability of the ship to:
- be safely manoeuvred alongside other ships/objects;
- launch and recover lifeboats; and
- safely receive pilot boarding, stores, and bunker, etc.

In this regard, MSC/Circ.982 recommends that bridge wings should be provided out to the maximum beam of the ship.

IACS Members understand the stringency of this recommendation in MSC/Circ.982 and the other solutions, taking into account factors including the reasonable and safe practice of seafarer’s leaning over the side of bridge wing, etc., for normal cargo ships/passenger ships while still meeting the intention of the regulation. Industry practice over the years has proven these solutions to be adequately safe and practical for navigation safety. However, in order to achieve a common understanding in the implementation of this regulation for normal cargo ships/passenger ships, IACS has developed this Unified Interpretation relating to SOLAS regulation V/22.1.6.

Additionally, particular types of ships, such as tug/tow boats, Offshore Supply Vessels (OSVs), rescue ships, work ships (e.g. floating crane vessels), etc., offer unique problems in complying with the stringent recommendation in MSC/Circ.982 because of their special functions and characteristics of operation which frequently require such ships to manoeuvre close to other ships/objects. In such operations, if the bridge wings extend to the ship’s maximum beam or even near to it, this will result, and has resulted, in collisions of the bridge wings with other ships/objects.

Taking into account the above justifications and the fact that such ships have comparatively low freeboards, it is considered appropriate to give such types of ship a larger allowance than that permitted for normal cargo/passenger ships in determining the termination of the bridge wing inboard of the ship’s maximum beam recognizing that the visible area of the ship’s side will be reduced, but not to an extent that is considered detrimental to the safe operation of the ship during manoeuvring. If this ship type is changed to a type other than those addressed in this paragraph, then the interpretation in this paragraph would no longer apply.

3. Source / derivation of the proposed IACS Resolution

NAV 55 concurred with the view of IACS contained in item 2 above and agreed to a draft MSC circular on Unified Interpretations of SOLAS regulation V/22.1.6 relating to navigation bridge visibility for approval at MSC 87. The MSC circular was approved at

MSC 87 and circulated under the symbol of MSC.1/Circ.1350 and published on 1 June 2010.

4. Summary of Changes intended for the revised Resolution

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC239 "Insulation with approved non-combustible materials (Reg. II-2/3.2.3)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2010)	24 June 2010	1 January 2012

- **New (June 2010)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

This UI was developed to ensure that the yards will be aware that the details of the fastening methods mentioned in type approval certificates will have to be complied with when installing A-class insulation in bulkheads and decks.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

Nil

.4 History of Decisions Made:

This UI was discussed and developed by the Statutory Panel through correspondence or at the Statutory Panel meeting.

.5 Other Resolutions Changes

See also UI FTP5 (New, June 2010)

.6 Dates:

Original Proposal: *14 August 2008 by the Statutory Panel*
Panel Submission to GPG: *02 June 2010 (Ref. 10077_PSa)*
GPG Approval: *24 June 2010 (Ref. 10077_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC239:

Annex 1. **TB for Original Resolution (June 2010)**

See separate TB document in Annex 1.

◄▲►

Technical Background for UI SC239 New, June 2010

1. Scope and objectives

This UI was developed to ensure that the yards will be aware that the details of the fastening methods mentioned in type approval certificates will have to be complied with when installing A-class insulation in bulkheads and decks.

2. Engineering background for technical basis and rationale

UI FTP5, “Testing and approval of “A” class divisions – fastening of insulation material and details of joints”, was developed to ensure that the method of fastening A-class insulation on ships’ bulkheads and decks on board the ship corresponds to how the insulation was fastened during the fire test of the insulation. A-0 divisions may or may not contain insulation as A-0 does not require a temperature criterion for steel divisions, but if fitted it must meet the same criteria as other A-Class divisions. For example, Lightweight Bulkhead Panel Systems and Aluminium Divisions require insulation.

Since the yards will normally not be involved with details covered in UI FTP5, UI SC239 has been developed to ensure that the yards will be aware that the details of the fastening methods mentioned in type approval certificates will have to be complied with when installing A-class insulation in bulkheads and decks on board the ship.

3. Source / derivation of the proposed IACS Resolution

N.A.

4. Summary of Changes intended for the revised Resolution:

N.A.

5. Points of discussions or possible discussions

The Statutory Panel discussed the application statement in following points:
The implementation date for the UI FTP5 is 1 July 2011 and for this UI SC is 1 January 2012. The reasoning behind these implementation dates took into account:
1) that the surveyor is to ensure insulation is installed in accordance with type approval report, regardless if the type approval is provided in accordance with the new FTP UI or not; and
2) that the FTP UI will allow existing type approvals to expire thus avoiding a wholesale renewal of the certification on or before the implementation date of the new FTP UI.

6. Attachments if any

None.

UI SC240 "Closing device for ventilation of battery rooms (SOLAS II-2/5.2.1.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Sept 2011)	27 September 2011	-
New (Oct 2010)	27 October 2010	1 July 2011

- **Corr. 1 (Sept 2011)**

.1 Origin of Change:

☑ Suggestion by IACS Statutory Panel

.2 Main Reason for Change:

To clarify the implementation notes by including reference to IACS PR No.29.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This issue was considered by IACS Statutory Panel under the long-standing Task 4 - Interpretation of IMO instruments.

Statutory Panel unanimously agreed that the amendment should be treated as a correction.

Also, it is decided that there is no need to submit UI SC240 (Corr.1 Sept 2011) to IMO.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *13 September 2011 Made by Statutory Panel*
GPG Approval: *27 September 2011 (Ref: 10124aIGc)*

- **New (Oct 2010)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Reg. 5.2.1.1 of SOLAS Chapter II-2 reads:

"*The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated. The means of closing shall be easily accessible as well as prominently and permanently marked and shall indicate whether the shut-off is open or closed.* "

SOLAS requires all main ventilation openings to be capable of being closed from outside the space; however battery rooms pose a significant hazard due to the possible accumulation of explosive gasses. This interpretation mitigates the overriding hazard of the battery room ventilation.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and discussed at the 11th Statutory Panel Meeting in March 2010 during which a consensus was reached. The UI was prepared based on the discussions of the group.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *July 2010 Made by the Statutory Panel*
Panel Approval: *16 October 2010 (Ref: 10124_PSb)*
GPG Approval: *27 October 2010 (Ref: 10124_IGe)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC240:

Annex 1. **TB for New (Oct 2010)**

See separate TB document in Annex 1.

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There is no separate Technical Background (TB) document for Corr.1 (Sept 2011).

Technical Background for UI SC240 New, Oct 2010

1. Scope and objectives

This UI is intended to clarify the scope of applicability of SOLAS Chapter II-2 Reg. 5.2.1.1 with regard to the particular issue of ventilation of battery rooms.

2. Engineering background for technical basis and rationale

Reg. 5.2.1.1 of SOLAS Chapter II-2 reads:

"The main inlets and outlets of all ventilation systems shall be capable of being closed from outside the spaces being ventilated. The means of closing shall be easily accessible as well as prominently and permanently marked and shall indicate whether the shut-off is open or closed. "

In this regulation, SOLAS requires main ventilation openings to be capable of being closed from the outside. This regulation does not take into account the specific hazards associated with battery rooms.

The possible build up of explosive gasses (most notably hydrogen) is of primary safety concern and so a closing device need not be provided for ventilation openings on battery rooms, or if there is one present then there should be a clearly visible sign stating, for example, "This closing device is to be kept open and only closed in the event of fire or other emergency – Explosive gas"

There are other critical safety factors to take into account when considering the closing device to the battery room. Where a closing device is required for the vessel to comply with the appropriate intact and/or damage stability requirements, or where a weather-tight closing device is required to satisfy conditions of assignment according to the Load Line Convention, or where a fixed gas fire extinguishing system is provided. In all these cases a closing device may be necessary. In these cases the ventilation opening should have a clear notice stating, for example, "This closing device is to be kept open and only closed in the event of fire or other emergency – Explosion risk".

Generally the battery room is an isolated compartment which does not contribute to the buoyancy of the vessel; also it is normally located at least 4.5m above the deck in position 1 or 2.3m above the deck in position 2 and not usually fitted with a fixed gas fire extinguishing system. The ventilation for the battery room does not normally connect to any other space. Therefore a closing device is not generally required, however the above scenarios should be considered when examining the ventilation arrangement of the battery room. If one of the above scenarios is encountered then a closing device must be provided with a warning notice as per the instructions in the UI.

3. Source / derivation of the proposed IACS Resolution

Class societies experience of the potential hazard from incidents involving battery room fires.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC241 "Manually operated call points (SOLAS II-2/7.7)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Nov 2010)	16 Nov 2010	1 Dec 2010

- **New (Nov 2010)**

.1 Origin of Change:

☑ Suggestion by IACS members

.2 Main Reason for Change:

This issue has been raised due to comments made by Port State Control Inspectors, whose interpretations of this SOLAS regulation have indicated non-compliance on the ships inspected. Detailed information is covered in Part B.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *July 2009 Made by the Statutory Panel*
Panel Approval: *28 October 2010*
GPG Approval: *16 November 2010 (Ref: 10160_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1 **TB for New (Nov 2010)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI SC241 New, Nov 2010

1. Scope and objectives

This UI is intended to clarify the application of SOLAS Regulation II-2/7.7, with particular reference to individual spaces within the accommodation spaces, service spaces and control stations.

2. Engineering background for technical basis and rationale

During PSC inspections, a number of IACS Members have reported deficiencies raised by inspectors.

In one instance a PSC inspector raised a deficiency against the lack of a manually operated call point (MOCP) in the emergency generator room, which formed a part of the accommodation block but had no direct access into the accommodation itself, the only door opening directly onto the open deck.

On another occasion, a PSC inspector raised a deficiency against the lack of a MOCP at each exit from the navigation bridge.

The phrase *'installed throughout the accommodation spaces, service spaces and control stations,'* can be interpreted variously. It is clear that there should be a manually operated call point within 20 m, and reasonable to expect that exits from spaces normally manned should also be provided with one so that an alarm can be raised on exiting the space.

Following discussion within the Statutory Panel it was concluded that the phrase *'Manually operated call points complying with the Fire Safety Systems Code shall be installed throughout the accommodation spaces, service spaces and control stations'* does not require the fitting of a manually operated call point in an individual space within the accommodation spaces, service spaces and control stations. However, a manually operated call point shall be located at each exit (inside or outside) to the open deck from the corridor such that no part of the corridor is more than 20 m from a manually operated call point. Service spaces and control stations which have only one access, leading directly to the open deck, shall have a manually operated call point not more than 20 m (measured along the access route using the deck, stairs and/or corridors) from the exit. A manually operated call point is not required to be installed for spaces having little or no fire risk, such as voids and carbon dioxide rooms, nor at each exit from the navigation bridge, in cases where the control panel is located in the navigation bridge.

3. Source / derivation of the proposed IACS Resolution

SOLAS Ch. II-2 Reg. 7.7

"Manually operated call points complying with the Fire Safety Systems Code shall be installed throughout the accommodation spaces, service spaces and control stations. One manually operated call point shall be located at each exit. Manually operated call

points shall be readily accessible in the corridors of each deck such that no part of the corridor is more than 20 m from a manually operated call point."

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

Emergency generator room

Whilst the emergency generator room is a control station, if the logic that every control station should be provided with a MOCP is applied, the same logic should also be applied to every accommodation space.

It is considered therefore that MOCP's need not be provided in every individual space within the accommodation spaces, service spaces and control stations. With respect to the application of SOLAS regulation II-2/7.7 for determining the position of the manually operated call points on cargo ships, the term "throughout accommodation spaces, service spaces and control stations" has been understood by IACS Members to pertain to corridors, stairways and escape routes within accommodation spaces, service spaces and control stations, which are normally employed by the crew, to open deck on each deck level.

The term "shall be located at each exit" is considered to pertain to the exits from the space enclosing the accommodation spaces, service spaces and control stations to the weather or from a deck within the space enclosing the accommodation spaces, service spaces and control stations to another deck within the space enclosing the accommodation spaces, service spaces and control stations.

In cases where a space, not normally manned, cannot be accessed directly from these corridors, stairways and escape routes; a MOCP would not be required to be provided. There should however be a MOCP within an acceptable distance from the door to such space, and the 20 m criterion is therefore applied.

Navigation bridge

In the event of fire, when the signal initiated by a MOCP is sent to the control panel indicating the location of the fire, a person in the navigation bridge initiates a visual and audible fire alarm by operating the control panel of the fire alarm system.

However, in the event of fire in the navigation bridge, the notification of fire to the control panel can be made by a person in the navigation bridge *without* using the MOCP and the subsequent action can be taken by a person in the navigation bridge to initiate a visual and audible fire alarm by operating the control panel of the fire alarm system.

The practice of IACS members is therefore that MOCP's need not be provided at each exit of the navigation bridge, in cases where the control panel for the fire alarm system is located in the navigation bridge.

Spaces having little or no fire risk

Referring to SOLAS Reg.II-2/7.5.2 which exempts spaces having little or no fire risk such as voids, public toilets, carbon dioxide rooms and similar spaces from installation of a fixed fire detection and alarm system for passenger ships carrying more than 36 passengers, the Panel agreed that MOCP's need not to be installed in spaces having little or no fire risk such as voids and carbon dioxide rooms regardless of their location as these voids and rooms have no fire risk at all.

The application statement has been developed without a contract for construction date so as to allow Members to apply the UI in defence of arrangements on existing ships if the need so arises.

6. Attachments if any

None

UI SC242 "Arrangements for steering capability and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control"

Summary

This UI provides unified interpretations of SOLAS, Chapter II-1, Regulations 28.3, 29.1, 29.2.1, 29.3, 29.4, 29.6.1, 29.14 and 30.2

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Jan 2020)	08 January 2020	1 July 2020
Corr.1 (Aug 2011)	01 August 2011	reinstated from 21 Dec 2017
Rev. 1 (Apr 2016)	21 April 2016	Deleted on 20 Dec 2017
Corr.1 (Aug 2011)	01 August 2011	-
New (Jan 2011)	13 Jan 2011	1 Jan 2012

- **Rev. 2 (Jan 2020)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Rev.1 was not endorsed at SSE 4 and consequently the Machinery Panel continued to develop the UI to address the concerns raised by the SSE sub-committee.

A draft UI Rev.2 was agreed by MSC 101 and published as MSC.1/Circ.1416/Rev.1. The draft UI Rev.2 was further updated to reflect the content of MSC.1/Circ.1416/Rev.1.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The draft UI Rev.2 was agreed unanimously at the 28th Machinery Panel meeting (September 2018).

The updated UI Rev.2 was agreed by Machinery Panel in November 2019 (PM13921_IMzk dated 26/11/2019)

.5 Other Resolutions Changes:

None

.6 Any hinderance to MASS, including any other new technologies:

None

.7 Dates:

Original Proposal:	September 2019
Panel Approval:	26 November 2019 (Ref: PM13921_IMzk)
GPG Approval:	08 January 2020 (Ref: 13262_IGo)

- **Corr. 1 (Aug 2011) – Reinstated**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

UI SC 242 (rev.1 Apr 2016) was in force from 1 July 2017 but it was not endorsed by the relevant IMO Sub-committee, and there was not sufficient time for reviewing and making a new submission to the subsequent Sub-committee (SSE 5).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

GPG concluded that UI SC242 (Rev.1 Apr 2016) is to be deleted and that IACS would revert back to UI SC242 (Corr.1 Aug 2011).

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 7 December 2017 Made by Machinery Panel
Panel Approval: 7 December 2017 (Ref: PM13921)
GPG Approval: 19 December 2017 (Ref: 13262_IGg)

- **Rev. 1 (Feb 2016)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

One member has been notified by the industry that some of the wording in UI SC242 may be contradictory with respect to applicability of an auxiliary steering gear on vessels fitted with multiple steering gears. The contradiction arises between interpretation of paragraph 29.6.1 and 29.1.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

UI SC 242, Rev. 1 was agreed unanimously at the 22nd Machinery Panel meeting (September 2015).

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 12 September 2013 Made by Machinery Panel
Panel Approval: 19 February 2016 (Ref: PM13921)
GPG Approval: 21 April 2016 (Ref: 13262)

- **Corr. 1 (Aug 2011)**

.1 Origin of Change:

☑ Other (Objections raised at DE55)

.2 Main Reason for Change:

The word “dedicated” has been added as a result of objections in DE55 in the following: For a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, the requirement in SOLAS II-1/29.1 is considered satisfied if each of the steering systems is equipped with its own dedicated steering gear.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Observer's report from DE 55 tasked the Machinery Panel to evaluate whether the insertion of the word “dedicated” in

“For a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, the requirement in SOLAS II-1/29.1 is considered satisfied if each of the steering systems is equipped with its own dedicated steering gear”

has altered the meaning.

The machinery panel agreed tacitly or explicitly to the revised UI SC242.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *11 July 2011 Made by Machinery Panel*
GPG Approval: *1 August 2011 (Ref: 10193mIGf)*

- **New (Jan 2011)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

Criteria for ships using a conventional power operated auxiliary steering gear are based on the rudder stock diameter.

As azimuth thrusters have no conventional rudder stock there is no criterion for applying the pertinent SOLAS requirements. Accordingly, it is necessary to develop a UI with regard to SOLAS II-1/29.3.3 and 29.4.3.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Form A was approved on 13 June 2005. The industry was consulted for feedback. The drafts were sent to the following companies.

ABB Azipod (Helsinki, Finland)
Rolls-Royce OyAb (Rauma, Finland)
Rolls-Royce Ab (Kristinehamn, Sweden)

Rolls-Royce AS (Ulsteinvik, Norway)
STEERPROP (Rauma, Finland)
Schottel (Germany)
WPNL (Drunen, Netherland)
Brunvoll AS
Niigata Power Systems Co., Ltd.
IHI Corporation
Nakashima Propeller Co., Ltd.
Kawasaki Heavy Industries Ltd.
Schottel GmbH & Co.KG
Voith Turbo Schneider Propulsion GmbH & Co.
Jastram GmbH & Co.KG
Wartsila

The feedback received is listed below:

Industry comment 1:

3 comments were received from the view point of operating smaller coastal vessel with main propulsion devices of around 100kW, as given below:

Reg. 29.3: A rotational speed of 0.4rpm is required.

Comment: A common rate of turn for rudder propeller is about 2-3rpm, 0.4rpm would be too slow.

IACS Response: The 0.4 rpm is equivalent to conventional Steering gear rotating from 35 degrees one side to 30 degrees on the other side within 28s. Therefore this requirement is just meeting the current rotational speed and is specified as the minimum.

Reg. 29.4: Specification of 7kn and 0.08rpm slewing speed for the operation of auxiliary steering arrangements.

Comment: For a small vessel 7kn is nearly the cruising speed. I think a reduction of speed and higher slewing speed is favourable.

IACS Response: Again, this is a performance objective equivalent to conventional auxiliary steering gear where it must be possible for the alternative steering arrangement to rotate the equivalence of the 15 – 15 degrees for conventional steering gear within 60s at one half of the maximum ahead service speed or 7kn, whichever is the greater.

Reg. 29.6.1: Redundancy requirements for passenger ships.

Comment: For me the level of redundancy is not clear. For example a ship with two azimuth thrusters, each with a power take-off for a hydraulic power unit and 3 slewing motors. What can fail while maintaining full manoeuvrability: (i) a slewing motor or (ii) a complete hydraulic power unit?

IACS Response: The intent is to ensure that steering is available from at least one steering device, for example: One azimuth thruster with the required rotational

performance metric met. So for the above example 1, the failure of a complete hydraulic unit would render one thruster inoperable, the remaining thruster needs to perform at the required metric. 2, A failed slewing motor(s) may or may not degrade the slewing rate of one thruster, the intent is to ensure that the performance of the remaining fully operational thruster meets requirements. Repairs are to be carried out as soon as possible.

To aid clarity the following definition will be included.
Definition: Steering Gear Power unit – For the purposes of alternative steering arrangements, the steering gear power unit shall be considered as defined in SOLAS Reg.II-1/3. For electric steering gears refer SOLAS II-1/3; electric steering motor shall be considered as part of power unit and actuator.

Note: the UI has been changed with respect to the original draft sent to Industry – See TB document in Annex 1.

Industry comment 2:

Our pod units to QM2 got reduced propeller shaft torque at high ship speeds at helm angles over 25° and that has been our internal standard since then. We all know that MCR and a helm angle of 35° give unwanted and unreasonable high vibration loads to the pod units.

Regulation 29.3 - Interpretation – "Definition: declared steering angle: … is the helm angle at which the ship shows a comparable manoeuvring behaviour as with conventional rudder at 35° helm angle or the helm angle with maximum steering force where it is intended to use the superior steering capability, without exceeding manufacturers guidelines for safe operation."

It is somewhat difficult for us to determine the equivalent helm angle for a pod unit since we don't have the corresponding required rudder force at 35° for each project. We have to ask the ship designer/yard to provide that information for coming projects. However, it would be interesting to know if a general helm angle corresponding to the rudder angle of 35°could be established for our pod units. We therefore intend to make a study with a number of ships, i.e. the ships we have in service with our units and compare the pod forces with the estimated rudder forces. We have the pod forces for the following ships with your class - QM2 (where 50% of the pod units are steerable), the Millennium series and the Ingalls/NYK Crystal Serenity/Pride of America where all units were azimuthing. Is it possible that LR could estimate the rudder forces for ships with similar size and power? I believe you can find that in your data base. We also have the MSC Cruise ships and the French navy ships BPC Mistral/Tonnere with BV class we could use for comparison.

Our coming New Generation Pod will have higher lateral area and therefore also higher side force which could lead to a further reduced maximum helm angle at MCR.

IACS response: Noted

Note: the UI has been changed with respect to the original draft sent to Industry – See TB document in Annex 1.

Industry comment 3:

We have no comment for the document of rudder stock diameter, because our company already stopped the new construction of apply model "DUCKPELLER".

IACS response: Noted

Industry comment 4:

Main characteristic of steerable thrusters is that thrust and steering capability can be generated at zero vessel speed.

29.6.1.3 ...single failure in the piping system...
Please explain into more detail what is meant. Normally, in case of twin main units plus an auxiliary unit, one of the twins may suffer failure and be shut down. The other twin unit acts as main propulsion, whereas regaining steering capability of the other unit may take quite some time, if possible at all. Remaining steering capability is capability of one of the twin units. This is the practical situation.

IACS Response: This is to address the conventional scenario where two power units are coupled to a common steering gear and failure of one must not result in complete loss of steering capability, this is not true to duplicated alternative devices. However it is recommended that the term single pipe failure be changed to " after a single failure which renders the alternative steering arrangement inoperable the defect can be isolated so that steering capability can be maintained or speedily regained".

29.14
It is accepted that in case of twin propulsion units (ex- two steerable thrusters), one of these units may be regarded as the alternative power supply. Hence for twin units this requirement 29.14 is normally fulfilled.

IACS Response: This requirement is dealing with the electrical power supply arrangements for the auxiliary steering gear for a short period, so for the instance of two alternative steering devices being fitted one of them must have access to an electrical supply emanating from the emergency source of power within 45s to cope with total black out situations.

Industry comment 5:

1. First of all there is nothing in the enclosed papers that collides with our practise.

2. The definitions based on rudder stock diameters are of course not so handy for us, as most steering columns we make are made either of a welded steel tubes but more often (for large thrusters) of cast iron of adequate strength and ductility.

3. The strength calculation for these steering columns are either calculated fatigue endurable against worst-case load (just to simplify the calculation effort) or especially for higher speed and power applications the operational strength is calculated using application specific load spectra and application specific limitations of steering angle and propeller torque/speed. These load spectra are including of course any force/moment component of thrust, side force, propeller torque and steering torque and are validated by various measurements in model and full scale.

4. We have also made the experience, that even though the thruster body is not specifically designed to have a high steering effect when the propeller is switched off, there is nevertheless a remarkable steering effect in this operation condition down to slow speeds of few knots 5-7 and therefore an emergency operation of the disengaged thruster steering gear may be of use in practise.

5. The 2500 kW border would fit for us. Our type 1010 thruster is internally considered as the smallest thruster for really sea-going applications and is rated min. 1250 kW.
So a standard twin-thruster installation has 2500 kW which fits your proposal.

6. Considering the alternative power supply it is most commonly specified such that the yard is responsible for the availability of this additional supply incl. the switch. This is because the standard scope of supply of the thruster maker is normally the thruster automation cabinet only. Starters and supplies are normally outside the thruster maker's supply.

IACS response: The above comments (1- 6) are noted

7. Last, but not least, we would like to have more clearness with respect to the required steering angles. Our philosophy is of course to have sufficient steering gear strength and power to allow +/- 35° operation of the steering gear at full ship speed anyhow. Nevertheless we do recommend and practise various limitations which of course still allow the ship to fulfil any IMO manoeuvre. Maybe you could address the admission of steering angle limitations depending on ship speed and propeller torque/speed limitations depending on steering angle in general. Of course the test of the steering gear at +/-35° at full speed shall not be touched.

IACS Response: This has been addressed by amending the declaration of the "Declared Steering Angle"

Definition: declared steering angle: … is the helm angle at which the ship shows a comparable manoeuvring behaviour as with conventional rudder at 35° helm angle or the helm angle with maximum steering force where it is intended to use the superior steering capability, without exceeding manufacturers guidelines for safe operation in respect to the vessels speed or propeller torque/speed limitation.

Note: the UI has been changed with respect to the original draft sent to Industry and the above definition has been changed – See TB document in Annex 1.

Industry comments received on the draft Technical Background (TB) documents in Annex 1.

Industry comment 6:

We fully support the draft interpretation proposals that the IACS working have presented for SOLAS II-1, Regulation 29, Steering gear and the IMO Resolution 137(76). The draft interpretation proposals will treat thrusters more fairly than before.

We have, however, some comments to the Technical Background (TB) documents in Annex 1.

Quote
3. Source/derivation of the proposed IACS Resolution
Accordingly the interpretations have been developed upon the following background;
(1) With respect to Reg. 29.3.3, all devices could be operated by power according to the reason in 2(i).
(2) With respect to Reg. 29.4.3, every ship should have at least 2 complete sets of devices such that one device can be designated as the auxiliary steering system. A single device having two independent sets of propulsion machinery (or motors in case of electric propulsion), steering motors and their control systems may be acceptable. To duplicate only slewing motors and their control systems is not acceptable according to the reason in 2(2).
(3) With respect to Reg. 29.14, an alternative power supply sufficient to comply with Reg. 29.4.2 should be provided for the slewing motor and control system of one device within 45s for ships with a total propulsive power greater than 2500 kW.
Unquote

Item 3.(2) is unclear in many respects; it is not clear what is meant by the expression "device". A careless interpretation of the item could lead to an impression that single Azipods are not acceptable. Such an interpretation is not acceptable to us. We to date have delivered Azipods to 9 singlepod vessels, classed with some classification societies. All vessels have worked perfectly; none have experienced any steering problems.

IACS Response: This is not our intention.

Note: the TB has been changed with respect to the original draft sent to Industry – See TB document in Annex 1.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *July 2005 Made by the Machinery Panel*
Panel Approval: *04 January 2011*
GPG Approval: *13 January 2011 (Ref: 9612_IGj)*

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1 **TB for New (Jan 2011)**

See separate TB document in Annex 1.

◄▼►

Annex 2 **TB for Rev. 1 (Feb 2016)**

See separate TB document in Annex 2.

◄▼►

Annex 3 **TB for Rev. 2 (Jan 2020)**

See separate TB document in Annex 3.

Note: *There is no separate Technical Background (TB) document for Corr.1 (Aug 2011)*

Technical Background for UI SC242 New, Jan 2011

1. Scope and objectives

SOLAS II-1/Reg. 29.1 requires every ship to have a main steering gear and an auxiliary steering gear. In addition, some requirements in Reg. 29 are applicable based on the required diameter of the rudder stock as shown below:

(i) Reg. 29.3.3 requires that the main steering gear is to be operated by power when the required diameter of the rudder stock is over 120 mm.
(ii) Reg. 29.4.3 requires that the auxiliary steering gear is to be operated by power when the required diameter of the rudder stock is over 230 mm.
(iii) Reg. 29.14 requires that an alternative power supply is to be provided for the auxiliary steering gear, its control system and the rudder angle indicator when the required diameter of the rudder stock is over 230 mm.

Recently non-traditional steering devices such as azimuth thrusters and water jet propulsion systems have been utilized in large ocean-going ships. Since these devices do not have a conventional rudder stock, the requirements above are not applicable directly.

Further, additional clarification was needed for application of the requirements to installations with multiple rudders or thrusters.

2. Engineering background for technical basis and rationale

To develop interpretations to address the above requirements, it is necessary to consider the special characteristics of these non-traditional steering devices such as;

(i) They are operated by power without exception, and
(ii) Their main steering ability is expected when the device generates a thrust, while the traditional steering gear may keep some amount of the ability in the ship's wake produced by its inertia even when the main propulsion machinery suddenly stops. However, it has been demonstrated that the struts from large azimuthing propulsors do provide some steering capability at low speeds without propulsive forces.

3. Source / derivation of the proposed IACS Resolution

Accordingly the interpretations have been developed upon the following background;

(1) With respect to Reg. 29.3.2, considering the higher steering effect from thrusters, these and similar devices shall only be required to be operated up to declared steering angle limits, or equivalent (e.g thrust vector direction limits), other than 35° /30°; due to different limit angles, the minimum rotational speed is to be defined as angular speed; reference to deepest seagoing draft has been removed, because this in not always possible, and also considering that the thrusters typically are fully submerged at any draft.

(2) With respect to Reg. 29.3.3, all devices could be operated by power according to the reason in 2(i).
(3) With respect to Reg. 29.4.2, reference to deepest seagoing draft has been removed also for the auxiliary steering arrangement, because this in not always possible, and also considering that the thrusters typically are fully submerged at any draft.
(4) With respect to Reg. 29.4.3, criteria considered equivalent to the required diameter of rudder stock being larger that 230 mm was developed, being a propulsive power greater than 2500 kW per thruster unit.
(5) With respect to Reg. 29.6.1, the application of the regulation was clarified, in respect of installations with multiple rudders or thrusters, in that a passenger ship is to maintain full steering capability even after failure of one power unit, and thus redundant power units are to be fitted for each of the multiple rudders or thrusters. Additionally, in order to cope with stuck rudder or thruster due to a failed system, there are to be means to regain ship manoeuvrability by placing the failed rudder/thruster in neutral position.
(6) With respect to Reg. 29.14, a criteria considered equivalent to the required diameter of rudder stock being larger that 230 mm was developed, i.e. an alternative power supply sufficient to comply with Reg. 29.4.2 should be provided for the slewing motor and control system of one device within 45s for ships with a propulsive power greater than 2500 kW per thruster unit; this requirement is applicable only to steering systems having a certain proven steering capability due to vessel speed, when propulsion power has failed, because there is no scope in azimuthing a thruster or similar system which is not capable of providing any directional effect in the absence of propulsion power.

The addition of the propulsive power requirement within 3(3) in respect to Regulation 29.4.3 and 29.14 originated from an investigations of many classed ships have indicated that most ships where the rudder stock is required to be some 230 mm have an installed propulsive output between some 2500 and 6000 kW per thruster unit as shown in Fig.1. Therefore it is considered that only ships with propulsion output above 2500 kW per thruster unit are to fulfil the requirements related to alternative power supply for steering.

It should also be taken into account that small ships after 45 sec with the propulsion system being inoperable will have significantly reduced advance speed.

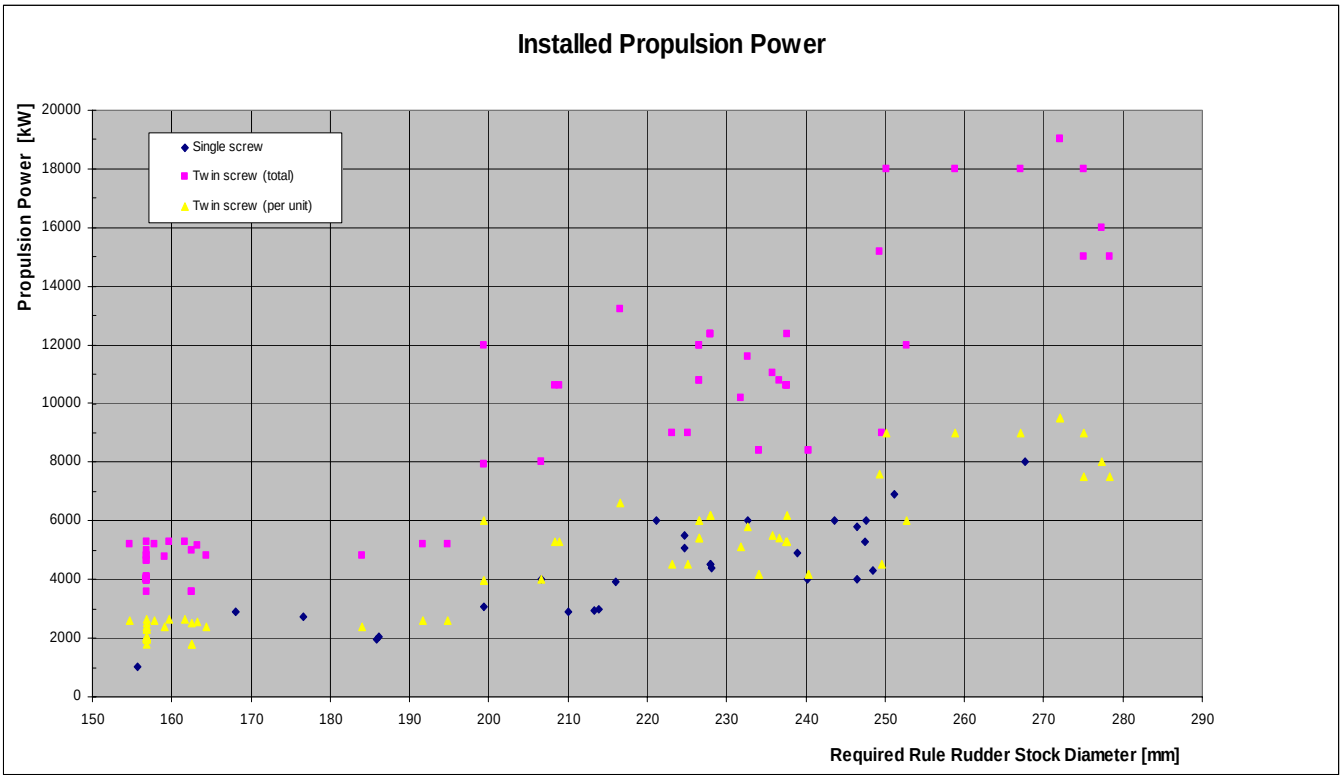


Figure 1 Required rudder stock diameter as a function of propulsion power

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC242 (Rev.1, Apr 2016)

1. Scope and objectives

In response to industry comments about a perceived contradiction between interpretations of paragraph 29.6.1 and 29.1, the aim of Rev. 1 is to resolve the contradiction and to clarify requirements.

2. Engineering background for technical basis and rationale

It was considered important to clarify the various terms used for steering systems and its associated equipment. Hence a definition for ‘steering system’ was introduced in the Introduction to complement the definition of ‘steering gear power unit’ in the Interpretation of Reg. 29.6.1.

The Interpretation of Reg. 29.1 was rephrased as a functional requirement to align it with the text of Reg. 29.1. It is further considered that the requirement in SOLAS II-1/29.1 is satisfied if each of the steering systems is equipped with its own dedicated steering gear and each of the steering systems fulfils the requirements for main steering gear (as given in interpretation of Reg.29.3.).

The definition of ‘declared steering angle limits’ was removed from 29.4 as it is the same as in 29.3.

The interpretation for Reg. 29.6.1 was rephrased as functional requirements with examples for possible design solutions shown in Attachment 1 to this TB. It was further clarified that the capacity requirements apply regardless whether the steering systems are arranged with common or dedicated power units.

An interpretation for Reg. 28.2 ‘Means of going astern’ was not considered necessary and therefore deleted.

As a new proposal by one member, the Panel agreed to add an interpretation for Reg. 30.2. This clarifies that the requirements of Reg. 30.2 apply to each steering system in ships fitted with multiple steering systems.

3. Source / derivation of the proposed IACS Resolution

Members opinions as to how the intent of SOLAS regulations for steering gears are best applied to alternative propulsion and steering systems without rudder, such as but not limited to azimuthing propulsors or water jet propulsion systems,

4. Summary of Changes intended for the revised Resolution:

Changes to the following SOLAS interpretations:

Reg. 29.1: Rephrased as functional requirement. Added interpretation how the intent of Reg. 29.1 can be met for ships fitted with multiple steering systems.

Reg. 29.6.1: Rephrased as functional requirements with examples for possible design solutions shown in Attachment 1 to this TB.

Reg. 28.2: Deleted as not considered necessary

Reg. 30.2: New interpretation to clarify that the requirements of Reg. 30.2 apply to each steering system in ships fitted with multiple steering systems.

5. Points of discussions or possible discussions

There was extensive discussion about the Interpretation for Reg. 29.6.1 and different views were expressed as to which hardware configurations would meet the intent of the Regulations and how this should be worded in the Interpretation. As a way forward it was eventually agreed to cast the Interpretation as functional requirements and to provide examples for acceptable design solutions in an Attachment to the TB.

One member proposed deleting the Interpretation for Reg. 28.3, however, after further deliberation by the Panel it was considered important that information regarding the ability of ships with multiple propulsion/steering arrangements to navigate and manoeuvre with one or more of these devices inoperative should be available on board for the use of the master or designated personnel. The Interpretation was therefore retained.

6. Attachments if any

Attachment 1: Sketches illustrating design options for passenger and cargo ships for complying with Reg. 29.6.1

Technical Background (TB) document for UI SC242 (Rev.2, Jan 2020)

1. Scope and objectives

UI SC242, Rev.1 was submitted to SSE 4 (SSE 4/12/10) but not endorsed by the sub-committee. In particular, it was felt that the concerns raised by Norway in SSE 4/12/14 needed further consideration. In response to the sub-committee's concerns the Machinery Panel has further developed SC242 and prepared Rev. 2.

2. Engineering background for technical basis and rationale

It was considered important to clarify the relationship between Reg. 29.1 and Reg. 29.6.1. Both are now aligned in requiring a degree of redundancy for both single and multiple steering propulsion units.

After thorough evaluation the Panel majority agreed that redundancy should be required in the steering gear for each steerable propulsion unit (interpretation of Reg. 29.6.1 takes precedence over interpretation of Reg. 29.1) based on the understanding that, in particular for passenger ships, a reduced steering capability after a single failure was not acceptable.

Therefore, the requirement for a main and auxiliary steering gear should be applicable for each of the steering gears for a twin steering-propulsion unit installation. Alternatively, each of the steering gears is to comply with the interpretation of Reg. 29.6.1.

Sketches illustrating the terms used for the steering system and related subsystems are shown in Attachment 2.

3. Source / derivation of the proposed IACS Resolution

Members views as to how the intent of SOLAS regulations for steering gears are best applied to alternative propulsion and steering systems without rudder, such as but not limited to azimuthing propulsors or water jet propulsion systems.

4. Summary of Changes intended for the revised Resolution:

- Rewording of interpretations of Reg. 29.1 and Reg. 29.6.1 to align requirement
- Improved consistency in applied terminology
- Illustrated definitions of terminology (Attachment 2)

5. Points of discussions or possible discussions

- Acknowledging that the hydraulic pump and hydraulic motor are same type of component – with the same reliability - the level of redundancy was modified from requesting redundancy for steering power unit (pump) to also request redundancy for the steering actuator (hydraulic motor).

- In the paper submitted by IACS to SSE6 (SSE6/12), regarding the Revision 2 of the UI SC242, the following definitions agreed by the qualified majority of IACS Members were included in a dedicated paragraph:

"**Definitions**
For the purpose of this UI the following definitions apply:

"Steering system" is ship's directional control system, including steering gears, steering gear control system and rudder (including the rudder stock) if any, or any equivalent system for applying force on the ship hull to cause a change of heading or course.

"Steering-propulsion unit" is a unit intended for both propulsion and steering of the ship.

"Steering actuator" is a component which converts power into mechanical action to control the steering-propulsion unit. In case of electric steering: electric motor and driving pinion. In case of electro Hydraulic steering: hydraulic motor and driving pinion.

"Steering actuating system" consists of a steering gear power unit, a steering actuator and, for hydraulic or electrohydraulic steering gears, the hydraulic piping.

"Declared steering angle limits" and "maximum steering angle rate of change" are the operational limits in terms of maximum steering angle and maximum steering angle rate of change or equivalent, that are to be declared by the manufacturer / ship designer, also taking into account the vessel speed or propeller torque/speed or other limitation."

However, in this regard, IMO decided to delete the above proposed paragraph "Definitions" and preferred to introduce the definitions of "Declared steering angle limits" and of "Steering gear power unit" directly in the interpretation of Regulations 29.3 and 29.6.1 respectively (as per IMO document MSC.1/Circ.1416/Rev.1); the qualified majority of IACS Members, after consideration of this IMO proposal, agreed with this modification.

- An IACS Members proposed the following modification in the interpretation of regulation 29.6.1 for the reason that the requirement in item .4 of the interpretation was considered, in their understanding, to apply to "ships equipped multiple steering propulsion systems" instead of "each steering gear":

  "For a ship fitted with multiple steering-propulsion units, where each main steering system comprises two or more identical steering actuating systems, an auxiliary steering gear need not be fitted provided that each steering gear:

  .1 in a passenger ship, is capable of satisfying the requirements in Interpretation to SOLAS regulation II-1/29.3 while any one of the steering gear steering actuating systems is out of operation;

  .2 in a cargo ship, is capable of satisfying the requirements in Interpretation to SOLAS regulation II-1/29.3 while operating with all steering gear steering actuating systems;

  .3 is arranged so that after a single failure in its piping or in one of the steering actuating systems, steering capability can be maintained or speedily regained.

The above capacity requirements apply regardless whether the steering systems are arranged with common or dedicated power units.”

The proposal was however not supported by the qualified majority.

6. Attachments if any

Attachment 2: Sketches illustrating definitions used in the UI

Attachment 1

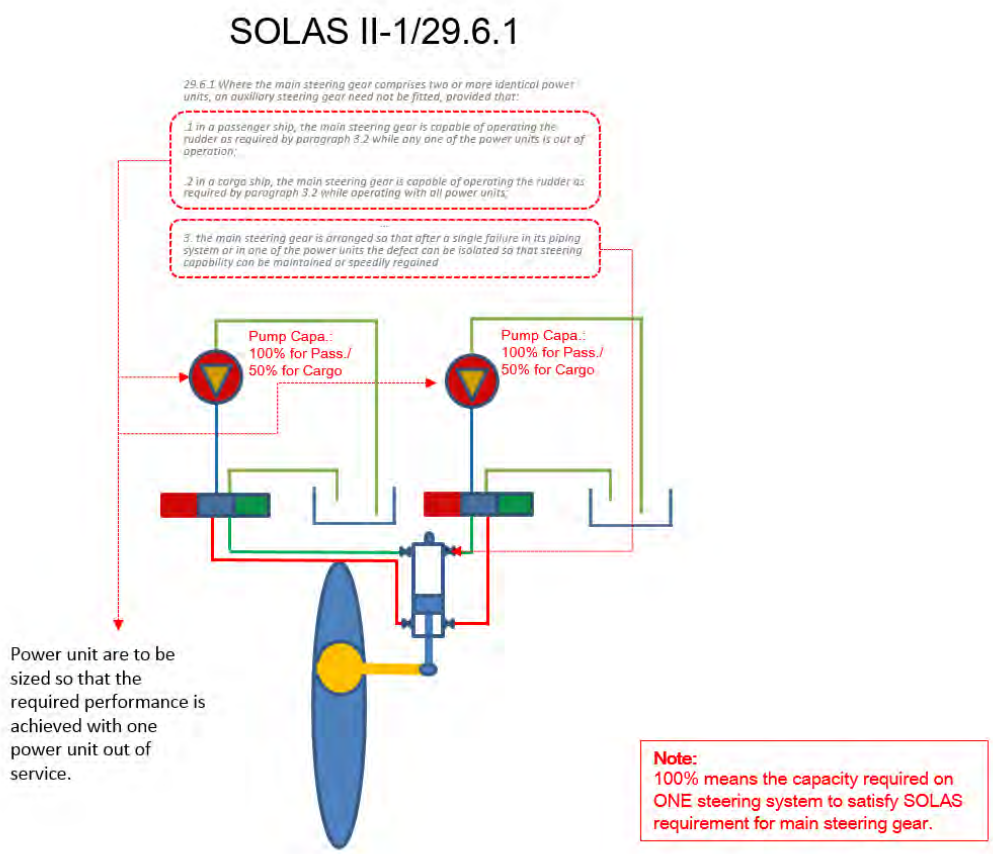
SOLAS II-1/29.6.1

29.6.1 Where the main steering gear comprises two or more identical power units, an auxiliary steering gear need not be fitted, provided that:

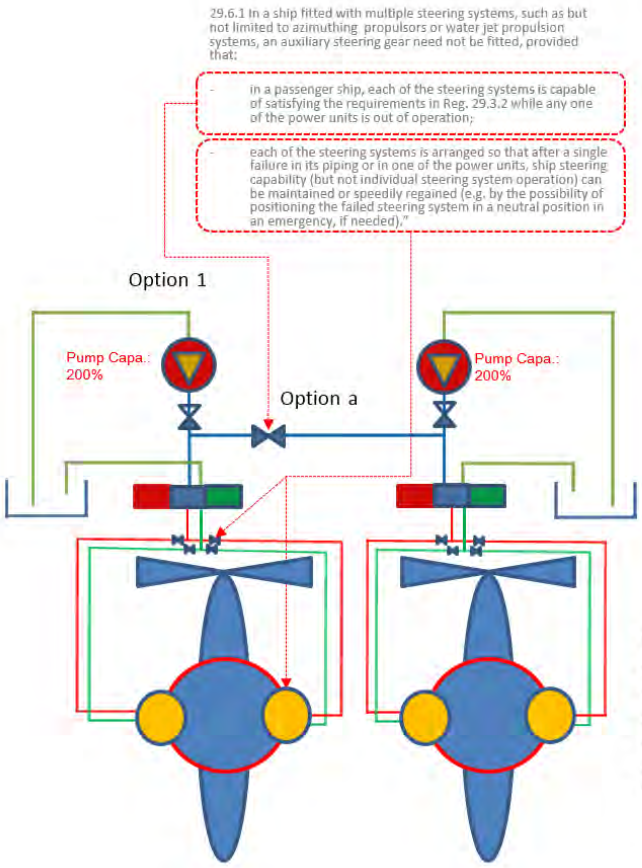
.1 in a passenger ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while any one of the power units is out of operation;

.2 in a cargo ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while operating with all power units;

.3 the main steering gear is arranged so that after a single failure in its piping system or in one of the power units the defect can be isolated so that steering capability can be maintained or speedily regained.



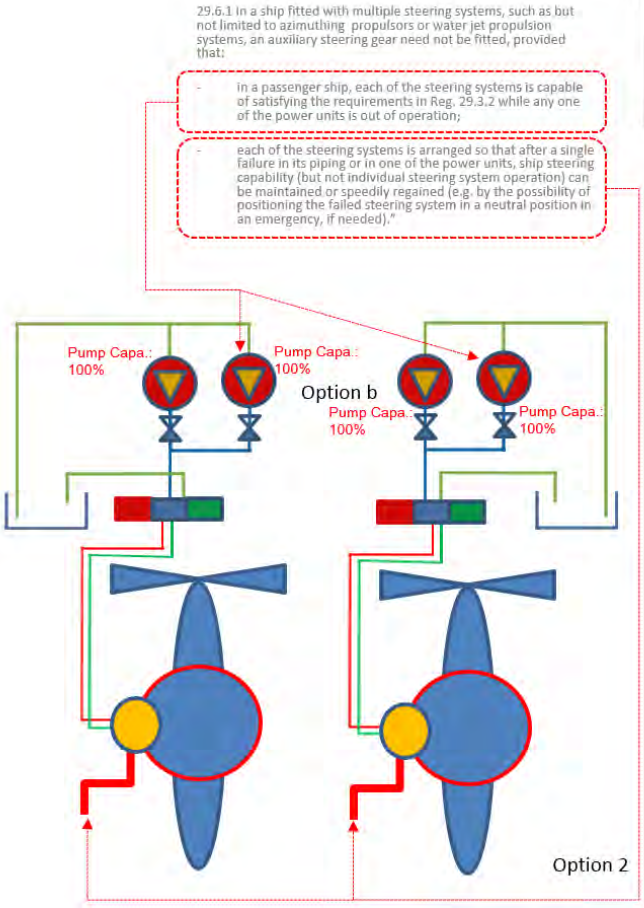
Draft revised UI SC242 (Rev. 1)
Application to Passenger ships
Hydraulic steering gear
Option 1 - a



Note:
-100% means the capacity required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.
- Each pump should be capable of operating BOTH pods at full rating.

Power units are to be sized so that the required performance is achieved with one power unit out of service.

Draft revised UI SC242 (Rev.1)
Application to Passenger ships
Hydraulic steering gear
Option 2 - b



Note:
-100% means the capacity required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.
- Each pump should be capable of operating ONE pod at full rating.

Power units are to be sized so that the required performance is achieved with one power unit out of service.

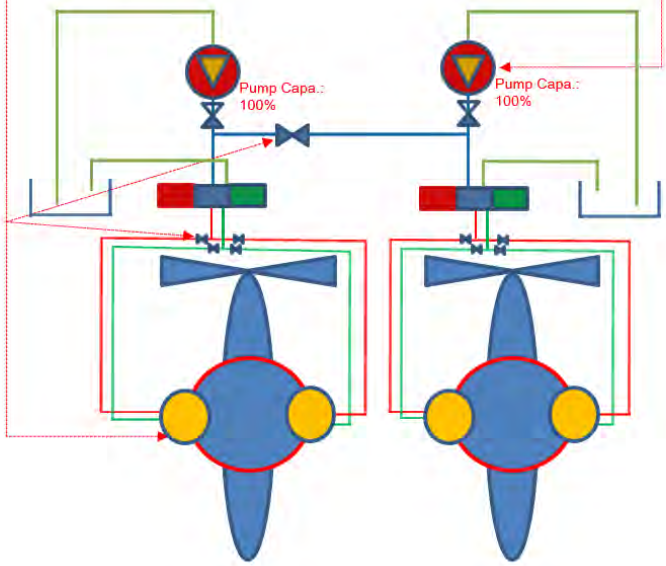
Draft revised UI SC242 (Rev.1)
Application to Cargo ships
Hydraulic steering gear
Option 1

29.6.1 In a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, an auxiliary steering gear need not be fitted, provided that:

- in a cargo ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while operating with all power units;
- each of the steering systems is arranged so that after a single failure in its piping or in one of the power units, ship steering capability (but not individual steering system operation) can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed)."

Option 1:
Redundancy in steering motors
+ interchangeability of power units
+ isolation of hydraulic systems

Power units may be sized so that the required performance is achieved only with both units in service.



Note:
-100% means the capacity required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.
- Each pump should be capable of operating ONE pod at full rating.

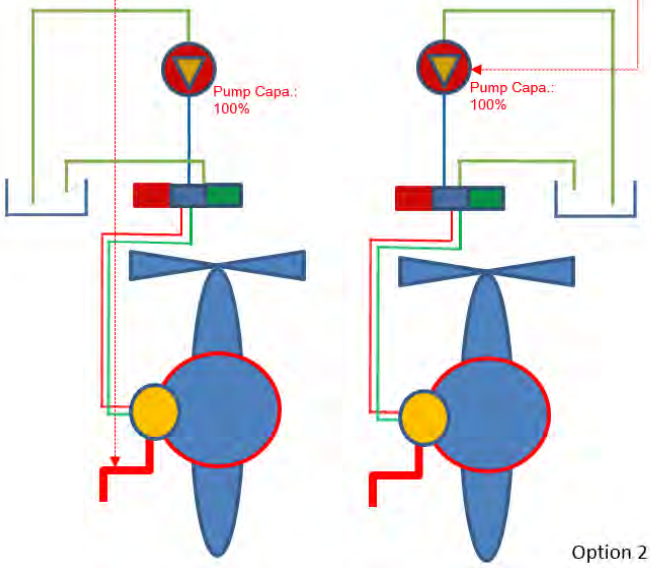
Draft revised UI SC242 (Rev. 1)
Application to Cargo ships
Hydraulic steering gear
Option 2

29.6.1 In a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, an auxiliary steering gear need not be fitted, provided that:

- in a cargo ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while operating with all power units;
- each of the steering systems is arranged so that after a single failure in its piping or in one of the power units, ship steering capability (but not individual steering system operation) can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed)."

Option 2:
Emergency means of pod positioning in neutral position

Power units may be sized so that the required performance is achieved only with both units in service.



Note:
-100% means the capacity required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.
- Each pump should be capable of operating ONE pod at full rating.

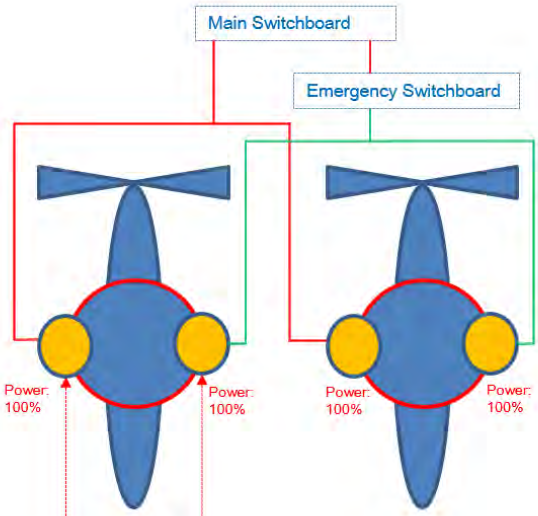
Option 2

Draft revised UI SC242 (Rev. 1)
Application to Passenger ships
Electric steering gear

29.6.1 In a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, an auxiliary steering gear need not be fitted, provided that:

- in a passenger ship, each of the steering systems is capable of satisfying the requirements in Reg. 29.3.2 while any one of the power units is out of operation;
- each of the steering systems is arranged so that after a single failure in its piping or in one of the power units, ship steering capability (but not individual steering system operation) can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed)."

Power units are to be sized so that the required performance is achieved with one power unit out of service.



Note:
-100% means the power required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.
- EACH electric motor should be capable of operating ONE pods at full rating.

Note:
- For a ship fitted with multiple steering systems, EACH of the steering systems shall be served by at least TWO exclusive circuits fed directly from the main switchboard.
- ONE of the circuits may be supplied through the emergency switchboard.

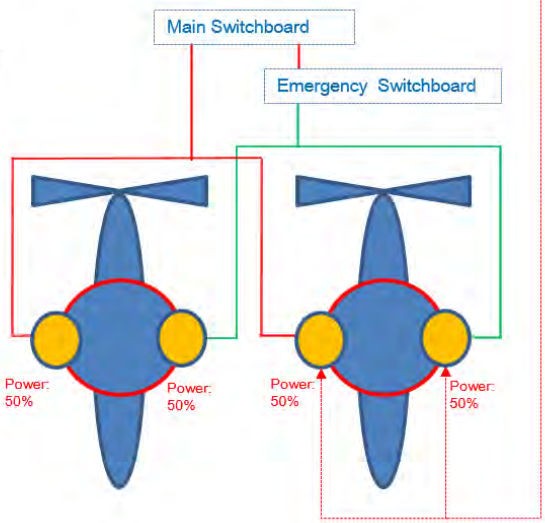
Draft revised UI SC242 (Rev.1)
Application to Cargo ships
Electric steering gear
Option 1

29.6.1 In a ship fitted with multiple steering systems, such as but not limited to azimuthing propulsors or water jet propulsion systems, an auxiliary steering gear need not be fitted, provided that:

- in a cargo ship, the main steering gear is capable of operating the rudder as required by paragraph 3.2 while operating with all power units;
- each of the steering systems is arranged so that after a single failure in its piping or in one of the power units, ship steering capability (but not individual steering system operation) can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed)."

Option 1:
Redundancy in steering motors

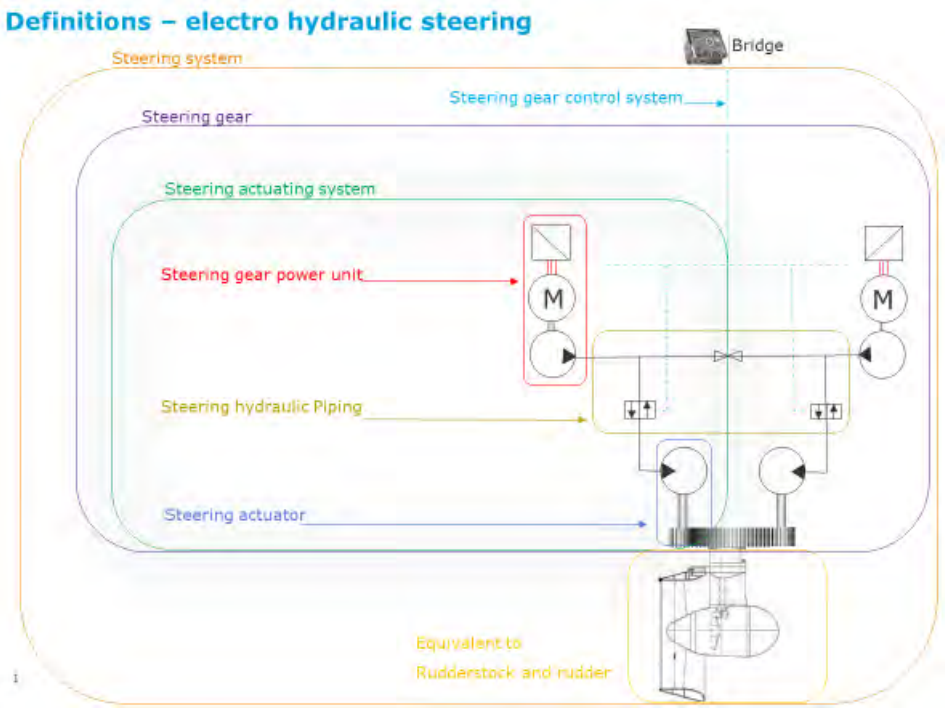
Power units may be sized so that the required performance is achieved only with both units in service.

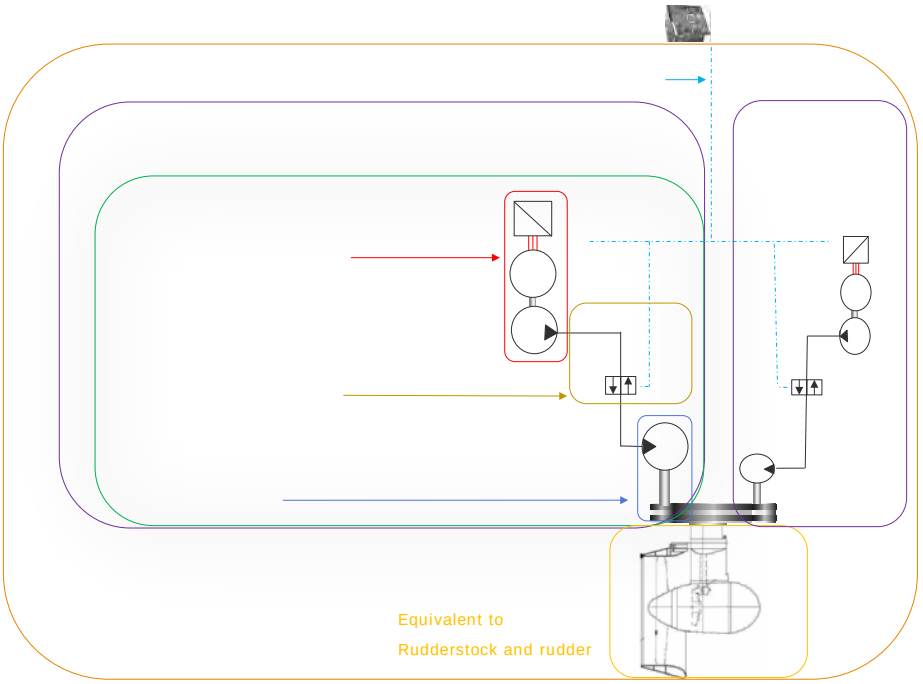


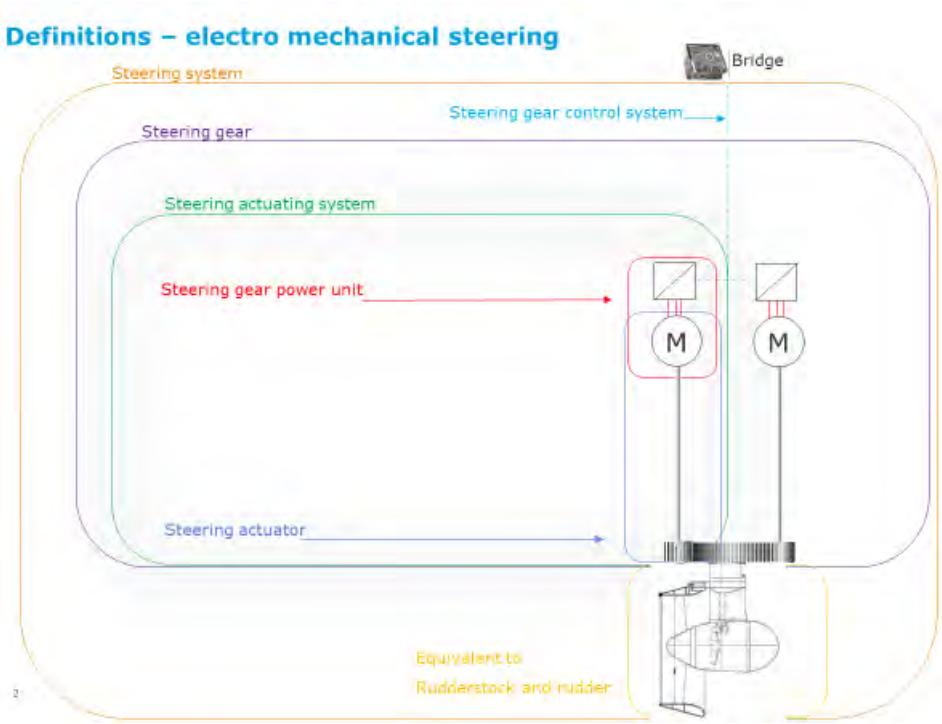
Note:
-100% means the power required on ONE pod/thruster steering system to satisfy SOLAS requirement for main steering gear.

Note:
- For a ship fitted with multiple steering systems, EACH of the steering systems shall be served by at least TWO exclusive circuits fed directly from the main switchboard.
- ONE of the circuits may be supplied through the emergency switchboard.

Attachment 2






Definitions – electro mechanical steering
Bridge
Steering system
Steering gear control system
Steering gear
Steering actuating system
Steering gear power unit
M
M
Steering actuator
Equivalent to
Rudderstock and rudder

UI SC243 "Access to controls for closing of ventilation of vehicle, special category and ro-ro spaces (SOLAS II-2/20.3.1.4.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2012)	30 May 2012	1 January 2013
NEW (Mar 2011)	18 March 2011	1 January 2012

- **Rev.1 (May 2012)**

.1 Origin for Change:

☑ Suggestion by IACS Statutory Panel

.2 Main Reason for Change:

Editorial revision of UI SC243, aiming to align the UI with the improvements agreed by FP 55 (Annex 6 to FP 55/23), under the long-standing Task 8 - Maintenance of IACS Resolutions.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The revision was unanimously agreed by Statutory Panel.

A new implementation date has been introduced as two new requirements, i.e. "clear marking" and "1.8 m" are added.

GPG approved the revision with an implementation date of 01 January 2013.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *05 May 2012 Made by: Statutory panel*
GPG Approval: *30 May 2012 (Ref. 11007aIGc)*

- **NEW (Mar 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

SOLAS Ch. II-2 Reg. 20.3.1.4.1
Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system from outside of the space in case of fire, taking into account the weather and sea conditions.

The terms "permit a rapid shutdown" and “taking into account the weather and sea conditions" in 20.3.1.4.1 need to be interpreted in a uniform way.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *July 2010 Made by: An IACS member*
Panel Approval: *14 January 2011 by: Statutory panel*
GPG Approval: *18 March 2011 (Ref. 11007_IGf)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC243:

Annex 1. **TB for New (March 2011)**

See separate TB document in Annex 1.

◄▼►

Note: There is no separate Technical Background (TB) document developed for Rev.1 (May 2012).

Technical Background for UI SC243 New, Mar 2011

1. Scope and objectives

This UI is intended to interpret the terms "permit a rapid shutdown" and “taking into account the weather and sea conditions" as contained in SOLAS II-2/20.3.1.4.1.

2. Engineering background for technical basis and rationale

SOLAS Ch. II-2 Reg. 20.3.1.4.1 reads:
Arrangements shall be provided to permit a rapid shutdown and effective closure of the ventilation system from outside of the space in case of fire, taking into account the weather and sea conditions.

Arrangements have been found on some ro-ro vessels where the access to the controls for the closing of ventilation openings for cargo holds may:
A) require the crew to cross the decks located directly above cargo holds served by those ventilators; or
B) require the crew to cross open decks and/or negotiate awkward routes created by cargo in independent cargo areas; or
C) be located in a high position.

In the case of A) it can be questioned whether it will be possible to cross on top of an un-insulated deck of a cargo hold on fire and in the case of B) it should be questioned in each case whether it is safe to cross the open deck (presuming that also this is full of cargo) and/or negotiate awkward routes created by cargo in independent cargo areas in case of bad weather. (An independent cargo area is a cargo area entirely separated from the cargo area on fire with at least A-0 divisions).

In the case of C) it could be questioned whether the crew can easily reach such controls from a safe position on deck level.

As an alternative arrangement, remote closing and position indicator arrangements from the bridge or a fire control station for those ventilator closures is acceptable.

3. Source / derivation of the proposed IACS Resolution

IACS UI SC 204 and IMO MSC/Circ. 1120 13.6

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

SOLAS regulations do not require cargo decks to be insulated against each other or against open decks. Even if it could be argued that access across an insulated deck in case of a fire below would possibly provide safer access to the controls, the issue of insulating the deck to provide safer access goes beyond the scope of interpretation and should be dealt with as an amendment of the SOLAS Regulations. Therefore case A) is not covered by this UI.

6. Attachments if any

None

UI SC244 "Load testing of hooks for primary release of lifeboats and rescue boats"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Nov 2015)	20 November 2015	-
Rev.1 (Nov 2012)	21 November 2012	1 January 2014
NEW (May 2011)	13 May 2011	1 July 2012

- **Corr.1 (Nov 2015)**

.1 Origin for Change:

☑ Other (IACS Observer's recommendation in the report on MSC 94)

.2 Main Reason for Change:

To update the UI in light of approved text of MSC.1/Circ.1489.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Observer to MSC 94 recommended (recommendation 5.5) that UI SC244 should be reviewed in light of the approval of MSC.1/Circ. 1489. The revised compromised version of the UI was unanimously agreed by the Safety Panel. GPG agreed to the revision as a correction without a new uniform implementation date, and that the revised UI does not need to be submitted to IMO.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *20 July 2015 Made by Safety Panel*
Panel Approval: *12 October 2015 by Safety panel (Ref: SP13015e)*
GPG Approval: *20 November 2015 (Ref: 13242_IGe)*

- **Rev.1 (Nov 2012)**

.1 Origin for Change:

☑ Conclusion at DE 56 concerning DE 56/13/1 taking into account the conclusion at DE 53 (DE 53/26)

.2 Main Reason for Change:

To extend the load testing of hooks for primary release to rescue boats.

To clearly state that the load testing of hooks apply to lifeboats launched by falls and not to free-fall lifeboats.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This UI was developed by the Statutory Panel through correspondence.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *11 June 2012 Made by: A Member*
Panel Approval: *06 September 2012 by: Statutory panel*
GPG Approval: *21 November 2012 (12145bIGb)*

- **NEW (May 2011)**

.1 Origin for Change:

☑ Based on IMO Regulation (MSC.81 (70), Part 2, Ch.5.3.4)

.2 Main Reason for Change:

To provide clarity on the load to be applied while applying MSC.81 (70), Part 2, Ch.5.3.4.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This UI was developed by the Statutory Panel through correspondence.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *31 July 2008 Made by: Statutory panel*
Panel Approval: *April 2011 by: Statutory panel*
GPG Approval: *13 May 2011 (Ref. 9669_IGd)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC244:

Annex 1. **TB for New (May 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Nov 2012)**

See separate TB document in Annex 2.

Annex 3. **TB for Corr.1 (Nov 2015)**

See separate TB document in Annex 3.

◄▼►

Technical Background for UI SC244 New, May 2011

1. Scope and objectives

This UI was developed to provide an interpretation in terms of application of MSC.81 (70), Part 2, Ch.5.3.4.

2. Engineering background for technical basis and rationale

Reference is made to the IMO Res. MSC.81 (70), Part 2, Ch. 5.3.4 regarding production and installation tests of lifeboat and rescue boat hooks of 2x static load. IACS is of the opinion that the referred regulation applies for hooks used as the primary release mechanism on conventional (side-launched) lifeboats.

Also, parity is provided for the applied load for single and double hook arrangements.

3. Source / derivation of the proposed IACS Resolution

The exemption of free fall lifeboats' hooks is reasoned as follows:

Due to their arrangement the loads seen by a hook on a FFLB are different from the loads on a hook for a davit launched arrangement. Therefore the normal load as seen by the hook should be used as basis for the load testing.

The following references specify "normal load":

- 4.7.6.2 of LSA Code which requires that, "Each free-fall lifeboat shall be fitted with a release system which shall...be so arranged as to release the boat under any condition of loading from no load up to at least 200% of the normal load", and,
- 6.9.5 of Part 1 (Prototype testing) of MSC.81(70) which requires that for, "Free-fall lifeboats...[it] should be demonstrated that the free-fall release mechanism can operate effectively when loaded with a force equal to at least 200% of the normal load...".

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

It is agreed that hooks intended for primary release of free-fall lifeboats shall be tested according to IMO Res. MSC.81 (70), Part 2, Ch. 5.3.4, and the load applied shall be 2 times the normal load caused by the fully equipped lifeboat when loaded with the number of persons for which it is to be approved.

Since launching of free fall lifeboats by falls is a secondary launching, the requirements for 2x static load testing are not applicable.

6. Attachments if any

None

Technical Background for UI SC244 Rev.1, November 2012

1. Scope and objectives

To address an inadvertent omission in the original version which DE 56 noticed, and IACS concurred with, concerning the application of the load testing of hooks for primary release to include rescue boats.

To clearly state that the load testing of hooks apply to lifeboats launched by falls and not to free-fall lifeboats.

2. Engineering background for technical basis and rationale

New paragraph 5.3.4 of MSC.226(82) which was added into the existing section of MSC.81(70) which is titled “Lifeboat and rescue boat test”.

The decision in DE 56/23 to apply the load testing of hooks to lifeboats launched by falls and not to free-fall lifeboats.

3. Source / derivation of the proposed IACS Resolution

DE 56/26 and DE 53/26

4. Summary of Changes intended for the revised Resolution:

The load testing of hooks for primary release now includes rescue boats.

On load testing of hooks associated with secondary means of launching to be tested has been explicitly exempted.

5. Points of discussions or possible discussions

IACS does not agree with the concerns raised at DE 56 that UI SC 244 should apply to both primary and secondary means of launching in light of paragraph 17.10 of DE 53/26 where it was concluded that “the relevant provisions of the revised recommendation (paragraph 5.3.4 of the LSA Code) only apply to lifeboats launched by falls and not to free-fall lifeboats”. Since the secondary load testing of FFLB is conducted only in light loaded condition, MSC.81 (70), Part 2, Ch.5.3.4 shall not apply. Based on the above and recognizing that only free-fall lifeboats have secondary means of launching, UI SC 244 has been revised to explicitly exempt the on load testing of hooks associated with secondary means of launching to be tested.

6. Attachments if any

None

Technical Background (TB) document for UI SC244 (Corr.1 Nov 2015)

1. Scope and objectives

To remove the ambiguity regarding the wording used in the UI as it was believed the former text did not mean that the testing of the single fall boats would be done using twice the fully laden mass of the boat.

To clearly state that in case of single fall systems the test load used for the testing of the connection between the release gear and the boat shall be the weight equal to double weight of the boat with its full complement of persons and equipment.

2. Engineering background for technical basis and rationale

A hook connection shall be tested with twice its expected max load. If there are two hooks, each hook connection shall be tested with twice its expected load, i.e. ½ x (boat incl. equipment and persons) x 2 = boat incl. equipment and persons. If there is only one hook, the hook shall be subjected to a load of 2 x (boat incl. equipment and persons).

Examples:

Dual-fall:		Single fall:
Empty lifeboat:	3000 kg	Empty lifeboat: 3000 kg
Equipment/fuel:	200 kg	Equipment/fuel: 200 kg
Persons:	2970 kg	Persons: 2970 kg
Boat with comp.:	6170 kg	Boat with comp.: 6170 kg
2 x Boat with comp:	12340 kg	2 x Boat with comp: 12340 kg
On each hook:	6170 kg	On hook (same as above): 12340 kg
Test load:		
Empty lifeboat:	3000 kg	Empty lifeboat: 3000 kg
Additional test load:	9340 kg	Additional test load: 9340 kg
2 times test:	12340 kg	2 times test: 12340 kg

3. Source / derivation of the proposed IACS Resolution

SSE 1/17/7, MSC.1/Circ.1489

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The interpretation repeats regulatory text "which shall be multiplied by two" which may possibly create confusion.

6. Attachments if any

N/A.

UI SC245 "Suction and discharge piping of emergency fire pumps, which are run through the machinery space"

Summary

Minor changes were made to the text to improve the technical understanding of the text.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Jan 2023)	19 January 2023	01 July 2023
Corr.1 (Jan 2012)	11 January 2012	-
NEW (June 2011)	4 June 2011	1 July 2012

- **Rev.1 (Jan 2023)**

1 Origin of Change:

☑ Other (Periodic review of IACS Resolution by Safety Panel)

2 Main Reason for Change:

Edited to provide a more clear understanding of the text.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

4 History of Decisions Made:

Statutory Panel requested to GPG that proposed corrections are minor to give a more clear understanding of the UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal : 17 June 2022 (Made by Safety Panel Chair)
Panel Approval : 28 December 2023 (Ref: PS22018f)
GPG Approval : 19 January 2023 (Ref: 22119cPSa)

- **Corr.1 (Jan 2012)**

1 Origin for Change:

☑ Suggestion by IACS Statutory Panel

2 Main Reason for Change:

Editorial corrections to the UI, including that in the title of the document.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Statutory Panel requested to GPG that proposed corrections are purely editorial ones and, therefore, it is not necessary to postpone the implementation date.

GPG approved the proposal. Permsec corrected the HF file to record the corrections.

5 Other Resolutions Changes

None

6 Dates:

Original proposal	: 17 December 2011	(Made by Statutory panel)
GPG Approval	: 11 January 2012	(Ref: 11084_IGg)

- **New (June 2011)**

1 Origin for Change:

☑ Suggestion by IACS members

2 Main Reason for Change:

This UI was developed to provide the clarification for some elements in provisions of SOLAS regulation.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to seek a clarification from IMO by a

submission to FP 54. In considering document FP 54/10/2 submitted by IACS, FP S/C agreed to the interpretations contained in paragraph 3 of FP54/10/2, and invited IACS to submit a Unified Interpretation on this issue to FP 55.

IACS sought the S/C's advice on establishing a maximum length of a "short pipe" by providing an example length of 3m to 4m. The S/C did not offer a view on this matter. As no advice was provided, the UI does not include a maximum length by example as it would not lead to a more uniform means of implementation.

5 Other Resolutions Changes

None

6 Dates:

Original proposal	: January 2011	(Made by Statutory panel)
Panel Approval	: April 2011	(Statutory panel)
GPG Approval	: 04 June 2011	(Ref: 11084_IGc)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC245:

Annex 1. **TB for New (June 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Jan 2023)**

See separate TB document in Annex 2.

Note: There is no separate Technical Background (TB) document available for Corr.1 (Jan 2012).

Technical Background for UI SC245 New, June 2011

1. Scope and objectives

This UI is intended to provide the clarification for some elements in provisions of SOLAS regulation II-2/10.2.1.4.1.

2. Engineering background for technical basis and rationale

Regarding paragraph .1 of the UI:

1. This is confirmation of the meaning of an expression.

Regarding paragraph .2 of the UI:

1. “Distance pieces”, “sea inlet valve” and “sea-chests” are always wet from the inside.
2. In addition, regarding insulation of the valve, taking into consideration the valve’s moving parts such as handles, reach rod connections and actuators, it is impracticable for the valve’s moving parts to be insulated to “A-60” class standards.
3. Therefore, it is not necessary for “distance pieces”, “sea inlet valves” and “sea-chests” to be insulated to A-60 class standards.

Regarding paragraph .3 of the UI:

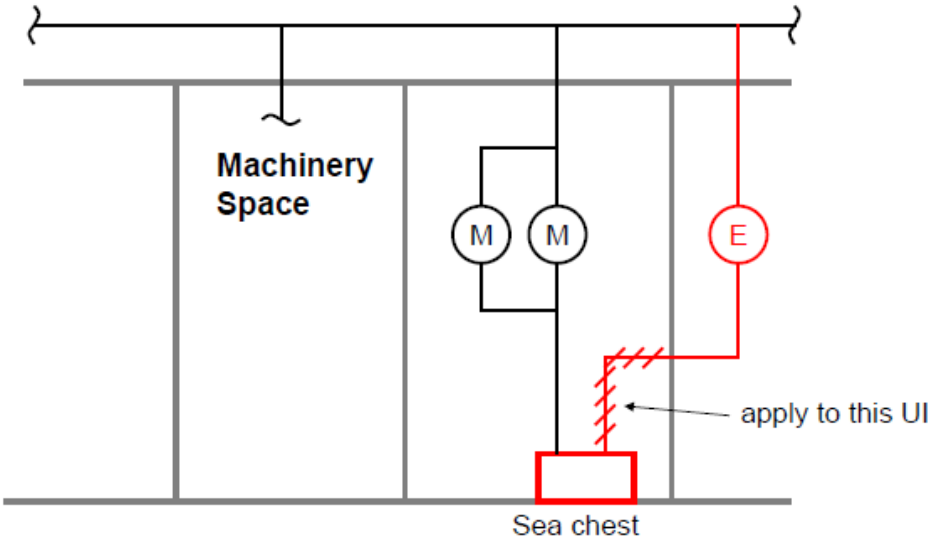
1. This is interpretation on the basis of practicality.

Regarding paragraph .4 of the UI:

1. Where the sea inlet valve is in the machinery space and remotely controlled and the type of valve is not a fail-open type, in the event of fire in the machinery space, the control piping and electric cables by which the sea inlet valve is opened are subjected to fire.
2. It is therefore necessary to protect the control piping and electric cables in order that the sea inlet valve can be opened in the event of fire in the machinery space.
3. In addition, a fail-close type valve is not acceptable because the valve cannot be opened in case of fire.

Regarding paragraph .5 of the UI:

1. In cases where main fire pumps are provided in a compartment outside a machinery space and where the emergency fire pump suction piping penetrates that compartment (see figure 1), in the event of fire in that compartment, both main fire pumps and emergency fire pump suction piping are exposed to fire at once. In this case, where main fire pumps and emergency fire pump suction piping are in the same compartment, even if such a compartment is not a machinery space, that piping should be considered as if it were in a machinery space and meet the requirements for such piping as interpreted by this UI.



M: Main pump
E: Emergency Fire Pump

Figure 1

3. Source / derivation of the proposed IACS Resolution

SOLAS Ch. II-2 Reg. 10.2.1.4.1

> *"The emergency fire pump, its seawater inlet, and suction and delivery pipes and isolating valves shall be located outside the machinery space. If this arrangement cannot be made, the sea-chest may be fitted in the machinery space if the valve is remotely controlled from a position in the same compartment as the emergency fire pump and the suction pipe is as short as practicable. Short lengths of suction or discharge piping may penetrate the machinery space, provided they are enclosed in a substantial steel casing, or are insulated to "A-60" class standards. The pipes shall have substantial wall thickness, but in no case less than 11 mm, and shall be welded except for the flanged connection to the sea inlet valve."*

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

Regarding paragraph .1 of the UI:

The term "the valve" is regarded as a vague term and it was considered that contextually "the valve" should be interpreted as "the sea inlet valve".

Regarding paragraph .2 of the UI:

Some interpretations prepared by Statutory Panel members as follows:

1. Distance pieces, sea inlet valves and sea-chests in suction piping need not be insulated to A-60 class standards due to the following reasons:

"The wording "piping" in SOLAS Reg.II-2/10.2.1.4.1 was changed from "pipe", which term does not include valves and distance pieces, under the SOLAS 2000 Amendments. The regulation was amended in accordance with MSC/Circ.847, which is similar to IACS UI SC 19, and without any technical background concerning the changes made regarding the range of A-60 insulation required, so the amendment has not changed the sprit of the requirement regarding the range of A-60 insulation and was just an editorial revision. Therefore, the requirement does not apply to distance pieces, sea inlet valves and sea-chests."

2. The sea inlet valve and the distance piece are to be insulated to "A-60" standard and the insulated piping system is to be an extension of the boundary between the machinery space containing the main fire pump and the emergency fire pump.

3. The sea chest need not be insulated to A-60 class standard, but sea inlet valves should be required to be protected by a steel enclosure. The enclosure would be considered sufficient for both protection from radiation and mechanical protection of the valve.

The Statutory Panel did not reach consensus on this interpretation. Accordingly, the Statutory Panel agreed to seek a clarification from IMO by a submission to FP 54.

In considering document FP 54/10/2 submitted by IACS, FP S/C agreed that distance pieces, sea inlet valves and sea-chests in suction piping need not be insulated to A-60 class standards.

Regarding paragraph .3 of the UI:

It is considered that it is necessary to clarify how to insulate pipes to "A-60 class standards" because any IMO instruments, such as SOLAS and FTP code etc., make no reference to this matter. Generally, the wording "A-60 class standards" is deemed to mean that objects such as pipes are covered/protected in a practical manner by insulation material which is approved as a part of A-60 class divisions in accordance with the FTP code.

Regarding paragraph .4 of the UI:

It is considered that it is necessary to prescribe additional requirements in accordance with the sprit of the requirement in order to that the sea inlet valve can be opened in the event of fire in the machinery space.

Regarding paragraph .5 of the UI:

In cases where the emergency fire pump suction piping penetrates the compartments where main fire pumps are provided, it is considered that it is necessary to apply this interpretation in the light of the principle of SOLAS Reg.II-2/10.2.1.4.1.

6. Attachments if any

None

Technical Background document for UI SC245 (Rev.1 Jan 2023)

1. Scope and objectives

This U was reviewed at its ten year anniversary and a minor amendment to the text was made.

2. Engineering background for technical basis and rationale

It was considered by the safety panel that by defining discharge piping this could lead to further confusion and the UI was clearer without this definition.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

The term "For this purpose, the discharge piping means piping between the emergency fire pump and the isolating valve;" was deleted from the UI paragraph. Paragraph 2 of the UI now reads ".2 in cases where suction or discharge piping penetrating machinery spaces are enclosed in a substantial steel casing, or are insulated to "A-60" class standards, it is not necessary to enclose or insulate "distance pieces", "sea inlet valves" and "sea-chests".

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC246 "Steering gear test with the vessel not at the deepest seagoing draught"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Sept 2015)	3 September 2015	1 January 2017
Corr.1 (Dec 2011)	1 December 2011	-
New (June 2011)	27 June 2011	1 July 2012

- **Rev.1 (Sept 2015)**

.1 Origin for Change:

☑ Based on IMO Regulation *(DE 57/20 Development of amendments to SOLAS Reg. II-1/29.3.2 and 29.4.2)*

.2 Main Reason for Change:

Changes are required an outcome of the task set in PTPM11801 to verify the calculation method for equivalent rudder/steering gear performance at the full draught condition. The change is also required to include a calculation tool and alternatives for estimating and accepting equivalent rudder/steering gear performance when testing is conducted with a partially submerged rudder.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PTPM 11801 reviewed the proposed calculation method presented in PTPM6801 and concluded that this was not practical to be used in reality due to the required input data. This was further evidenced by a letter from a member Society to IACS expressing concerns on the proposed calculation method.

As a result of the review PTPM11801 decided to propose a simplified tool based on the original proposal, this was derived by the project team members. Due to a lack of validation data available this derivation was based on Computational Fluid Dynamic (CFD) studies on two vessels validated against real vessel trial data.

The derived formula was deemed to be conservative and has been included in the UI for review. It was also decided to include an option to allow alternative calculation methods such as CFD to be submitted as an alternative to the conservative formula.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 1 June 2011, a follow up task of PTPM6801
Panel Approval: 9 July 2015 (Ref: PM11801)
GPG Approval: 3 September 2015 (Ref: 12033_IGj)

- **Corr.1 (Dec 2011)**

.1 Origin for Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

To correct the editorial mistake in the ISO standard number misquoted in the Interpretation. "ISO 10919:2005" is corrected to read as "ISO 19019:2005".

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PermSec received a bilateral query on this editorial mistake from the plan approval office of a Member society. PermSec initiated the correction after consulting with the Machinery Panel Chairman.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: Made by a Member Society staff on November 2011
Panel Approval: 02 November 2011 (Bilaterally by PermSec)
GPG Approval: 01 December 2011 (Ref: 5031gIGze)

- **New (June 2011)**

.1 Origin for Change:

☑ Based on IMO Regulation (SOLAS II-1 regulation 29.3.2 & 29.4.2)

.2 Main Reason for Change:

To develop a UI in respect of SOLAS Regulations II-1/29.3.2 and 29.4.2 and establish conditions for ships which cannot achieve deepest seagoing draught at the trial to replace the alternative requirement in UR M42.15(i).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

PT agreed that no amendment to SOLAS II-1 regulation 29 would be necessary and that the draft UI to be developed by the team would be sufficient to meet the objectives of the task.

Review of DNV proposed method completed and the need for experimental data confirmed as necessary to verify the predicted steering gear loads for steering gear when rudders are partially submerged.

Reference to ISO 19019:2005 Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials agreed by the PT as the reference procedure for all ships which are not at deepest seagoing draught. Draft UI and Proposed amendment to URM42 developed to support this reference.

Additional conditions were developed by the team to be applied when testing steering gear in accordance with the ISO instructions on all occasions when ships were not at the deepest draught for the trial, in order to establish reliable and consistent test methodology.

.5 Other Resolutions Changes

UR M42 (Rev.4 June 2011)

.6 Dates:

Original proposal: Made by M. Wharton Manager PT PM6801
Panel Approval: 30 April 2011
GPG Approval: 27 June 2011 (Ref: 5031gIGv)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC246:

Annex 1. **TB for New (June 2011)**

See separate TB document in Annex 1.

◄▲►

Annex 2. **TB for Rev.1 (Sept 2015)**

See separate TB document in Annex 2.

◄▲►

There is no separate Technical Background (TB) document available for Corr.1 (Dec 2011)

Technical Background for UI SC246 New, June 2011

1. Scope and objectives

To establish alternative steering gear trial conditions for vessels which cannot be tested at their deepest seagoing draught and to develop a UI in respect of SOLAS Regulations II-1/29.3.2 and 29.4.2 and based on this interpretation consider whether/how UR M42.15(i) is compatible with UI and propose amendments to M42.15(i) as necessary.

2. Engineering background for technical basis and rationale

The SOLAS regulations require that the main steering gear and rudder stock shall be:
- of adequate strength and capable of steering the ship at maximum ahead service speed which shall be demonstrated; and
- capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side in not more than 28 s

Alternative steering gear trial conditions to those where the vessel is at the deepest sea going draught, which is normally equal to the summer load line, are considered necessary for certain ship types in order to provide acceptable testing conditions. In order to establish a sound and uniform practice, the draft UI is suggested to refer to ISO 19019:2005 and through a proposed amendment to UR M42 allow the trial requirements contained in the ISO instructions to replace the requirement for alternative testing provided that the loading condition specified will result in predictable trial conditions in compliance with UR M42.15(i) as proposed for amendment.

The extant ISO 19019:2005 Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials contains a procedure to demonstrate the performance requirements of SOLAS regulations for steering gear and refers to the loading condition for the ship to be as close as practical to full load displacement. This procedure is referenced to replace the specially considered clause in M42.15, subject to additional conditions developed by the team to establish consistent and reliable testing for ships not tested at the deepest sea-going draught.

3. Source / derivation of the proposed IACS Resolution

For ships not at the deepest sea-going draught for the steering gear trial ISO 19019:2005 Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials is referenced. The following extracts are relevant and applicable:

6.1 Steering gear trials
6.1.1 Purpose
Steering gear trials are performed to verify the performance of the steering gear and to demonstrate its efficiency.

6.1.2 Trials specification
If the loading condition is not contractually specified, steering gear trials shall be conducted at a displacement as close as reasonably possible to full-load displacement for merchant ships and warships.
and;
6.1.5.1 Ahead-steering-gear trial
With the main propulsion engines delivering maximum continuous rating ahead or at the corresponding shaft speed, the following rudder manoeuvres shall be executed. The first direction of rudder movement, i.e. port or starboard, shall be at the discretion of the trial captain, considering the conditions in the area. The following description is for first rudder deflection to port.
a) Amidships to 35° port — Hold for sufficient duration in order to record time taken, at the steering gear,
between rudder amidships and 30°;
b) 35° port to 35° starboard — Hold approximately 10 s; record time taken, at the steering gear, between
35° hardover to 30° to the opposite side (as the steering gear is slowing down between 30° and hardover);
c) 35° starboard to 35° port — Hold approximately 10 s; record time taken between 35° starboard and 30° port;
d) 35° port to amidships — Record time taken between 35° port and rudder amidships;
e) trial completed.

This trial shall be repeated for each power unit of the steering gear and, if possible, for both units acting together. For emergency power units, trials shall be performed at reduced speed and reduced rudder angles. Setting of the propulsion plant of a single-screw main propulsion system shall not be changed during the trial; however, change in throttle adjustment or propeller pitch in the case of a controllable-pitch propeller plant or multi-screw main propulsion systems is permissible during the trial to avoid overload or overspeed. If the maximum rudder angle is less than 35°, the maximum possible rudder angle shall be used, with time determined to the maximum angle minus 5°, as above.

The additional requirements to be satisfied during the trial were developed and agreed by the PT to establish consistent and reliable trial conditions for all occasions when the trial is undertaken with the ship not at the deepest sea-going draught.

4. Summary of Changes intended for the revised Resolution:

To replace the ‘alternative trial conditions may be specially considered’ term in UR M42.15(i) with specific requirements when the loading condition for the ship at the steering gear trial is contractually specified to be other than the deepest seagoing draft or the ship cannot achieve deepest draught to test in accordance with ISO 19019:2005 subject to additional conditions for consistent and reliable testing.

Proposed amendment
15. Trials
The steering gear should be tried out on the trial trip in order to demonstrate to the Surveyor's satisfaction that the requirements of the Rules have been met. The trial is to include the operation of the following:

(i) the steering gear, including demonstration of the performances required by Regulation 29.3.2 and 29.4.2. For controllable pitch propellers, the propeller pitch is to be at the maximum design pitch approved for the maximum continuous ahead R.P.M. at the main steering gear trial.
If the vessel cannot be tested at the deepest draught, ~~alternative~~ trial conditions ~~may be specially considered~~ as stated in Section 6.1.5.1 of ISO 19019:2005 *Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials* are to be applied.
If the loading condition is such that the ship is not at the deepest draught, steering gear trials shall be conducted at a displacement as close as reasonably possible to full-load displacement as required by Section 6.1.2 of ISO 19019:2005 on the conditions that either the rudder is fully submerged (zero speed waterline) and the vessel is in an acceptable trim condition, or the rudder load and torque at the specified trial loading condition have been predicted and extrapolated to the full load condition.

In this case for the main steering gear trial, the speed of ship corresponding to the number of maximum continuous revolution of main engine ~~could~~ is to apply.

5. Points of discussions or possible discussions

SOLAS II-1/29.3.2 and 29.4.2
Reviewed by the PT in order to generate a UI for the performance requirements for the main and auxiliary steering gear

UR M42.15(i)
Reviewed by the PT in order to establish requirements to replace the alternative trial conditions with specific reference to ISO 19019:2005 *Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials* subject to additional conditions developed by the PT.

From work specification items for the panel task:
A review of the DNV proposal “Steering gear test with partly submerged rudder” was completed and an evaluation of the need for experimental data was completed, it was considered necessary that experimental data would be required to verify the proposed method.

6. Attachments if any

None

Technical Background document for UI SC246 (Rev.1, Sept 2015)

1. Scope and objectives

The amendment to UI SC246 is as a result of the conclusions of PTPM11801. PTPM11801 was triggered as an outcome of PTPM6801. MSC.1/Circ. 1425, issued 13 June 2012 issued a unified interpretation of SOLAS Reg. II-1/29.3 and 29.4 which allows vessels to be tested at a ballast draught and the rudder load and torque to be reliably extrapolated to obtain the loading and torque at the full draught condition. This is being implemented as a SOLAS requirement effective 1 January 2016 as per Resolution MSC.365(93) by adding SOLAS Reg. II-1/29.3.2.

2. Engineering background for technical basis and rationale

SOLAS Reg. II-1/29.3 and 29.4 allow rudder torque and load to be measured in the ballast condition to be reliably extrapolated to the full load condition where the vessel cannot be tested in this condition. No guidance or proposed calculation methods are however stated. PTPM11801 therefore derived a simplified calculation method; a summary of the derivation is presented below:

Formula Derivation

For the purposes of the simplification conducted as part of this UI Revision:

The Hydrodynamic torque is taken as:

$$T_h = F_h . X_h$$

The hydrodynamic rudder force is taken as:

$$F_h \propto k_1 . k_2 . k_3 . \rho . A V^2 \delta$$

The hydrodynamic torque arm is taken as:

$$X_h = \sum_{i=1}^{n} \left(\frac{A_i}{A} . B_i (\alpha_i - k_i) \right)$$

Where:

k_1	Coefficient for profile type
k_2	Flow coefficient
k_3	Aspect ratio coefficient
A	The complete area of the rudder blade including the flap
V	The effective inflow velocity of the rudder
ρ	Density of Seawater
δ	The effective angle of attack of the inflow to the rudder
k_i	$\frac{A_{iF}}{A_i}$

B_i	Mean breadth of partial area
α_i	0.25 for partial area behind fixed structure such as a rudder horn 0.33 in general
A_i	Partially submerged area under consideration
A_{iF}	The area forward of the rudder stock centerline.

The Steering Gear torque is derived as:

$$T_s = PL_t \sum_{i=1}^{n} (A_{vi} \frac{\cos\varphi}{\cos\theta})$$

Where:

P	Hydraulic Differential Pressure
L_t	Torque arm
A_{vi}	Projected pressurised area of piston/vane no i
φ	Cylinder neutral angle for linked cylinder steering gear. For Ram and rotary vane types $\varphi = 0$
θ	Is the rudder angle for Ram type steering gear. For linked Cylinder and rotary vane steering gear this value = 0

In any steering system, the steering actuator torque needs to balance the hydrodynamic rudder torque and the losses due to friction in bearings. If it is assumed that frictional losses are linearly dependent on the steering gear torque the following relationship can be derived.

$$T_h = (1 - R)T_s$$

Where

R is non-dimensional constant representing frictional losses.

By applying the above formulas for the trial and fully submerged rudder conditions an equation to derive hydraulic pressure can be shown as:

$$P_F = P_T (\frac{1 + R_T}{1 + R_F} . \frac{\cos\theta_F}{\cos\theta_T} . \frac{k_{3F}}{k_{3T}} . \frac{\rho_F}{\rho_T} . (\frac{V_F}{V_T})^2 . \frac{\delta_F}{\delta_T} . \frac{X_{hF}}{X_{hT}})$$

In the above formula, the F and T subscripts define the full laden and trial conditions respectively.

By making the following assumptions the above formula can be further simplified.

Using defined assumptions this formula can be simplified to:

$$P_F = P_T \left(1.22 . \max\left(1.0, \frac{k_{3,F}}{k_{3,T}}\right) . \max\left(1.0, \frac{A_F}{A_T}\right) . \max\left(1.0, \left(\frac{V_F}{V_T}\right)^2\right) . \max\left(1.0, \frac{X_{h,F}}{X_{h,T}}\right) \right)$$

Where:

$k_3 = \frac{H^2}{A_t} + 2$ in the trial and fully loaded conditions.

- H is the mean height of the rudder area.
- A_F is the total area rudder blade including area of flap and area of rudder post or rudder horn in the deepest seagoing draught condition.
- A_T is the total area rudder blade including area of flap and area of rudder post or rudder horn in the trial condition.
- $X_{h,F}$ is the Hydrodynamic rudder torque arm in the deepest seagoing draught condition.
- $X_{h,T}$ is the Hydrodynamic rudder torque arm in the trial condition.
- V_F is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.
- V_T is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine in the trial condition.
- P_F is the estimated system pressure at maximum draught/maximum service speed.
- P_T is the maximum recorded system pressure during trials.

Where a constant displacement pump is utilised then the volumetric flow can be assumed to be almost constant. The performance of the steering gear can then be based on the following formulas:

$$\dot{Q}(P) = \frac{P - P_{0\%}}{P_{100\%} - P_{0\%}} (\dot{Q}_{100\%} - Q_{0\%}) + \dot{Q}_{0\%}$$

Where:

- P is the delivered hydraulic pressure.
- $\dot{Q}_{0\%}$ is the delivered flow rate at 0% utilisation of the pump.
- $\dot{Q}_{100\%}$ is the delivered flow rate at 100% utilisation of the pump.
- $P_{0\%}$ is the delivered hydraulic pressure at 0% utilisation.
- $P_{100\%}$ is the delivered hydraulic pressure at 100% utilisation.

This leads to a conservative estimate of steering time of:

$$t_f = t_T \frac{\dot{Q}(P_T)}{\dot{Q}(P_F)}$$

Where:

- t_T is the steering time in the sea trial condition.

The formula was verified and simplified using Computational Fluid Dynamic studies validated against real life data as defined in report SO-EF 2013.019.

Following the validation work it was decided to increase the 1.22 constant to 1.25 in order to remain conservative; this gives the proposed formula:

$$P_F = P_T(1.25(\frac{A_F}{A_T})(\frac{V_F}{V_T})^2)$$

Where:

- P_F is the estimated steering actuator hydraulic pressure in the deepest seagoing draught condition.
- P_T is the maximum measured actuator hydraulic pressure in the trial condition.
- V_F is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.
- V_T is the proposed speed of the vessel corresponding to the maximum continuous revolutions of the main engine in the trial condition.

Inclusion of alternative methods

It was concluded that the derived formula was a usable prediction method however was conservative.

It was therefore decided to add an allowance in UI SC246 for the use of Computational Fluid Dynamic studies by the builder to evidence that the requirements of SOLAS Reg. II-1/29.3 and 29.4 have been fulfilled. Any such submission would have to be validated and reviewed to the satisfaction of the Society.

3. Source / derivation of the proposed IACS Resolution

- Section 6.1.5.1 of ISO 19019:2005 Sea-going vessels and marine technology – Instructions for planning, carrying out and reporting sea trials.
- IACS UR S10

4. Summary of Changes intended for the revised Resolution:

Previous revisions have included only the allowance for alternative calculation methods to be implemented where the vessel cannot be tested at the deepest seagoing draught this revision has made the following changes:

- Addition of the allowance that if the rudder is fully submerged the tests are deemed to being performed in an acceptable condition.
- Addition of the derived prescriptive formula as a method for predicting rudder torque at the maximum seagoing draught.
- Addition of the allowance for Computational Fluid Dynamic studies to be used to the satisfaction of the Society to prove compliance with the requirements.

5. Points of discussions or possible discussions

During the amendment to this UI, the following points of discussion were raised:

- The use of the hydrodynamic torque arm defined in IACS UR S10 was discussed however, it was discovered that it is only accurate where the rudder is fully submerged.

- During the development of the formula, there was a lack of validation data leading to the use of validated CFD to develop the formula. Due to the time taken a total of 3 cases were tested. Further verification work has been recommended.
- The 1.25 constant in the formula has been shown to be conservative however can be revisited when more validation data is available.
- The current SOLAS regulation suggests the calculation of a trial speed to simulate the maximum torque on the rudder. The feasibility of this method was questioned and requires further discussion.
- The definition of V_F was discussed at the 21st Machinery Panel Meeting. V_F was understood as the design speed of the vessel corresponding to maximum continuous revolutions specified by the designer or shipyard. It was not intended that the conversion or verification of this stated parameter would be subject to Society. However, one member expressed an opinion that V_F was unknown according to the definition in the UI and therefore a proposal to clearly state that V_F is the design speed of the vessel was considered. Machinery Panel concurred that assuming the design speed as V_F would not be conservative from SOLAS point of view although the actual speed corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught is normally higher than the design speed due to the yard taking some safety margin. As a result, “contractual design” was added to the definition of V_F for the sake of clarification.

V_F is the contractual design speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.

6. Attachments if any

- Attachment 1: IACS PM11801- Verify calculation method for equivalent rudder/steering gear performance at the full draught condition – Technical Background.
- Attachment 2: Calculation Procedure for Equivalent steering gear performance.
- Attachment 3: SO-EF 2013.019 – Computation of Rudder loads acting on full Spade and semi spade rudder during steering gear tests.

IACS PM11801- Verify calculation method for equivalent rudder / steering gear performance at the full draught condition-Technical Background

Summary

IACS PM11801 was established to verify the proposed method for predicting the steering gear torque required at a vessels deepest seagoing draught to meet the requirements of SOLAS II-1/29.3 and 29.4 based on data obtained from steering trials.

The team was made up of specialists in Machinery, Hull and Computational Fluid Dynamic (CFD) disciplines from Member Classification Societies.

The task initially focussed on gathering data and reviewing the equivalent Steering Gear test draft proposal put forward by a Member Society and partially reviewed under PM6801. This proposed tool was then simplified and Computational Fluid Dynamic assessments were conducted to develop a simplified extrapolation method.

Following the development of a simplified method a project extension was granted and this was used to gather further verification and trial data.

A draft amendment to UI SC246 has been produced including the proposed formula and giving options for alternative calculation methods.

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4. Tool Simplification 6
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1. Introduction

1.1. PM11801 was established with the aim of verifying a previously proposed calculation method presented by a member society to predict the rudder turning performance in the deepest seagoing draught condition where trials have been conducted in the ballast or trial condition.

1.2. SOLAS II-1/29.3.2 states that:

"The Main Steering gear and rudderstock shall be capable of putting the rudder over from 35° on one side to 35° on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35° on either side to 30° on the other side in not more than 28 s"

The regulation requires the vessel to be at its deepest sea going draught and running at maximum ahead service speed. On some vessel types however it is not possible to test in such a condition and therefore IMO have issued MSC.1/Circ/1425 which provides an interpretation of SOLAS II-1/29.3.2 and 29.4.2. This interpretation allows for the vessel to be tested at an acceptable trim condition and the results extrapolated to the full load condition. The aim of PM11801 was to review, simplify and test the proposed tool for extrapolating the trial data.

1.3. The team established to conduct this work on behalf of the IACS Machinery Panel was multidiscipline with experience in Machinery, Structures/Hydrodynamics and Computational Fluid Dynamics.

1.4. It should be noted that the task did deviate from the original proposal laid down in Form 1 and Form A due to the need to simplify the proposed calculation method and conduct CFD analysis to investigate the assumptions made. This was conducted with the full agreement of the Machinery Panel.

2. Review of proposed tool

2.1 The proposed tool was presented to PM11801 as an outcome of PM6801. This tool was developed by a member society. Each task member was asked to review the tool and findings were discussed at the opening meeting held in London between the 6th & 7th June 2012.

2.2 It was felt strongly by all team members that the proposed tool was unsuitable for use in its presented format due to both its complexity and assumptions made within the calculation.

2.3 Based measurements outlined in a presented memo the proposed tool was shown to overestimate measured rudder moments by 7.5-11.5% based on actual measured data. It was also noted that the tool required an estimation of rudder wetted area to be made. Studies have shown that a 1/12 change in rudder height results in an 18% change in the estimated moment at full load draught. The uncertainty was felt by the team to be an unacceptable variable which could be open to interpretation error and if static draught only is considered would be very conservative.

2.4 The proposed tool made an estimation of the point of attack or rudder moment arm. This was based on the rules of a member society which in turn were taken from IACS UR S10. Experience has shown however that this formula is only applicable for rudders in the fully submerged condition and not partially submerged conditions. It was therefore felt by the PT that further research was required into the effects of rudder submersion on the torque arm.

2.5 The proposed tool also required time and steering angle to be inputted at very small intervals over the time span of the rudder movement. It was felt that in a trial environment this would not be practical and it would be easy for recording errors to be made which would dramatically alter the output of the tool.

2.6 The difference in ship response between the trial and full load condition had not been taken into account and it was assumed that a ship in the deepest seagoing draught condition behaves similarly to the reduced draught condition. It was the experience of task members that this is not always the case and this would need to be accounted for in the calculation method.

2.7 The value of Friction torque used in section 4.1.2 of the proposed tool was an estimate based on hydraulic pressure readings. Based on experience from member societies friction losses are subject to hysteresis which does not allow for a simplistic prediction. Again this would need to be investigated as part of the task.

2.8 The proposed tool did not allow (due to the input format) the number of readings taken through the trial to be reduced as any reduction in the plotted and extrapolated points would affect the accuracy of the results. This left the tool very open to recording errors.

2.9 Concerns were raised to the Machinery Panel by a member society in 2008. These comments were taken into account by the Project Team and discussed at length.

2.10 Following the review of the task and the points raised in 2.2-2.9 above it was felt strongly that the tool required simplification and modification; this was led by one member of the project team.

3. Test Data

3.1 Another major aim of PM11801 was the gathering of steering gear test data for vessels in both the ballast and deepest sea going draught conditions. From the outset of the task this data proved difficult to obtain as vessels are often only tested in one condition prior to acceptance. The proposed tool also required pressure data at intervals over the whole period of rudder movement which at present is not recorded as part of trials with only peak readings being recorded by most Societies.

3.2 A task member had previously completed trials on 2 container vessels. This data was made available to the PT and used as the basis for the tool simplification. The data consisted of 2, 8000 TEU capacity container ships, one with a semi spade and one with a full spade rudder.

3.3 Another member supplied data for VLCC sister vessels which were tested at different draughts. This data was used when tool simplification was conducted.

3.4 Following a project extension an appeal was made via the Machinery Panel Chairman to obtain more validation data from member Societies. Whilst responses were received from several Societies few had data for both the trial and deepest seagoing draught condition. It was therefore decided to conduct further trials as part of the project extension.

3.5 Following discussions with Shipowners and builders a further two vessels were identified and tests conducted on one of these. This vessel was a 4000TEU container vessel which is covered in more detail in section 6 of this report.

4. Tool Simplification

4.1 Following the conclusions regarding the proposed tool outlined in section 1 it was decided that the tool required further investigation and simplification prior to being suitable for use.

4.2 As the tool was originally developed by a task member society it was decided that they would lead on the simplification with support from the other PT members particularly with regards to the output from the Computational Fluid Dynamic analysis. This resulted in the publication of the report “Calculation procedure for equivalent steering gear performance”.

4.3 The simplification used the proposed 2008 tool as a basis and simplified conservatively based on the trial and fully submerged rudder profiles.

4.4 For the purposes of the simplification conducted as part of this PT:

4.4.1 The Hydrodynamic torque is taken as:

$$T_h = F_h . X_h$$

4.4.2 The hydrodynamic rudder force is taken as:

$$F_h \alpha k_1 . k_2 . k_3 . \rho . A V^2 \delta$$

4.4.3 The hydrodynamic torque arm is taken as:

$$X_h = \sum_{i=1}^{n} (\frac{A_i}{A} . B_i (\alpha_i - k_i))$$

This torque arm is referenced relative to the rudderstock center and is deemed positive when the rudder is un-balanced.

Where:

k_1 Coefficient for profile type

k_2 Flow coefficient

k_3 Aspect ratio coefficient

A The complete area of the rudder blade including the flap

V The effective inflow velocity of the rudder

ρ Density of Seawater

δ The effective angle of attack of the inflow to the rudder

k_i $\frac{A_{iF}}{A_i}$

B_i Mean breadth of partial area

α_i 0.25 for partial area behind fixed structure such as a rudder horn
0.33 in general

A_i Partially submerged area under consideration

A_{iF} The area forward of the rudder stock centerline.

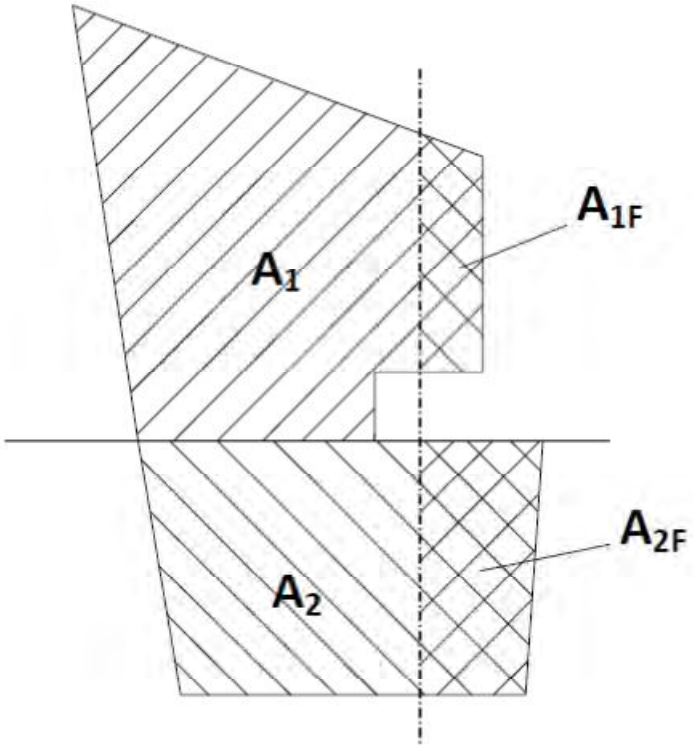
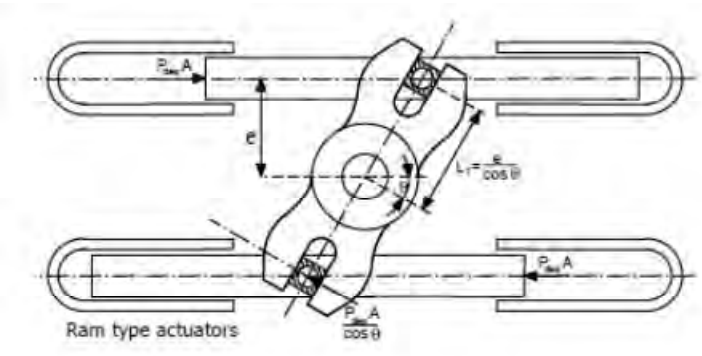


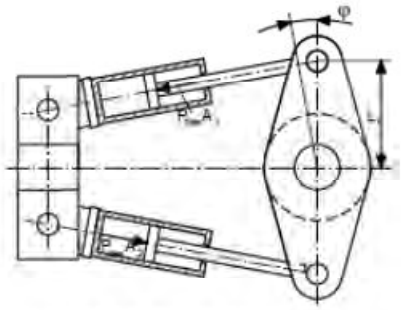
Figure 1- Rudder areas

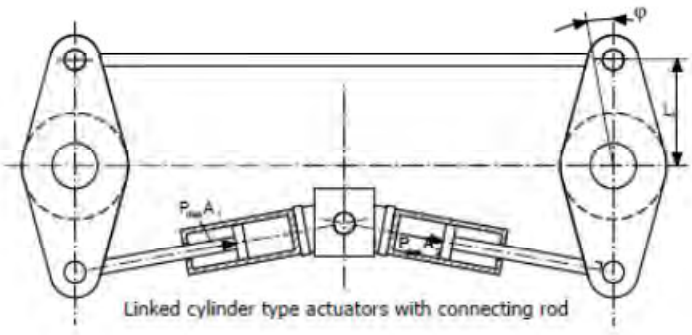
4.4.4 The Steering Gear torque is derived as:

$$T_s = PL_t \sum_{i=1}^{n} (A_{vi} \frac{\cos\varphi}{\cos\theta})$$

P	Hydraulic Differential Pressure
L_t	Torque arm
A_{vi}	Projected pressurised area of piston/vane no i
φ	Cylinder neutral angle for linked cylinder steering gear. For Ram and rotary vane types $\varphi = 0$
θ	The rudder angle for Ram type steering gear. For linked Cylinder and rotary vane steering gear this value = 0







4.5 In any steering system the steering actuator torque needs to balance the hydrodynamic rudder torque and the losses due to friction in bearings. If it is assumed that frictional losses are linearly dependent on the steering gear torque the following relationship can be derived.

$$T_h = (1 - R)T_s$$

Where

R is non-dimensional constant representing frictional losses.

4.6 By applying the above formulas for the trial and fully submerged rudder conditions an equation to derive hydraulic pressure can be shown as:

$$P_F = P_T(\frac{1+R_T}{1+R_F}.\frac{\cos\theta_F}{\cos\theta_T}.\frac{k_{3F}}{k_{3T}}.\frac{\rho_F}{\rho_T}.(\frac{V_F}{V_T})^2.\frac{\delta_F}{\delta_T}.\frac{X_{hF}}{X_{hT}})$$

In the above formula the F and T subscripts define the full laden and trial conditions respectively.

By making the following assumptions the above formula can be further simplified.

- The ratio due to friction losses is taken as 1.0
- The ratio due to rudder angles could be taken as 1.0 if it is assumed that the maximum full load hydraulic pressure occurs at the same rudder angle as the maximum sea trial hydraulic pressure. Theoretically it may be that this occurs at different angles therefore the factor should be taken as 1.22.
- The ratio of seawater densities can be taken as 1.
- The ratio of inflow effects can be taken as the ratio of ship speed if it is assumed that the inflow velocity into the rudder is dominated by the vessel speed.
- The relative ratio due to effective angle of attack should be taken as 1.0. This is because at large effective angle of attack, the hydrodynamic torque is independent on the effective angle of attack due to flow separation, which is the most likely scenario for both sea trial and full load condition.

Using these assumptions the Formula can be simplified to:

$$P_F = P_T\left(1.22.\max\left(1.0,\frac{k_{3,F}}{k_{3,T}}\right).\max\left(1.0,\frac{A_F}{A_T}\right).\max\left(1.0,\left(\frac{V_F}{V_T}\right)^2\right).\max\left(1.0,\frac{X_{h,F}}{X_{h,T}}\right)\right)$$

Where:

$$k_3 = \frac{H^2}{A_t} + 2$$ in the trial and fully loaded conditions.

H is the mean height of the rudder area.

A_F is the total area rudder blade including area of flap and area of rudder post or rudder horn in the deepest seagoing draught condition.

A_T is the total area rudder blade including area of flap and area of rudder post or rudder horn in the trial condition.

$X_{h,F}$ is the Hydrodynamic rudder torque arm in the deepest seagoing draught condition.

$X_{h,T}$ is the Hydrodynamic rudder torque arm in the trial condition.

$\mathbf{V_F}$	is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.
$\mathbf{V_T}$	is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine in the trial condition.
$\mathbf{P_F}$	is the estimated system pressure at maximum draught/ maximum service speed.
$\mathbf{P_T}$	is the maximum recorded system pressure during trials.

4.7 Where a constant displacement pump is utilised then the volumetric flow can be assumed to be almost constant. The performance of the steering gear can then be based on the following formulas:

$$\dot{Q}(P) = \frac{P - P_{0\%}}{P_{100\%} - P_{0\%}}(\dot{Q}_{100\%} - Q_{0\%}) + \dot{Q}_{0\%}$$

Where:

P	is the delivered hydraulic pressure.
$\dot{Q}_{0\%}$	is the delivered flow rate at 0% utilisation of the pump.
$\dot{Q}_{100\%}$	is the delivered flow rate at 100% utilisation of the pump.
$P_{0\%}$	is the delivered hydraulic pressure at 0% utilisation.
$P_{100\%}$	is the delivered hydraulic pressure at 100% utilisation.

This leads to a conservative estimate of steering time of:

$$t_f = t_T \frac{\dot{Q}(P_T)}{\dot{Q}(P_F)}$$

Where:

t_T	is the steering time in the sea trial condition.

4.8 Therefore if the predicted system pressure is below the designed working pressure of the steering gear and the predicted time is below 28 seconds then regulation 29.3 is deemed satisfied .

4.9 It is however understood that many steering gears utilise variable displacement pumps and in some rare instances centrifugal pumps. In these instances, the pump characteristic data would need to be requested from the manufacturer.

Within the scope of this project, the work conducted on pump characteristics was limited. Further trial data and study is suggested for non-constant flow rate pumps.

4.10 The formula was deemed very conservative and the torque arm calculation used within it was based on IACS S10. It was therefore felt that as this estimate was based on the fully submersed rudder it would not accurately predict performance of rudders in the partially submersed condition. The formula was therefore further refined using outputs from Computational Fluid Dynamic investigations conducted as part of the project and discussed in section 5.

5. Simplified method based on Computational Fluid Dynamics Calculations

5.1 It was decided to conduct a Computational Fluid Dynamics (CFD) study into the rudder lever arm and torque at the deepest seagoing and ballast draughts in order to investigate the effect on steering gear response times. As a member society had data for 2 container ships and a CFD capability it was decided that they would lead in this area.

5.2 The main aim of the study was to develop an alternative simplified calculation procedure for extrapolating rudder torque from the trial condition at a reduced draught to the maximum sea going draught condition taking account of the changing lever arm on the rudder.

5.3 The simulations were conducted using a finite volume Reynolds-averaged Navier-Stokes equations solver (RANSE). During simulations, the rudder angle was dynamically changed from 0 to -35 degrees and from -35 - +35 degrees this simulation was then validated using sea trial data. The results are included in the report entitled “Computation of Rudder Loads acting on a Full -Spade and Semi- Spade rudder during Steering Gear Tests,”. Based on the results from the CFD analysis a simplified formula was developed based on the formula developed as part of the tool simplification study. The ratio of lever arms and ratios of rudder torques for the full spade rudder at the instant of maximum rudder torque were determined using CFD. The restrained ship motions initially used in the study lead to a conservative ratio of torque for the full spade rudder. A more realistic ratio between sea trial and scantling draft condition of 1.26 occurred when unrestricted ship motions were applied in the simulation.

5.4 Based on the CFD calculations the following simplified formula was proposed:

$$Q_F = Q_T(1.25(\frac{A_F}{A_T})(\frac{V_F}{V_T})^2)$$

Where:

Q_F is the Rudderstock moment for the deepest seagoing draught and maximum service speed condition.

Q_T is the Rudderstock moment for the Trial Condition.

A_F is the total submerged area of the movable part of the rudder in the maximum sea going draught condition.

A_T is the total submerged area of the movable part of the rudder in the trial condition.

V_F is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.

V_T is the measured speed of the vessel (considering current) in the trial condition.

5.5 It can be seen that this formula uses a 1.25 factor which takes into account the lever arm change, the relative ratio of torques and the relative ratio of rudder angles where maximum torque is reached. Based on IACS UR S10 the difference in calculated lever arms between the deepest seagoing draught and sea trial conditions is small (in the region of 0.01m) and is based on the minimum requirement for the lever arm condition.

5.6 It is suggested that where a constant displacement pump is utilised and the pressure is lineally proportional to the rudder stock moment and the values of rudder stock moment could become pressures to give:

$$P_F = P_T(1.25(\frac{A_F}{A_T})(\frac{V_F}{V_T})^2)$$

Where:

P_F is the estimated steering actuator hydraulic pressure in the deepest seagoing draught condition

P_T is the maximum measured actuator hydraulic pressure in the trial condition.

V_F is the speed of the vessel corresponding to the maximum continuous revolutions of the main engine at the deepest seagoing draught.

V_T is the proposed speed of the vessel corresponding to the maximum continuous revolutions of the main engine in the trial condition.

5.7 Further verification trials were conducted. These show that the above formula is conservative however it is suggested that it should be maintained.

6. Verification Trials

6.1 Following the completion of the tool simplification and CFD analysis a project extension was granted by the Machinery Panel to request data from Member Societies in order to verify the simplified calculation method.

6.2 Despite requests being made by the Panel chair during 2013 little suitable data was made available to the task meaning further verification and validation became difficult.

6.3 It was discovered that trials were conducted either at the ballast or service condition and not at both meaning that whilst a prediction using the simplified calculation method could be made this figure could not be verified against actual trial data.

6.4 Following the feedback from member Societies it was decided to conduct trials within the scope of the project. Discussions with ship owners and shipyards however proved difficult and did not result in any offers to provide a vessel for trials.

6.5 The decision was made to conduct trials under the stewardship of a task member society as a vessel owner on their Register was prepared to conduct the trials.

6.6 The details of the trials are Commercial in Confidence and therefore cannot be published in their entirety however the outline results and verification work can be discussed.

6.7 The trial vessel was a >4000TEU container vessel of approximately 285m in length. The rudder angle was measured directly at the steering gear and torque was measured using strain gauges. Ship speed and rate of turn were recorded using the ships Global Positioning System (GPS).

6.8 During initial sea trials the steering gear test was performed with one pump only. During the deepest seagoing draught condition trials the test was performed with both one and two pumps in operation.

6.9 Based on the measured trial data which was taken with one pump in operation the maximum torque was calculated as 1428kNm. The measured value was 1312kNm meaning in this case the formula is conservative.

6.10 The results show a correlation between the service condition measurements and also the extrapolated value using the proposed formula however the value calculated is in excess of the measured value. The proposed formula can therefore be said to be conservative when applied to the available trial data.

7. Summary and Conclusions

7.1. PT11801 has investigated the derivation of a simplified method to predict the steering torque at the deepest seagoing draught condition based on trial data in the ballast condition in order to satisfy the requirements of MSC.1/Circ.1425 which allows for a reliable method to be used to predict steering gear performance based on measurements taken in the ballast condition.

7.2. Initially first principal assessment and Computational Fluid Dynamics were used to derive a simplified formula. This also showed that the torque arm in UR S10 could not be used at different rudder immersion values.

7.3. The project then verified the formula against data for 2 vessels on which trials had been conducted and submitted results to the Machinery Panel.

7.4. Requests for trial data to verify the calculation method proved to be very difficult as each Society tested in only one loading condition. Further verification trials were therefore commissioned and the results published.

7.5. It is understood that trial data is limited for this project. Moving forward any further data could be included to further refine the proposed constant of 1.25 and produce a more accurate prediction method.

7.6. It can be concluded based on available data that the formula derived as part of this project is conservative when used to derive the deepest seagoing draught condition rudder torque based on the trial data however contingency has been written into the draft amendment of UI 246 such that if a shipyard wishes to conduct CFD analysis or an alternative calculation method this can be accommodated.

7.7. The proposed formula is not applicable for ships where A_T is higher than 0.95 A_F. This is especially important for passenger ships and ferries however these vessel types are unlikely to have a substantial difference in deepest seagoing draught and trial draughts. Without this condition the formula would be too conservative for these rudder types.

7.8. It can also be concluded that if A_T is equal to A_F there is no need for an extrapolation method to be applied as the lever arm is unchanged.

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Calculation procedure for equivalent steering gear performance

Proposal

Driveklepp, Torgrim

1/4/2013

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1 General

1.1 Definitions and concepts

1.1.1 Steering gear test

The steering gear test is a sea trial test, in which a sequence of extreme manoeuvres is executed, to document compliance with SOLAS Regulation 29 requirements. The purpose of SOLAS Regulation 29 is to show that the vessel and steering gear respond satisfactory during an extreme manoeuvre.

The executed sequence of manoeuvres is as follows:

1. The rudder is turned from neutral position to starboard 35^{o}
2. The rudder is turned from starboard 35^{o} to portside 30^{o}
3. The rudder is turned from portside 35^{o} to starboard 30^{o}
4. The rudder is turned from starboard 35^{o} to neutral position

The requirements of the steering gear test as described in SOLAS Regulation 29 may be summarised as follows:

1. The vessel responds satisfactory during the extreme manoeuvres
2. The steering gear shows no signs of unexpected and undesirable performance (large deflections, vibrations, uncontrolled movements, etc.)
3. The steering gear has got sufficient torque capacity to turn the rudder without exceeding the approved maximum working torque (max 80% of design torque)
4. The steering gear pumps have sufficient capacity to turn the rudder from 35^{o} to 30^{o} within a specified time limit

The SOLAS minimum time limit for manoeuvre 2 and 3 is 28 seconds.

The SOLAS Regulation 29 is referring to a steering gear test performed with fully submerged rudder blade, at the deepest seagoing draught.

1.1.2 Trial condition

The trial condition is the actual vessel loading condition, for which the steering gear test is performed.

1.1.3 Full load condition

The full load condition is any loading condition satisfying the SOLAS requirement with respect to rudder submergence and vessel draught.

1.1.4 Equivalent steering gear performance

If the rudder blade is partially submerged in the trial condition, the SOLAS requirement with respect to rudder submergence is not fulfilled.

The equivalent steering gear performance is the estimated performance for the full load condition based on the actual steering gear performance in the trial condition.

The equivalent steering gear performance is used as basis for assessing compliance with SOLAS Regulation 29 when the trial condition does not satisfy the rudder blade submergence requirements.

1.1.4.1 Equivalent hydraulic pressure

The differential oil pressure in the hydraulic cylinders of the rudder actuator is hereinafter referred to as hydraulic pressure.

The hydraulic pressure during the steering gear test (P_T) is recorded and taken as basis for determining equivalent hydraulic pressure (P_F).

1.1.4.2 Equivalent steering time

The time span of each manoeuvre (t_1, t_2, t_3 and t_4) is recorded and taken as basis for determining equivalent time spans.

1.1.5 Hydrodynamic rudder torque

The hydrodynamic rudder torque (T_h) is the resulting moment due to hydrodynamic pressure on the rudder blade. The hydrodynamic rudder torque is the product of the hydrodynamic rudder force (F_h) and torque arm (X_h). The arm is taken as the position of the resulting point of attack relative to the rudder stock centre line.

1.1.6 Steering gear torque

The steering gear torque is the torque on the rudder stock from the steering gear actuator due to differential hydraulic pressure.

2 Basis for calculation procedure

2.1 Hydrodynamic rudder torque

The hydrodynamic rudder torque is taken as

$$T_h = F_h \cdot X_h$$

The hydrodynamic rudder force is taken as

$$F_h \propto k_1 k_2 k_3 \rho A V^2 \delta$$

And the hydrodynamic rudder torque arm is taken as

$$X_h = \sum_{i=1}^{n} \left(\frac{A_i}{A} B_i (\alpha_i - k_i) \right)$$

The rudder torque arm is given relative to the rudder stock centre line and is positive when the rudder is under balanced. See Figure 1.

In the above:

- k_1 is a coefficient depending on rudder profile type, see Figure 2
- k_2 is a coefficient depending on rudder/nozzle arrangement
- $k_3 = H^2/A_t + 2$
- H is the mean height of the rudder area, see Figure 3
- A_t is the total area rudder blade including area of flap and area of rudder post or rudder horn, if any, within the height H
- ρ is the density of water
- $A = \sum_{i=1}^{n} A_i$ is the whole rudder blade area, including area of flap
- A_i is the area of partial area, see Figure 4
- V is the effective inflow velocity of the rudder
- δ is the effective angle of attack of the inflow to the rudder
- B_i is the mean breadth of partial area, see Figure 3
- $\alpha_i = 0.33$ in general
- $\alpha_i = 0.25$ for partial area behind a fixed structure such as a rudder horn
- $k_i = A_{iF}/A_i$
- A_{iF} is the area forward of rudder stock centre line, see Figure 4

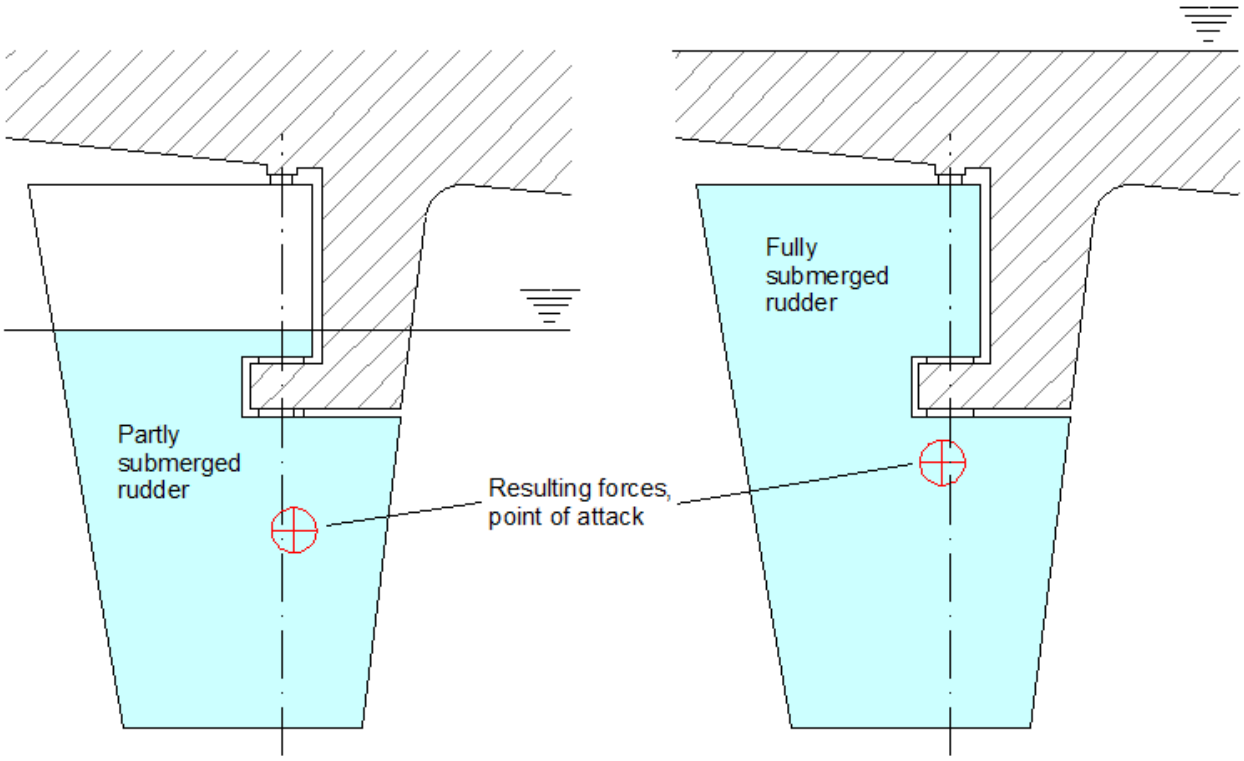

Figure 1 Resulting hydrodynamic forces

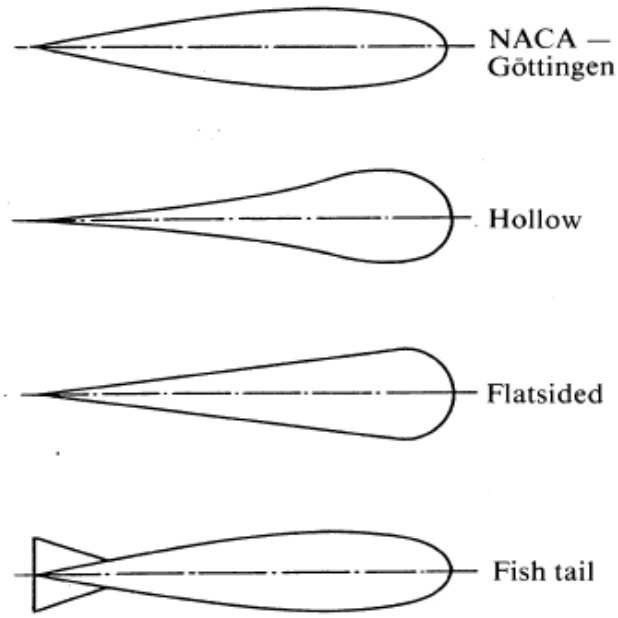

Figure 2 Rudder profiles

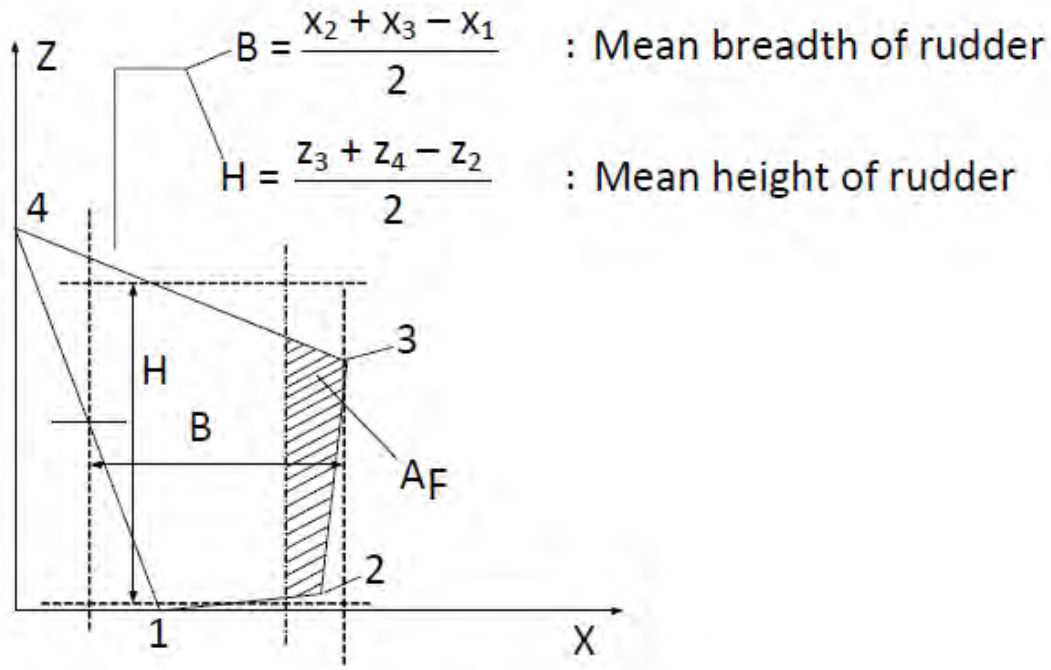

Figure 3 Rudder dimensions

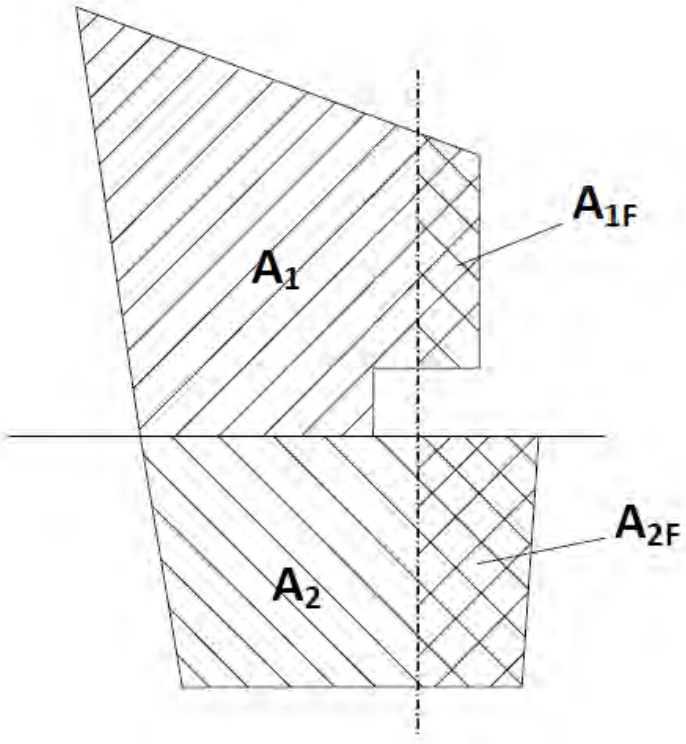

Figure 4 Area distribution

2.2 Steering gear torque

The steering gear torque is taken as

$$T_s = PL_t \sum_{i=1}^{n} A_i \frac{\cos\varphi}{\cos\theta}$$

where

- P is the hydraulic differential pressure, see Figure 5
- L_t is the torque arm
- A_i is the pressurised (projected) area of piston or vane number i
- φ is the cylinder neutral angle for linked cylinder steering gear, for ram and rotary vane type steering gear $\varphi = 0°$, see Figure 5
- θ is the rudder angle for ram type steering gear, for linked cylinder and rotary vane type steering gear $\theta = 0°$, see Figure 5

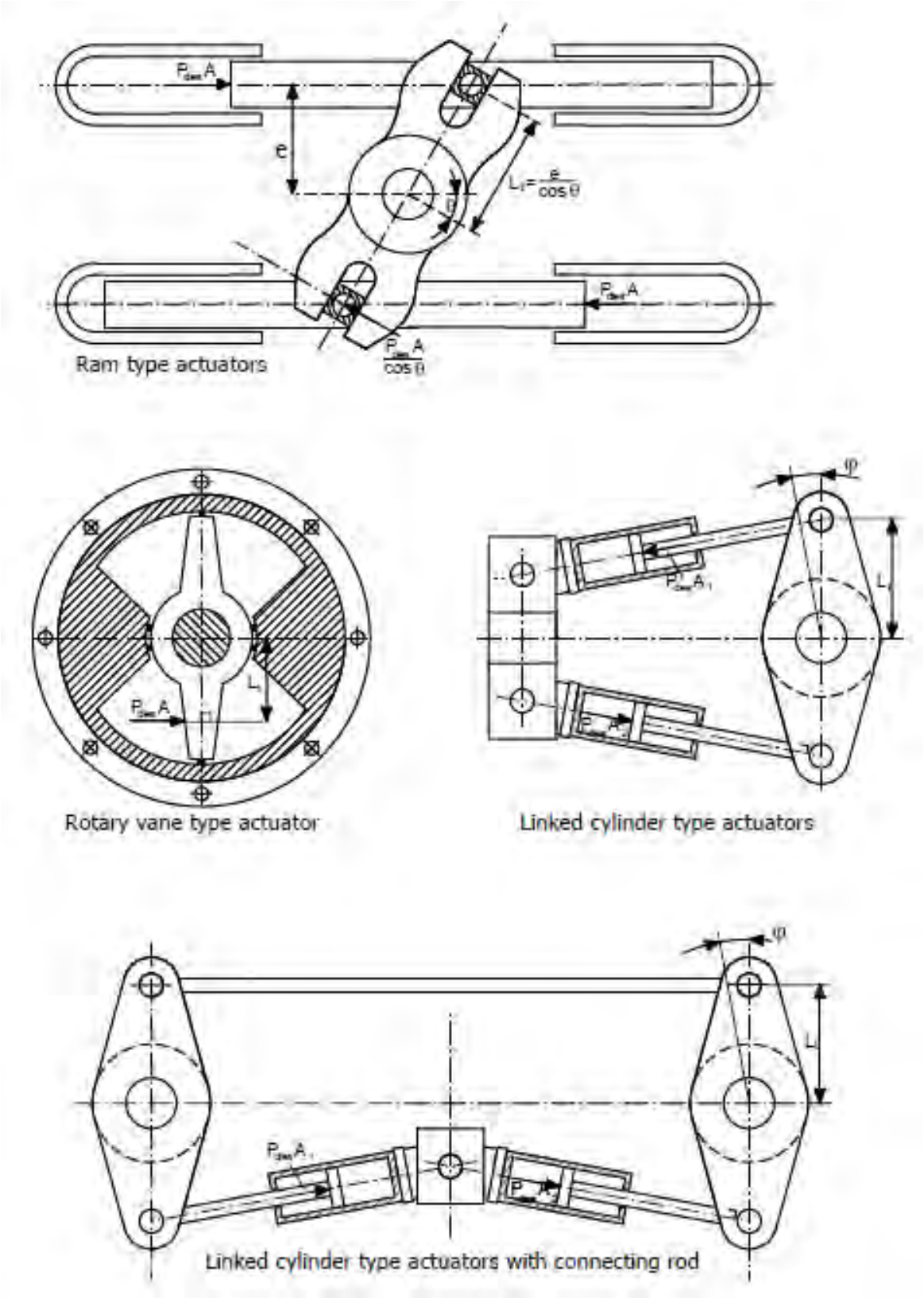

Figure 5 Illustration of rudder actuator types

2.3 Equivalent steering gear performance

2.3.1 Equivalent hydraulic pressure

The steering gear torque must balance the hydrodynamic rudder torque and the torque due to frictional losses in the various bearings.

If one assumes the frictional losses are linearly depending on the steering gear torque, the following relation may be assumed:

$$T_h = (1 - R)T_s$$

In the above equation, R is a non-dimensional constant representing frictional losses.

This is a quasi-static approach where inertia loads and the history effect of the wake is neglected, which may be questionable.

By applying this equation for both trial and full load condition, and considering the ratio, an equation, which can be applied to determine the equivalent hydraulic pressure, may be derived, i.e.

$$P_F = P_T \left(\frac{1 + R_T}{1 + R_F} \cdot \frac{\cos\theta_F}{\cos\theta_T} \cdot \frac{k_{3,F}}{k_{3,T}} \cdot \frac{\rho_F}{\rho_T} \cdot \frac{A_F}{A_T} \cdot \left(\frac{V_F}{V_T} \right)^2 \cdot \frac{\delta_F}{\delta_T} \cdot \frac{X_{h,F}}{X_{h,T}} \right)$$

The subscripts (F and T) are referring to full load condition and trial condition respectively.

The various ratios in the derived equation reflect different relative effects.

The following are proposed:

- ✓ The relative ratio due to friction loss may be taken as 1.0.
- ✓ The relative ratio due to rudder angle can be taken as 1.0 if one assumes that the maximum full load hydraulic pressure occurs at the same rudder angle as the maximum sea trial hydraulic pressure. However, theoretically it may be possible that this occurs at different rudder angles. The most conservative assumption would be

$$\cos 0° / \cos 35° = 1.22$$

- ✓ The relative ratio due to rudder aspect ratio (k_3) can be determined by the equations given in 2.1.
- ✓ The relative ratio due to water density can be taken as 1.0.
- ✓ The relative ratio due to rudder blade area can be determined by the equations in 2.1.
- ✓ The relative ratio due to effective inflow velocity may be taken as the ratio between the vessel speeds if one assumes that the inflow velocity into the rudder blade is dominated by the vessel speed.
- ✓ The relative ratio due to effective angle of attack should be taken as 1.0. This is because at large effective angle of attack, the hydrodynamic torque is independent on the effective angle of

attack due to flow separation, which is the most likely scenario for both sea trial and full load condition.

- ✓ The relative ratio due to hydrodynamic rudder torque arm is determined by the equations in 2.1.

Based on these considerations the following equation for the equivalent hydraulic pressure is proposed:

$$\left(1 \quad \mathrm{ax}\left(1 \quad \frac{}{}\right) \quad \mathrm{ax}\left(1 \quad \frac{}{}\right) \quad \left(1 \quad , \left(\frac{F}{}\right)\right) \quad \mathrm{ax}\left(1 \quad \frac{|X \quad |}{|X \quad |}\right)\right)$$

The $\mathrm{ax}(1 \quad x)$ functions are introduced to ensure that the equivalent hydraulic pressure is not less than the sea trial hydraulic pressure.

A less conservative version of the equation would be

$$\left(1 \quad \left(1 \quad \frac{}{} \quad \left(\frac{F}{}\right)\right) \quad \mathrm{ax}\left(1 \quad \frac{|X \quad |}{|X \quad |}\right)\right)$$

The final version of the equation should be determined based on CFD and sea trial data for both conditions. The constant 1.22 should also be reconsidered. It is most likely too conservative.

What seems to be the most important effect is the one due to the hydrodynamic rudder torque arm. The mathematical model proposed in 2.1 may not be accurate enough.

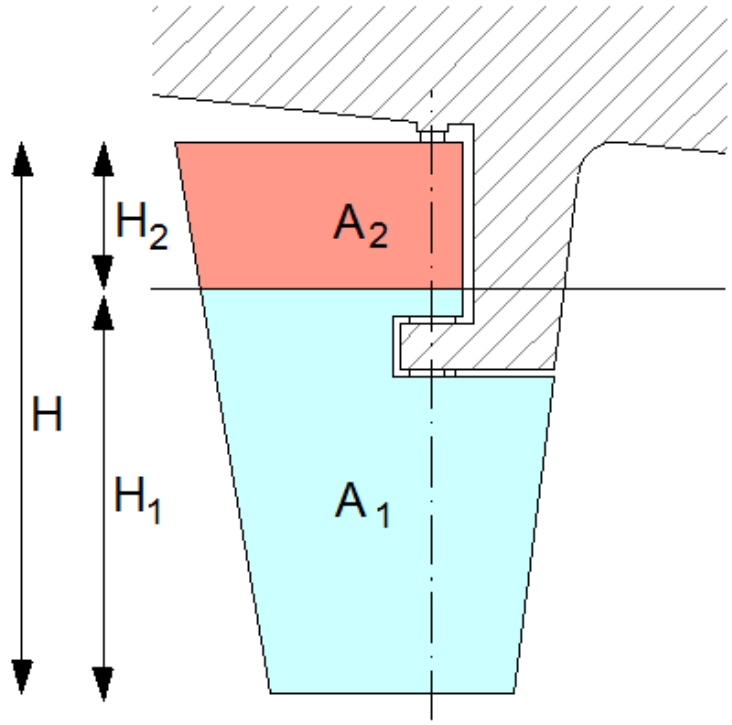

Figure 6 Area distribution

2.3.2 Equivalent steering time

The equivalent steering time estimated based on the results of a discharge test of the steering pump.

The delivered flow rate to the pump (displacement pump) may be taken as

$$\dot{Q}(P) = \frac{P - P_{0\%}}{P_{100\%} - P_{0\%}}\left(\dot{Q}_{100\%} - \dot{Q}_{0\%}\right) + \dot{Q}_{0\%}$$

where

- P is the delivered hydraulic pressure
- $\dot{Q}_{0\%}$ is the delivered flow rate at 0% utilisation of the pump
- $\dot{Q}_{100\%}$ is the delivered flow rate at 100% utilisation
- $P_{0\%}$ is the delivered hydraulic pressure at 0% utilisation
- $P_{100\%}$ is the delivered hydraulic pressure at 100% utilisation

The delivered pressure and flow at 0% and 100% utilisation are taken from a discharge test of the actual pump.

Alternatively, instead of the equation given above, one may apply least square fitting to measurements at 0%, intermediate and 100% utilisation, to obtain a linear relation between delivered flow rate and hydraulic pressure. For example, 0%, 25%, 50%, 75% and 100% utilisation.

A conservative estimate of an equivalent steering time (full load condition) may be taken as

$$t_F = t_T \frac{\dot{Q}(P_T)}{\dot{Q}(P_F)}$$

where

- t_T is the steering time in the sea trial condition

3 Proposed calculation procedure

3.1 Steering gear test

The steering times and the hydraulic differential pressures are recorded and documented in a table similar to Table 1.

Manoeuvre	Rudder angle span	Steering time	Hydraulic pressure
1	Neutral to starboard 35°		
2	Starboard 35° to portside 30°		
3	Portside 35° to Starboard 30°		
4	Starboard 35° to neutral		

Table 1 Documentation of steering gear test

The maximum recorded hydraulic differential pressure for each manoeuvre is documented.

3.2 Equivalent steering gear performance

The equivalent hydraulic pressure and steering time are calculated according to the formulas given in 2.3 taking the values of Table 1 as basis.

The equivalent steering gear performance is calculated following the proposed calculation procedure and documented in a table similar to Table 2.

Manoeuvre	Rudder angle span	Equivalent steering time	Equivalent hydraulic pressure
1	Neutral to starboard 35°		
2	Starboard 35° to portside 30°		
3	Portside 35° to starboard 30°		
4	Starboard 35° to neutral		

Table 2 Documentation of equivalent steering gear performance

The numerical calculations performed to obtain the equivalent time span and hydraulic differential pressure should be documented.

3.3 Compliance with SOLAS Regulation 29

It is proposed that the sea trial comply with the regulation if

1. The vessel responds satisfactory during the extreme manoeuvres
2. The steering gear shows no signs of unexpected and undesirable performance (large deflections, vibrations, uncontrolled movements, etc.)
3. The steering gear has got sufficient torque capacity if the calculated equivalent hydraulic pressure does not exceed max 80% of design pressure
4. The steering gear pumps have sufficient capacity if the calculated equivalent steering time does not exceed the time limit of 28 seconds

Computation of Rudder Loads Acting on a Full-Spade and a Semi-Spade Rudder during Steering Gear Tests

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Abstract:

Loads on full-spade and semi-spade rudders of two modern container vessels were determined under service and trial conditions. During these simulations the rudder angle is changed dynamically from 0 to +35° and from 35 to -35°. For comparison of the loads of the two rudder types, the ships were investigated on a straight ahead course with restrained ship motions. Additionally, the influence of the free ship motions during the manoeuvre on the rudder loads was investigated for the vessel with full-spade rudder. For all cases, calm-water conditions were assumed and free-surface effects were taken into account. Constant ship speed and propeller rotation rate were applied. The investigations were carried out using a finite-volume Reynolds-averaged Navier-Stokes equations (RANSE) solver. For the validation of the numerical results, available full-scale measurements for both investigated ships in sea trial conditions were used. The results of these simulations were used to extrapolate rudder stock moment in trial condition to full load condition

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1 Introduction

SOLAS Reg. II-1/29.3.2 and Reg. II-1/29.4.2 require steering gear test at the ship's deepest seagoing draft, when the rudder is fully submerged. The purpose of these tests is to demonstrate that the ship behaves satisfactory during manoeuvre. The steering gear should show no signs of undesirable performance, be able to turn the rudder without exceeding the maximum working torque, and be able to turn the rudder from 30° from one side to 35° to the other side within the specified time limit of 28 seconds.

For certain ship types, tests in full load condition are impracticable. Therefore, current practice in such cases is to demonstrate ship behaviour and steering gear performance at ballast (reduced) draft, i.e. with a partially submerged rudder, without providing these characteristics at full draft. This practice may lead to wrong results, as rudder submergence may strongly influence rudder torque, in particular for semi-spade rudders due to the variation in rudder balance.

Therefore, a calculation methodology was proposed in DNV *Calculation procedure for equivalent steering gear test*, *DNV (2008)*, allowing estimation of the change in steering gear torque due to change in rudder submersion. The methodology uses measurement results from sea trials with partly submerged rudder to evaluate compliance with SOLAS Reg. II-1/29.3.2 and Reg. II-1/29.4.2, requiring deepest seagoing draft, i.e. fully submerged rudder.

To verify the proposed calculation method and decide upon its suitability, the Machinery Panel of IACS has launched a multi-disciplinary Project Team consisting of the members of the Machinery Panel and Hull Panel; the expected contribution from the Hull Panel members is to address the calculation of the rudder torque, while the Machinery Panel members address the required steering gear torque. The aim of this proposal is to contribute to the development of the calculation method for the rudder torque.

1.1 Notes to the Calculation Procedure Proposed by DNV

Calculation procedure for equivalent steering gear test proposed in *DNV (2008)* represents a useful computational method, allowing calculation of the change in steering gear torque due to change in rudder submersion. The procedure is based on sound physical principles and empirical correction factors. Whereas we appreciate the idea behind the procedure and the approach in general, we would like to draw the attention of the Project Team to the fact that the problem of the rudder performance behind a ship hull is complex, and any calculation methodology should be treated with due caution and sufficiently validated. Regarding the calculation procedure proposed by DNV, it does not completely cover some effects, therefore the following topics require, in our opinion, further verification:

- Computational formula for the nominal torque T delivered from the steering gear in section 4.1.1 overestimates the measured moments for container ships by 7.5% (at the minimum draft T_{min}) and 11.5% (at the maximum draft T_{max}), according to our measurements.

- To Chapter 3, specifying conditions of the trials: it is very difficult to reliably estimate dynamic trim and stern wave during trials. A deviation of draft estimation in trials by only 1/12 of rudder height results into approximately 18% change of the estimated acting moment at full draft. Using only static draft at a.p. without stern wave leads to very conservative results. The proposed methodology will be difficult to use in practice, because it is too sensitive to small deviations in draft estimation.

- The value T_{fric} in Section 4.1.2 is estimated from the recordings of hydraulic pressure for the instants with the same steering angle but with reversed direction of the rudder motion. Based on our experience with both CFD simulations and measurements, hydrodynamic loads on the rudder are subject to a significant hysteresis, which does not allow for such a simplistic definition of T_{fric}. An improved estimation is necessary.

- The ship speed correction procedure in Section 4.1.6 recommends taking the maximum of two speeds (between full and ballast draft conditions) for the calculation, see correction factor R_{Vcorr}. According to our experience, in the cases where the speed at full draft is significantly less than the speed in test condition, such a correction may lead to a conservative result.

- The difference in ship response between test condition and full load condition is not taken into account. The procedure assumes that the ship in full load condition behaves similarly to the reduced draft condition. To our experience, the difference of ship behaviour between full load and ballast conditions may be significant, and may influence rudder loads.

- The correction factor $R_{allowance}$ is suggested as 0.15 without without specifying ship types and sizes, for which this estimation is derived and proven suitable.

- Hull-rudder interaction is not taken into account, although the ship wake is especially strong in the flow area under consideration (i.e. the upper part of the rudder). This might lead to unreasonably conservative results. Specifically, factor κ_2 (flow coefficient) in the first formula of section 4.1.4 has to be reduced to take account of the hull wake.

In general, the proposed procedure by DNV tends according to our experience to conservative estimations for container ships. The influence of some other assumptions (pump characteristics, estimation of T_{fric}, influence of the oblique flow and propeller wake on κ_2 etc.) is too uncertain to justify the use of such a complex computational procedure. Besides, no comparison with measurement data is shown, which is necessary for any calculation methodology in order to estimate its accuracy and applicability range.

1.2 Development of a Simplified Calculation Procedure

The aim of this study is to develop an alternative calculation procedure for scaling the rudder torque from trial conditions at a reduced draft to the deepest seagoing draft condition. To do this, the loads on a full-spade and a semi-spade rudder of two modern container vessels were numerically investigated in service and trial conditions and compared with existing sea trial measurements. The results of these simulations were used to extrapolate rudder stock moment measured in trial condition to rudder stock moment in scantling draft condition.

The numerical simulations were carried out using a finite-volume Reynolds-averaged Navier-Stokes equations (RANSE) solver. During the simulations the rudder angle is dynamically changed from 0 to 35° and from +35 to -35° with the same turning rate of the rudder as during the sea trials. Measurement data from sea trials were used for validation. The propeller was physically modelled and rotated with constant rotating rate.

In the first step, the loads for both investigated rudder types were computed for a straight ahead course with restrained ship motions. In the second step, the vessel with full-spade rudder was additionally investigated taking into account free ship motions in four degrees of freedom (surge, sway, heave and yaw) to quantify their influence on rudder loads.

For all cases calm-water conditions were assumed and free-surface effects were taken into account. Constant ship advance speed and propeller rotation rate were specified.

2 Ship Data

For the investigations, two modern 8000 TEU container ships of similar container capacity were selected, one outfitted with a semi-spade and the other one with a full-spade rudder. The ship with the semi-spade rudder is denoted as “Container Vessel I” and the ship with the full-spade rudder is denoted as “Container Vessel II”. The main particulars are listed in Table 1. Sea trial measurement data are available for validation.

Table 1: Main dimensions of Container Vessel I and Container Vessel II (all given parameters are approximate)

		Container Vessel I (Semi-Spade)	Container Vessel II (Full-Spade)
Capacity	[TEU]	8600	8400
Length between perpendiculars	L_{pp} [m]	320	320
Waterline breadth	B [m]	40	40
Scantling draft	D [m]	14	14
Design speed	v [knots]	> 25	> 25
Power (maximum continuous rating, MCR)	P [kW]	70000	65000
Propeller			
Diameter	D_P [m]	9	8.5
Rate of turn	n [rpm]	95	105
Number of blades	z [-]	6	6
Direction of rotation		right	right
Rudder			
Area of blade	A_B [m²]	75	70
Area of horn	A_H [m²]	≈ 20 m²	—

3 Sea Trial Measurements and Parameters for Numerical Simulations

Full-scale measurements in sea trial conditions are available for both container vessels. For comparison with numerical simulations, note that the reported draft and trim refer to static floating attitude at zero speed.

3.1 Container Vessel I

Calm-water conditions could not be achieved in the sea trials of Container Vessel I. The wind speed was about 20 knots and the wave height about 2 m. In addition, the steering gear test was performed directly after zig-zag manoeuvring tests, so that the ship had lost speed before the rudder steering test started. These conditions may explain the difference between the design speed of about 25 knots and the achieved speed of 23.5 knots with a propeller rotation rate of 97 rpm. Table 2 shows the full-scale measurement conditions and the used parameters

for the numerical simulations. Figure 1 shows the time history of the measured rudder stock moment during the see trial steering gear test.

Table 2: Measurement and numerical simulation conditions of Container Vessel I with semi-spade rudder

		Measurement	CFD Sea Trial	CFD Scantling
Draft at aft perpendicular	D_{AFT} [m]	9.41	9.41	14.61
Draft at forward perpendicular	D_{FWD} [m]	4.74	4.74	14.61
Ship speed	v_S [knots]	23.5	23.5	23.5
Propeller rotation rate	n [rpm]	97	97	97
Rudder turning rate	[°/s]	2.3 and 4.6	2.3 and 4.6	2.3 and 4.6
Wind speed	v_W [knots]	20	—	—
Effective wind direction	β_W [° to port]	30 to 40	—	—
Wave height	H_W [m]	2.0	—	—

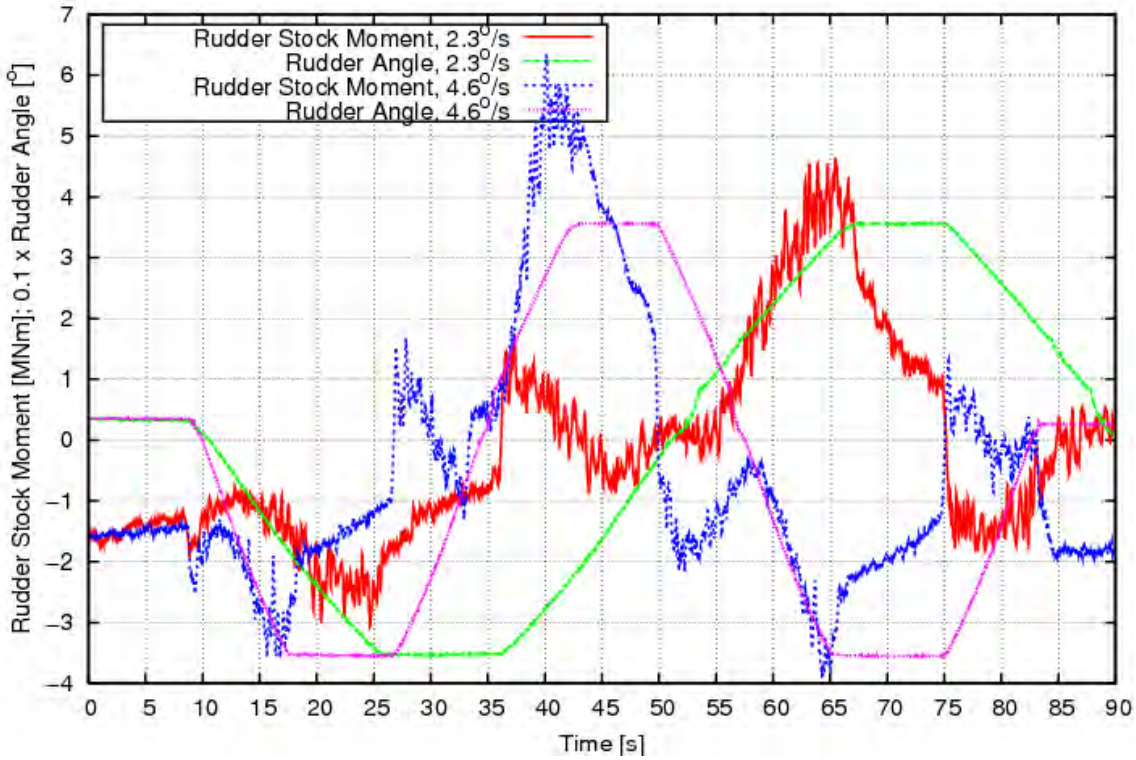

Figure 1: Time histories of rudder stock moment during steering gear test with rudder turning rates of about 2.3 and 4.6°/s from sea trial measurements for Container Vessel I

3.2 Container Vessel II

The steering gear test of Container Vessel II was conducted in calm water conditions. Before the measurements started, the ship had achieved a speed of 26.4 knots at propeller rotation rate 97 rpm. Table 3 shows the full-scale measurement conditions and the used parameters in the numerical simulations. Figure 2 shows the time histories of the rudder angle and stock moment during the full scale steering gear test.

Table 3: Measurement and numerical simulation conditions of Container Vessel II with full-spade rudder

		Measurement	CFD Sea Trial	CFD Scantling
Draft at aft perpendicular	D_{AFT} [m]	9.5	9.5	14.5
Draft at forward perpendicular	D_{FWD} [m]	5.0	5.0	14.5
Ship speed	v_S [knots]	26.4	26.4	26.4
Propeller rotation rate	n [rpm]	97	97	107
Rudder turning rate	[°/s]	2.4	2.4	2.4

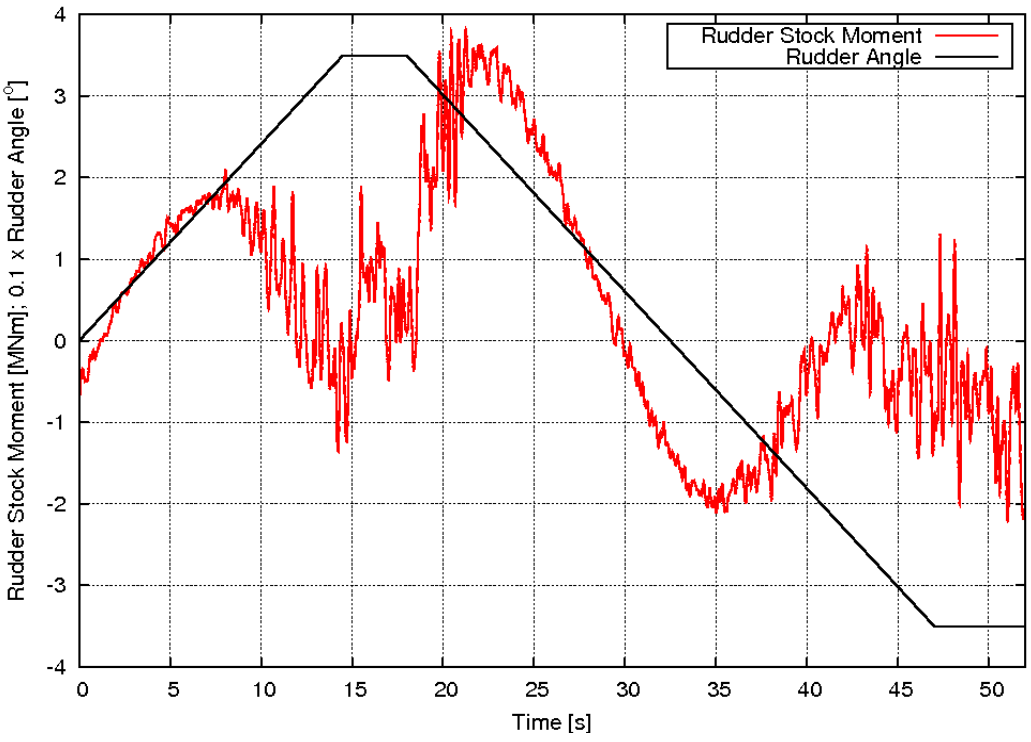

Figure 2: Time histories of rudder angle and stock moment during steering gear test with rudder turning rate of about 2.4°/s from sea trial measurements for Container Vessel II

4 Numerical Simulations

4.1 Numerical Methods

The commercial codes Comet and STAR-CCM+ of CD-adapco [1] are based on the solution of the Reynolds-averaged Navier-Stokes equations (RANSE), coupled with the solution of ship motions in the time domain. The fluid is considered as incompressible Newtonian fluid described by conservation equations of mass and momentum. Turbulence is modelled using the k-ε model.

The interface between water and air is modelled using an Eulerian approach. A scalar c ($0 \leq c \leq 1$) is introduced, equal to the volume fraction of water per fluid particle; values c=0 and 1 indicates 100% of air and water, respectively. The fluid is described as a two-phase mixture of water and air with the material properties calculated as weighted average of water and air properties. In addition to the conservation equations for mass and momentum, a transport equation for c is solved. The position of the water-air interface is defined from the condition c=0.5. This transport equation is discretised in space following a special method, the so-called HRIC scheme, *ICCM: User Manual COMET (2000)*, which reduces numerical diffusion of the transition zone. This treatment allows easy incorporation of breaking waves and slamming impacts.

A detailed description of the numerical method can be found in *Ferziger and Peric (1996)* and in the user manuals of *COMET*, *ICCM (2000)* and *StarCCM+*, *CD-Adapco (2012)*.

4.2 Numerical Grids

The computational domain consisted of three groups of blocks (sub-domains) around the ship hull, propeller and rudder, sharing common interfaces. The sub-domains surrounding propeller and rudder can freely rotate inside the grid surrounding the hull using the sliding grid technique. Rudder and propeller turn together with their surrounding sub-domains.

Near the hull, the grid was locally refined around the expected free surface and expected locations of high gradients of flow variables. The grid consisted mainly of hexahedral cells and few polyhedral cells. The grid for Container Vessel I consists of 0.6 million cells in the propeller sub-domain, 0.5 million cells in the rudder sub-domain and 3.1 million cells in the rest of the domain including the ship hull, Figure 3. The grid for Container Vessel II consists of 1.0 million cells in the propeller sub-domain, 1.2 million cells in the rudder sub-domain and 3.0 million cells in the rest of the domain including the ship hull, Figure 4.

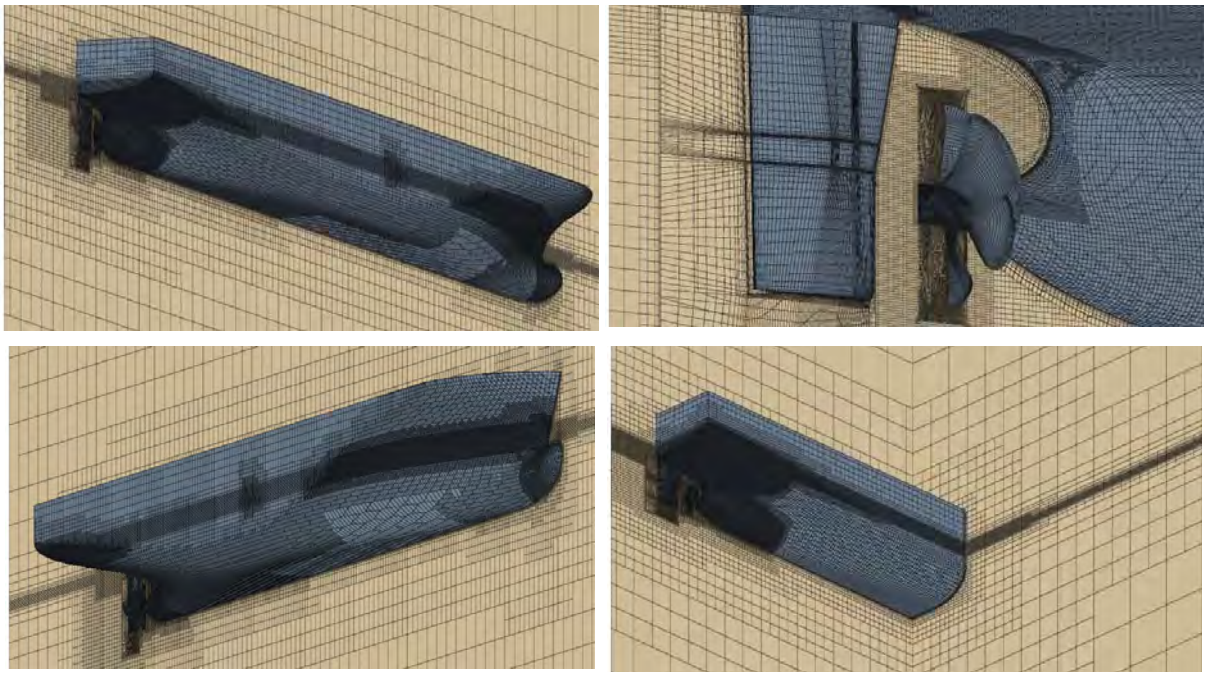

Figure 3: Computational grid around Container Vessel I, including views of rudder and propeller

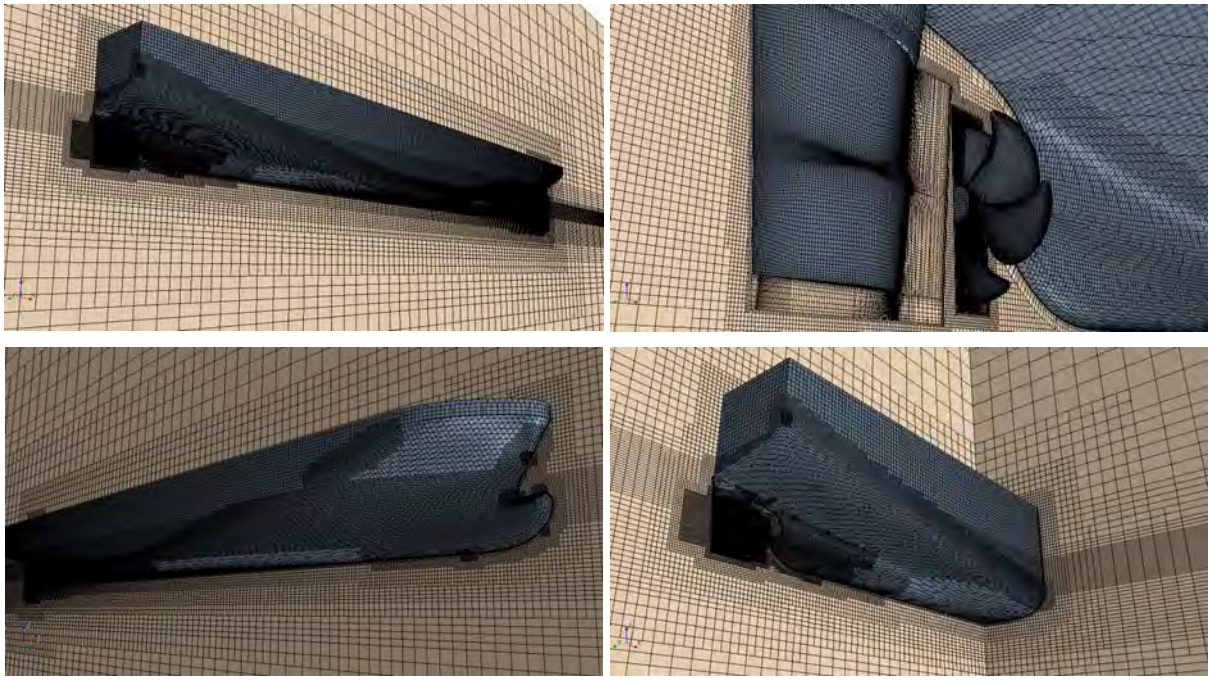

Figure 4: Computational grid around Container Vessel II, including views of rudder and propeller

4.3 Coordinate Systems

For the presentation of the rudder loads, a rudder-fixed coordinate system was used with origin at the intersection of base plane and rudder shaft axis. The *x*-axis points towards the leading edge, *y*-axis to port and *z*-axis upwards. The rudder angle and angular ship motions are defined in a ship-fixed coordinate system, with *x*-, *y*- and *z*-axes pointing towards bow, port and upwards, and origin coinciding with the origin of the rudder-fixed system. The rudder angle is positive to starboard. Translational ship motions are described in an inertial earth-fixed system, coinciding with the ship coordinate system at the beginning of simulations.

4.4 Boundary Conditions

A no-slip condition was applied on the hull, propeller and rudder with imposed time-dependent wall velocities. The upstream, side, top and bottom boundaries of the solution domain were modelled as velocity inlets with prescribed velocity components, turbulent kinetic energy, turbulence dissipation rate and volume fraction of air. The downstream boundary was modelled as a pressure boundary with prescribed hydrostatic pressure distribution.

The static attitudes of ships reported from full-scale sea trials were used to specify the initial draft and trim. For the scantling draft condition, untrimmed attitudes were assumed at different drafts. Figure 5 shows the free surface around the container vessel I for trial and scantling draft conditions.

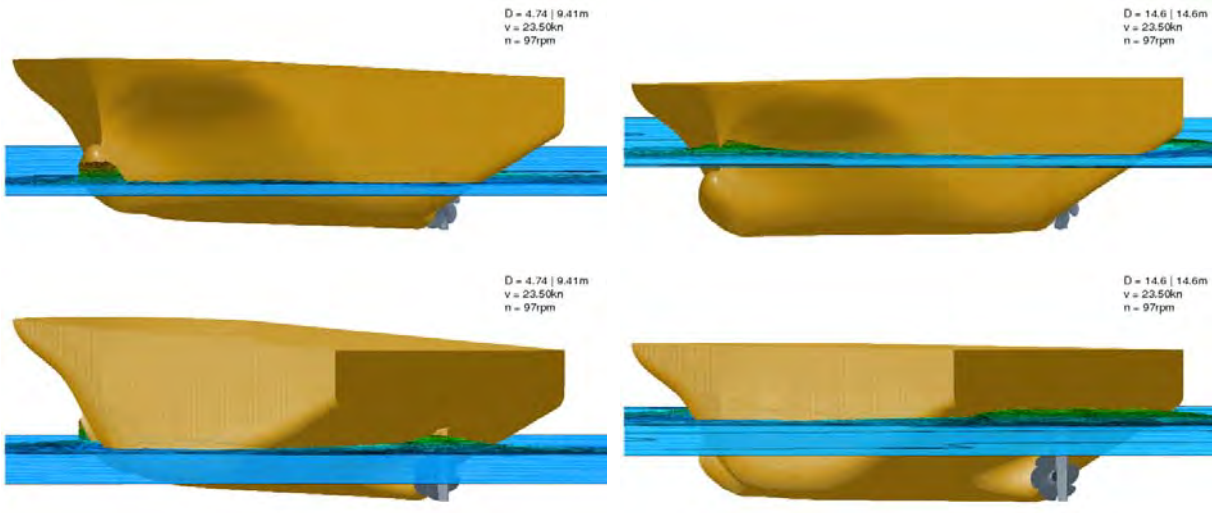

Figure 5: Free surface for sea trial (left) and scantling draft (right) conditions before steering gear tests for Container Vessel I

4.5 Ship Motion Setup

Unsteady simulations were performed, taking into account dynamic effects due to the manoeuvring ship, rotating propeller, and steered rudder. To determine rudder loads, two approaches were used:

1. Investigations with restrained ship motions: the ship hull was held fixed; the ship speed and propeller rotation rate were set to constant mean measured values, while the rudder angle was varied in time following the data records of sea trials.

2. Investigations with free ship motions in four degrees of freedom: free manoeuvring vessel in four degrees of freedom (surge, sway, heave and yaw) was modelled, with a constant propeller rotation rate and dynamically changed rudder angle.

5 Results

We present here the results at the sea trial and scantling draft conditions, as listed in Table 2 and Table 3. In addition, sensitivity analyses were performed with respect to the variation of some of the parameters of the setup, see the appendix. For all results presented here, rudder turning rates from 2.34 to 2.40°/s were used in the computations, i.e. slightly more conservative than the required mean rudder turning rate of 2.32°/s (65° in 28 s) according to SOLAS Reg. II-1/29.3.2 and Reg. II-1/29.4.2.

5.1 Suppressed Ship Motions

Simulations with suppressed ship motions were carried out for both rudder types. Figure 6 shows the time histories of the rudder stock moments and side forces of the semi-spade rudder; Figure 7 shows the same for the full-spade rudder. Figure 8 shows an example of free-surface elevation around the semi-spade rudder in sea trial and in scantling conditions for the time instant of maximum rudder stock moment. Figure 9 shows the distribution of dynamic pressure (i.e. full pressure less hydrostatic head with respect to the free-surface height) on hull, propeller and rudder at the same time instants.

For the semi-spade rudder, the maximum rudder stock moment of 3.8 MNm in sea trial condition occurs when the rudder reaches the maximum angle towards the port side of -35°. The maximum side force on the rudder of 8 MN occurs at the maximum rudder angle to starboard of +35°. In scantling condition, the maximum moment of 7.2 MNm and the maximum side force of 9.2 MN occur at the same rudder angles as in sea trial condition. The dynamic effects due to rudder turning is more pronounced in scantling draft conditions and results in an increase of rudder stock moment at the beginning of the time interval with constant maximum rudder angle.

The full-spade rudder reaches the maximum side force of 12 MN in scantling draft condition and 9 MN in sea trial conditions at the maximum rudder angles. Contrary to the semi-spade rudder, the maximum values are reached at both maximum rudder angles, towards port and starboard. The time history of the rudder stock moment of the full-spade rudder significantly differs from that of the semi-spade rudder. The maximum moment is reached during rudder angle change from +35 to -35° at a rudder angle of about +18° and later, at a rudder angle of about -22°. At both these time instants, the maximum moments are about 3.2 MNm in scantling draft condition and 2.0 MNm in sea trial condition.

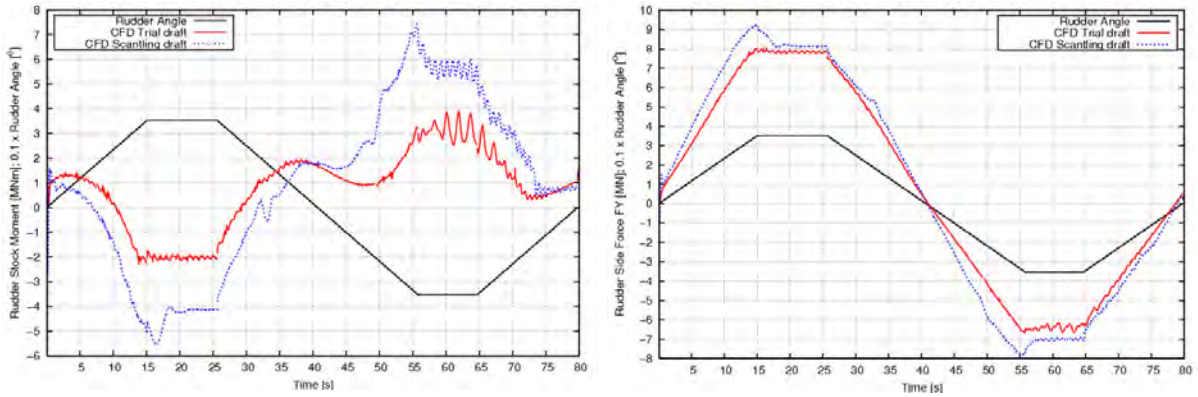

Figure 6: Rudder stock moments (left) and rudder side forces (right) for trial (red) and scantling (blue) conditions on the semi-spade rudder of Container Vessel I

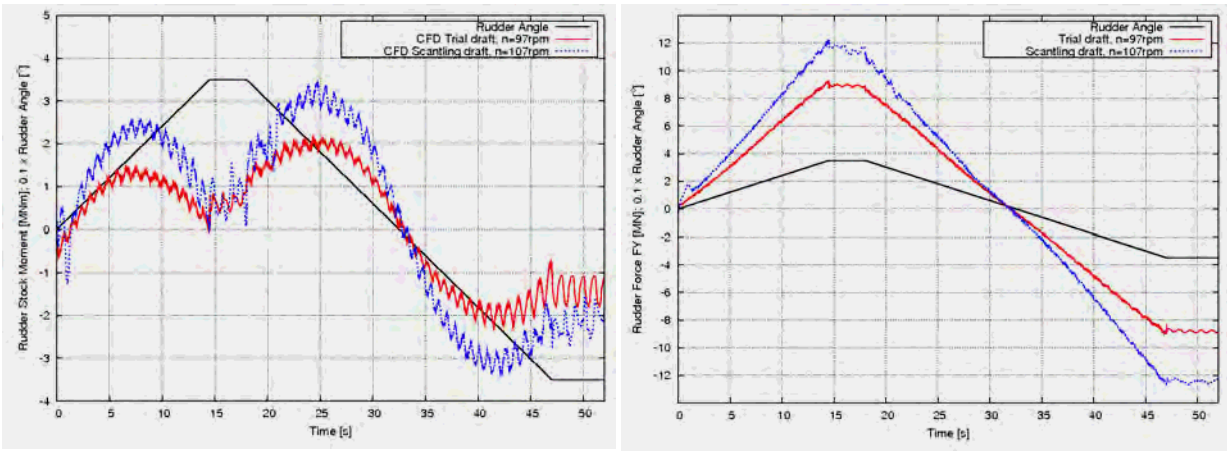

Figure 7: Rudder stock moments (left) and rudder side forces (right) for trial (red) and scantling (blue) conditions on the full-spade rudder of Container Vessel II

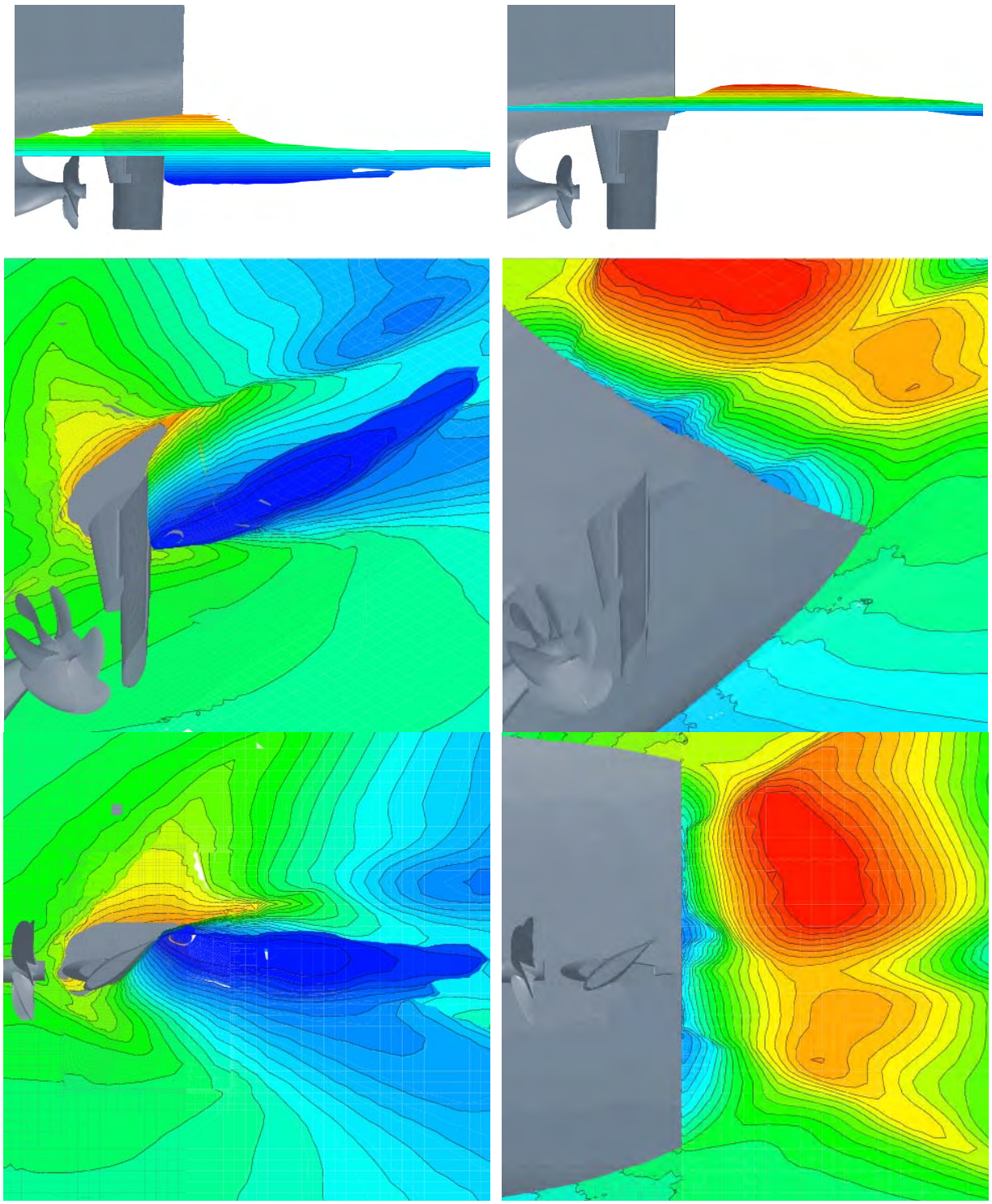

Figure 8: Free-surface elevation at the time instant of maximum rudder torque in trial (left, t=55.5 s) and scantling draft (right, t=60 s) conditions from two perspectives for Container Vessel I

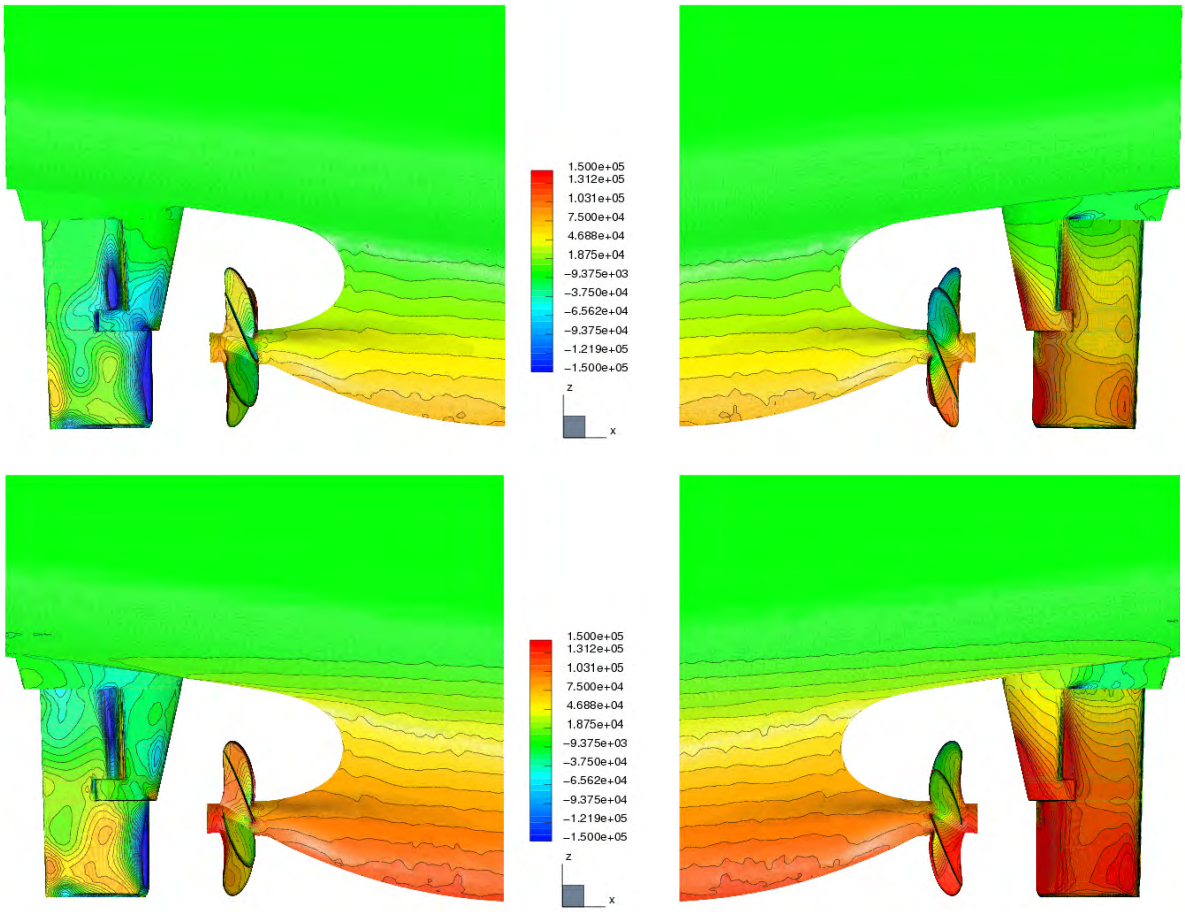

Figure 9: Dynamic pressure distribution at maximum rudder torque in trial (top, *t*=55.5s) and scantling (bottom, *t*=60s) conditions on Container Vessel I

5.2 Free Ship Motions

To evaluate the influence of ship motions on the rudder loads, simulations were performed with unrestrained ship motions in four degrees of freedom (surge, sway, heave and yaw). Non-linear equations of motion were solved in a coupled way with fluid motion equations.

The influence of ship motions on the rudder loads was fully investigated only for Container Vessel II with the full-spade rudder, using the software *STAR-CCM+*. The results of these investigations are discussed in this section; considerations regarding forces on the semi-spade rudder for a free moving vessel can be found in the appendix. These results indicate that the influence of roll and pitch motions on rudder loads is negligible, see page 29 of the appendix.

Figure 10 illustrates the influence of the ship motions on the rudder stock moment and side forces of the full-spade rudder in sea trial conditions. The maximum side force occurs – as before for the restrained ship calculations – at maximum rudder angles to both sides. The value of the maximum rudder force is reduced from 9.0 MN to 8.0 MN, whereas the maximum value of the rudder stock moment has increased remarkably from 2.0 to about 3.4 MNm; this behaviour can be explained by an increase of the lever arm.

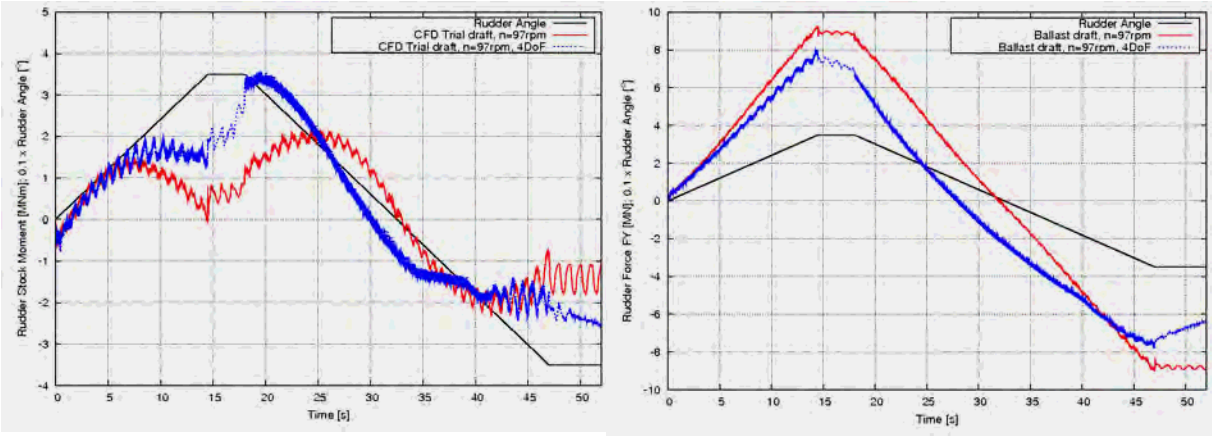

Figure 10: Rudder stock moments (left) and side forces (right) for computations with restrained (red) and free (blue) ship motions in four degrees of freedom for Container Vessel II in trial conditions

Figure 11 compares time histories of rudder stock moments and side forces for sea trial and scantling draft conditions from the computations with four free degrees of freedom. The time instant where the maximum stock moment occurs differs slightly between sea trial and scantling draft conditions. This shift in time results from the different ship motions. The differences between sea trial and scantling draft conditions of both side force and stock moment increase with time. These differences can be well explained when comparing the resulting yaw motions of the ship in sea trial and scantling conditions, Figure 12.

Figure 13 shows the free-surface elevations around the full-spade rudder at the time instants with the maximum rudder stock moments in sea trial and scantling conditions; Figure 14 shows the pressure distribution at the same time instants.

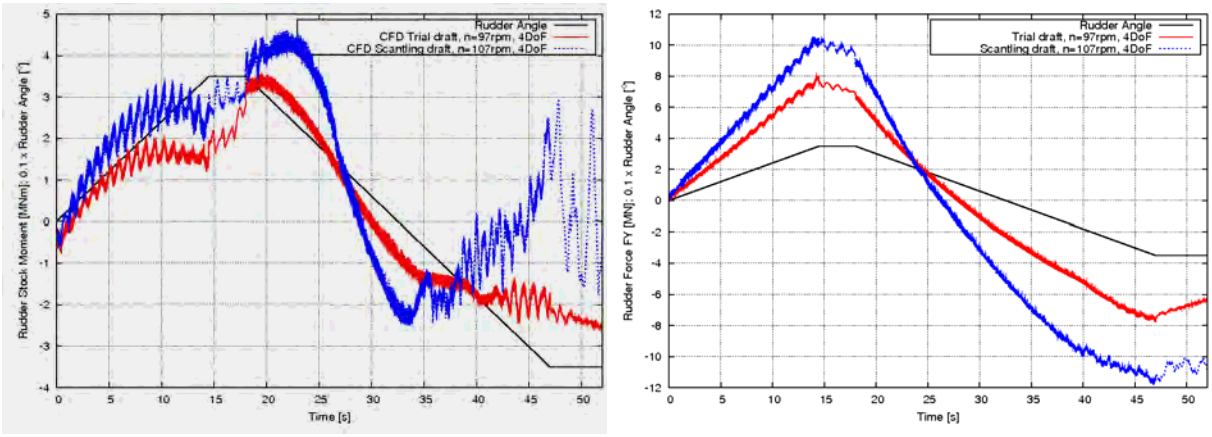

Figure 11: Rudder stock moments (left) and side forces (right) for trial (red) and scantling (blue) conditions from Container Vessel II simulations with free ship motions in four degrees of freedom

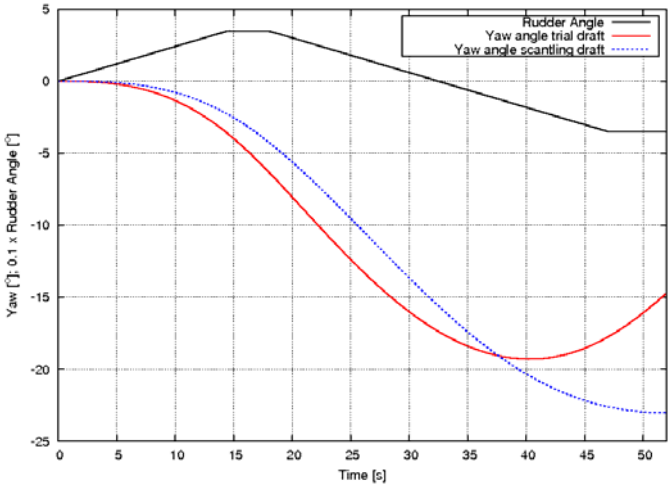

Figure 12: Time history of yaw motion for trial (red) and scantling (blue) conditions from simulations for Container Vessel II free ship motions in four degrees of freedom

5.3 Comparison with Sea Trial Measurements

Full-scale measurements of sea trials were available for validation of simulations. Figure 15 compares the measured rudder stock moments with computations for Container Vessel II with a full-spade rudder. The maximum values are well predicted. The characteristics of the time histories slightly differ: the time instant with the maximum moment is shifted by about 3 s; the change rates of the moment differ, e.g. between 20 and 35 s. These differences can be explained by comparing the figures on page 17. The calculated ship motions seem to differ slightly from the sea trial. The differences in the time interval between 10 and 20 s can be due to neglecting cavitation in the present computation. In Figure 23 of the appendix the influence of cavitation is evaluated.

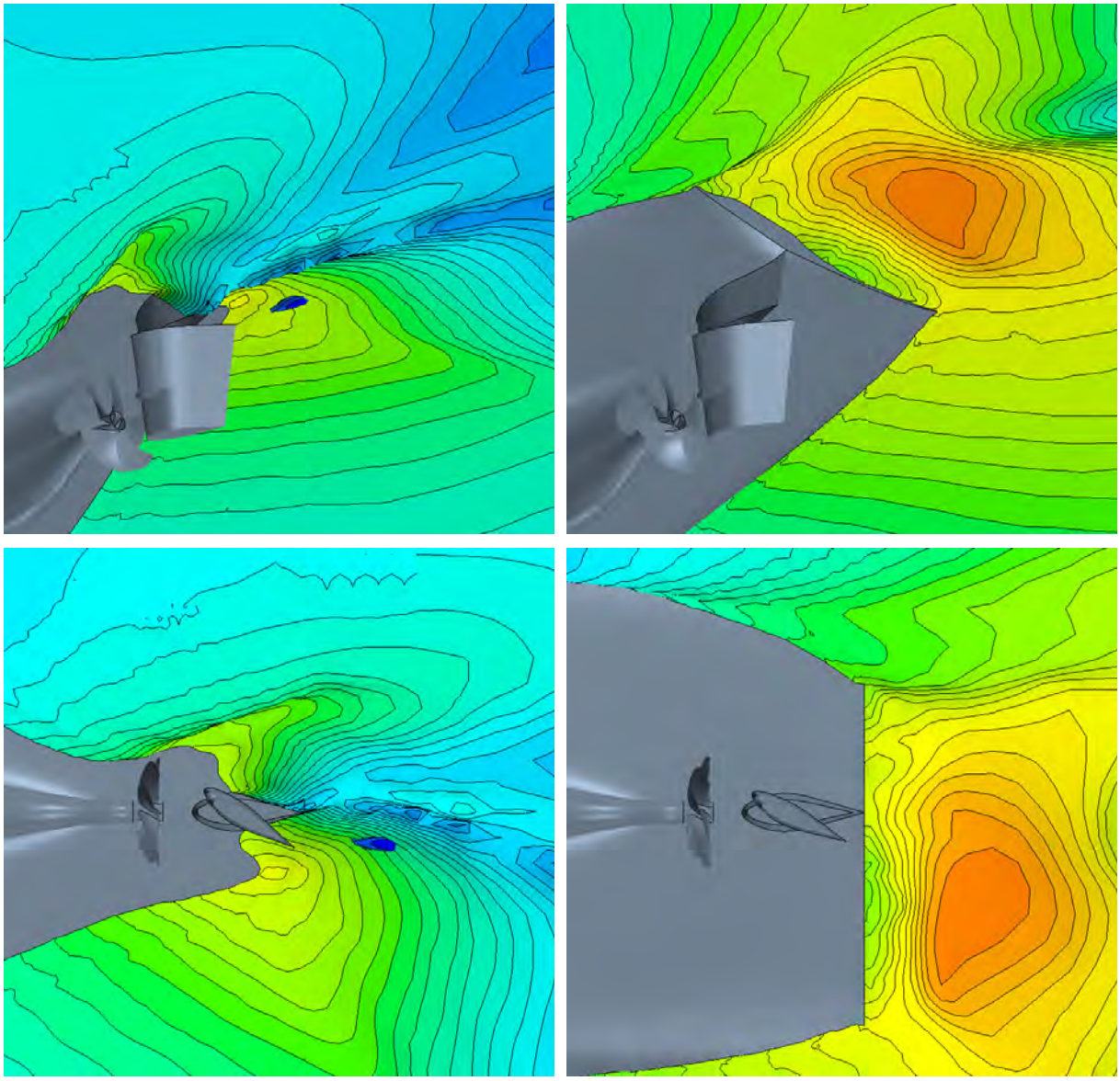

Figure 13: Free-surface elevation at the time instant with maximum rudder torque in trial (left, t=20 s) and scantling (right, t=22 s) conditions from two different point of view for Container Vessel II

The different characteristics after t=40 s result from the different ship motions, see Figure 11 as an explanation, and perhaps from the influence of cavitation, see Figure 23.

6 Proposal for the Calculation Procedure

The ratios of the lever arms and ratios of rudder torque for the full-spade rudder at the time instant of maximum rudder torque were determined from CFD simulations as reported in Table 4.

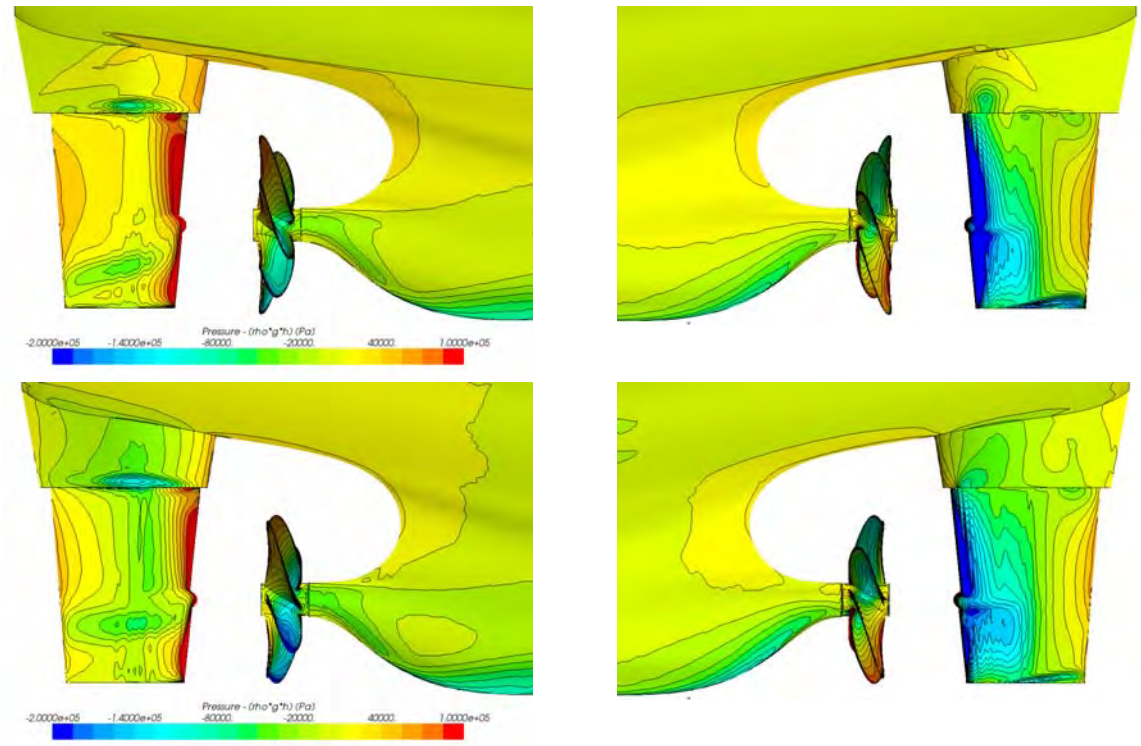

Figure 14: Dynamic pressure distribution on Container Vessel II at the time instant of maximum rudder torque in ballast (top, *t*=20 s) and scantling (bottom, *t*=22 s) conditions

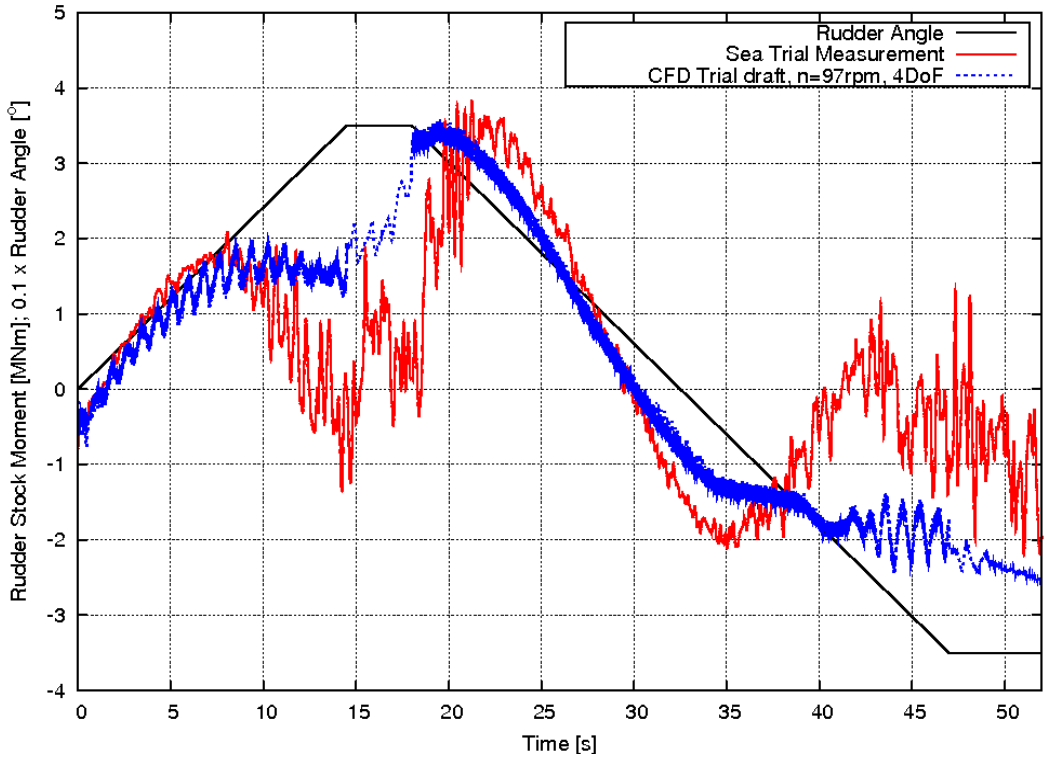

Figure 15: Container Vessel II: Full-scale measured (red) and computed (blue) rudder stock moments

Table 4: CFD results of rudder loads for Container Vessel I and Container Vessel II

		Rudder side force at max. torque	Lever arm	Max. torque	Ratio of lever arms	Ratio of torque values
		[kN]	[m]	[kNm]	[-]	[-]
Container Vessel I, semi-spade rudder	CFD trial, fixed hull	6400	0.59	3800	1.55	1.89
	CFD scantling, fixed hull	7800	0.92	7200		
Container Vessel II, full spade rudder	CFD trial, fixed hull	4100	0.49	2010	1.20	1.60
	CFD scantling, fixed hull	5390	0.59	3200		
	CFD trial, free motion	5030	0.68	3430	1.44	1.26
	CFD scantling, free motion	4410	0.98	4320		

The two calculated ratios of rudder torque for the fixed hull and free motion case were calculated using the maximum predicted torque for each case. Restrained ship motions lead to a conservative ratio of torque values of 1.6. A more realistic ratio between sea trial and scantling draft condition of 1.26 occurs in the simulations with unrestrained ship motions. The maximum torque for sea trial and scantling draft condition occurs at different rudder angles. For the free motion cases, maximum torque appeared at a rudder angle of 31° for sea trial condition and 25° for scantling draft condition.

The ratio of maximum rudder torque between scantling draft condition and sea trial condition for the semi-spade rudder determined with CFD with restrained ship motions was 1.89. Assuming for the full-spade rudder the same relation of rudder torque ratios between the restrained and unrestrained ship motion cases as for the semi-spade rudder, the ratio of 1.89 for the fixed ship hull reduces by 20% for the free moving ship, which leads to an estimation of the ratio of maximum rudder torque for the semi-spade rudder of 1.50 between scantling draft and sea trial conditions.

Based on the CFD calculations, we suggest the following formula to extrapolate the rudder stock moment from sea trial to scantling draft conditions:

$$\boxed{Q_F = 1.25\left(A_F/A_T\right)\left(V_F/V_T\right)^2 Q_T},$$

where Q_F is the rudder stock moment for full-load conditions, Q_T the measured rudder stock moment for sea trial conditions, V_F is the design speed and V_T is the measured advance speed in sea trials, A_F is the submerged area (still water) of the movable part of the rudder for full-load conditions, A_T is the submerged area (still water) of the movable part of the rudder for sea trial conditions. The factor of 1.25 contains the relative ratio of torque and the relative ratio of rudder angles where maximum torques are reached. The ratio of ship speeds and the ratio of the rudder blade areas are kept in the equation and are not included into the factor 1.25. The equation leads to $Q_F = 1.36Q_T$ and $Q_F = 1.55Q_T$ for the investigated full-spade and semi-spade rudders, respectively.

6.1 Application of the IACS UR for Scantling Draft and Sea Trial Conditions

Taking the same conditions as used in direct computation of rudder loads and following the IACS "Requirements concerning STRENGTH OF SHIPS" chapter S10.2 (assuming that only the submerged part of the rudder is taken into account), the loads of the rudder in scantling and sea trial condition are obtained as shown in Table 5.

Table 5: Rudder load calculation based on IACS Requirements concerning STRENGTH OF SHIPS Chapter S10.2

		Rudder force	Lever arm	Rudder torque	Ratio lever arm	Ratio rudder torque
		[kN]	[m]	[kNm]	[-]	[-]
Container Vessel I, semi spade rudder	Trial condition	5240	0.66	3470	0.98	1.45
	Scantling, condition	7790	0.65	5030		
Container Vessel II, full spade rudder	Trial condition	7610	0.71	5410	1.01	1.14
	Scantling, condition	8570	0.72	6160		

The difference in the calculated lever arms between scantling and sea trial conditions is very small and is based on the minimum requirement for the lever arm criterion. The ratio of rudder torque values is not conservative compared to the results of the CFD computations.

7 Conclusions

Loads on a full-spade and a semi-spade rudder of two modern container vessels were numerically investigated in service and trial conditions and compared with existing sea trial measurements. The results of these simulations were used to extrapolate rudder stock moment measured in trial condition to rudder stock moment in scantling draft condition. A simplified calculation method is proposed for extrapolation of sea trial results at reduced draft to scantling draft condition.

Further studies are recommended to consider other ship types.

8 References

[1] Ferziger, J.H., Peric M.: Computational Methods for Fluid Dynamics, Springer Verlag Berlin Heidelberg, 1996

[2] ICCM: User Manual COMET, Version 2.0, Institute of Computational Continuum Mechanics GmbH Hamburg, 2000

[3] CD-Adapco (2012) StarCCM+ User Manual

[4] IACS UR S10, Rudders, Sole Pieces and Rudder Horns

[5] SOLAS Chapter II-1, Regulation 29

[6] DNV “Calculation procedure for equivalent steering gear test”, 2008

Appendix: Sensitivity Analyses from Performed Numerical Simulations

1. Overview of Sensitivity Studies

In addition to the conditions listed in Table 2 and Table 3, sensitivity analyses were performed for Container Vessel I with respect to

- Variation of propeller rotation rate
- Draft variation between trial and scantling conditions
- Rudder turning rate
- Presence of cavitation
- Unrestrained roll and pitch motions

Table 6 summarises parameter variation studies presented.

Table 6: Parameter variations for sensitivity check for Container Vessel I with semi-spade rudder (text in italics means variations of parameters)

	CFD Sea Trial	CFD Scantling
Draft aft/forward perpendiculars [m]	9.41 / 4.74	14.61 / 14.61
	10.20 / 5.53	*13.2 / 13.2*
Rudder turning rate [°/s]	≈ 2.3	≈ 2.3
	≈ 4.6	*≈ 4.6*
Propeller rotation rate [rpm]	97	97
	85	*91*
Ship motions	restrained	restrained
		free

2. Influence of Propeller Rate Change

The measured propeller rates and corresponding ship speeds during sea trials differ from the design values in calm water due to wave and wind. In addition, the sea-trial manoeuvres carried out directly prior to the 35 to 35° rudder test influenced the ship speed. For example, Container Vessel I had carried out 20 to 20° zigzag-

manoeuvres directly prior to the rudder test. As a consequence, the ship speed had reduced to 23.5 knots at 97 rpm propeller rate. This propeller rate should result in a design speed of about 25 knots in calm-water conditions.

For the numerical investigations, it has been unknown whether small changes of the propeller rotation rate at the same ship forward speed could result in big differences in the rudder loads. Therefore, the propeller rate was varied for sea trial and scantling conditions for Container Vessel I. In scantling condition, the propeller rate was reduced from 97 to 91 rpm, Figure 16 whereas in sea trial condition, the propeller rate was reduced from 97 to 85 rpm, Figure 17. Computations were performed with restrained ship motions.

The differences in the resulting stock moments for small propeller rotation rate changes were also small. So we decided to use the reported propeller rates and ship speeds during the sea trial measurements for computations in sea trial conditions.

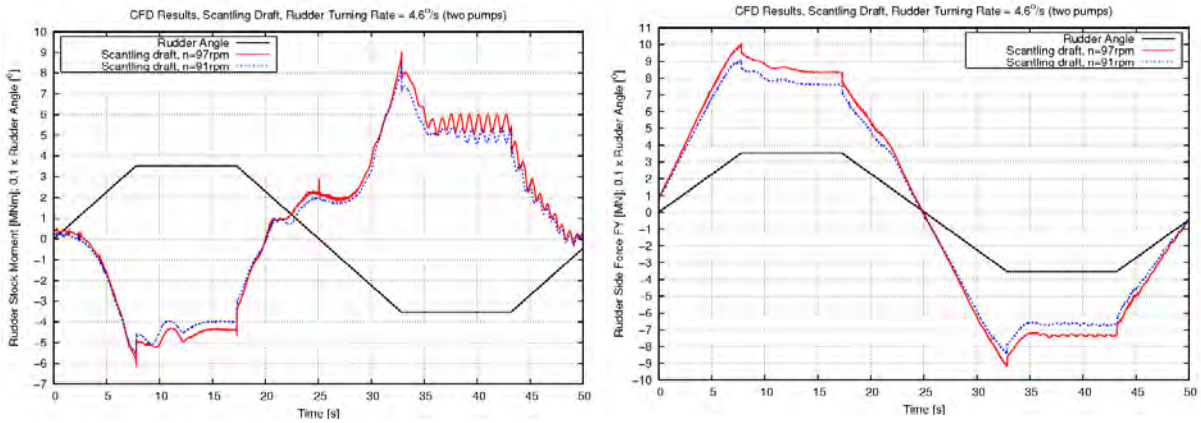

Figure 16: Container Vessel I: Change of rudder stock moment (left) and rudder side forces (right) due to a reduction of propeller rate from 97 rpm to 91 rpm at scantling conditions

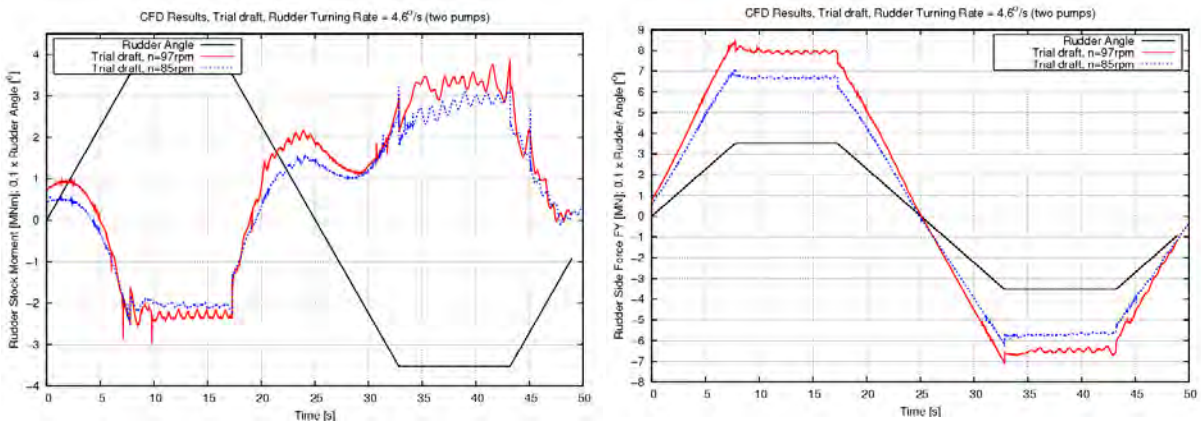

Figure 17: Change of rudder stock moment (left) and rudder side forces (right) due to a reduction of propeller rate from 97 to 85 rpm for Container Vessel I in sea trial conditions

3. *Influence of Draft Variation between Trial and Scantling Conditions*

To evaluate the influence of different drafts on the acting loads, two additional trim and draft conditions of Container Vessel I were investigated in simulations with restrained ship motions. Figure 18 shows the time histories of rudder stock moments and side forces in different trim and draft conditions.

The maximum rudder loads and characteristics of the time histories of rudder loads at the draft 13.2 m on even keel agree with the results at the scantling draft 14.6 m. In both cases, the rudder is fully submerged and the only difference is the free-surface height above the rudder. At the draft 13.2 m, the still water level lay 1.0 m above the upper edge of the rudder, whereas at the draft 14.6 m, the still water surface height increases by 1.4 m, which has no remarkable influence on the loads.

The second, sea trial trim condition was investigated, which has an increased draft by 0.79 m in comparison with the first investigated sea trial draft. As expected, the results lay between the first sea trial condition and the fully submerged rudder.

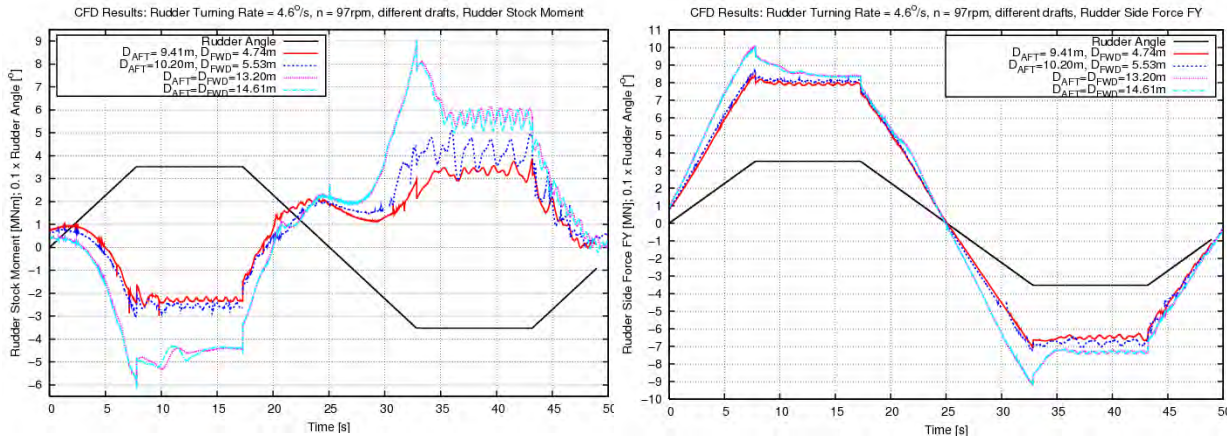

Figure 18: Rudder stock moments (left) and rudder side forces (right) for Container Vessel I in different draft and trim conditions

4. *Influence of Rudder Turning Rate*

During the full-scale measurements, steering gear tests were performed with two different rudder turning rates: 2.3°/s when using one steering gear pump and 4.6°/s when using two pumps, Figure 1. To evaluate the influence of the rudder turning rate, these two turning rates were investigated for trial and scantling draft in simulations with restrained ship motions for Container Vessel I. Figure 19 and Figure 20 show the resulting time histories of the rudder loads. There is a significant influence of rudder rotation rate in fully submerged rudder conditions, which leads to an increase of the maximum loads with increasing rotation rate, whereas the dynamic

influence of rudder rotation rate in sea trial conditions leads to insignificant differences in loads at different rotation rates.

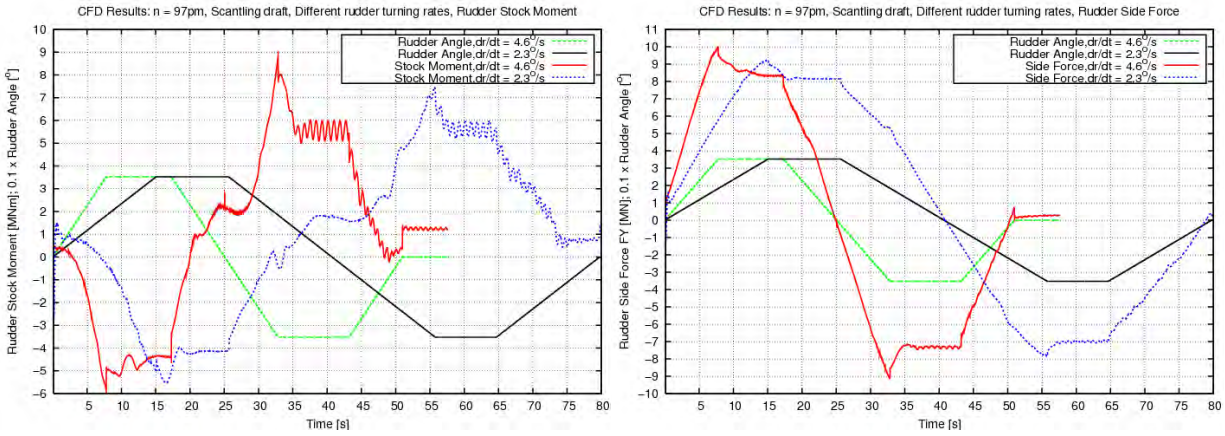

Figure 19: Change of rudder stock moment (left) and rudder side forces (right) due to doubling the rudder turning rate from about 2.3 to 4.6°/s for Container Vessel I in scantling draft condition

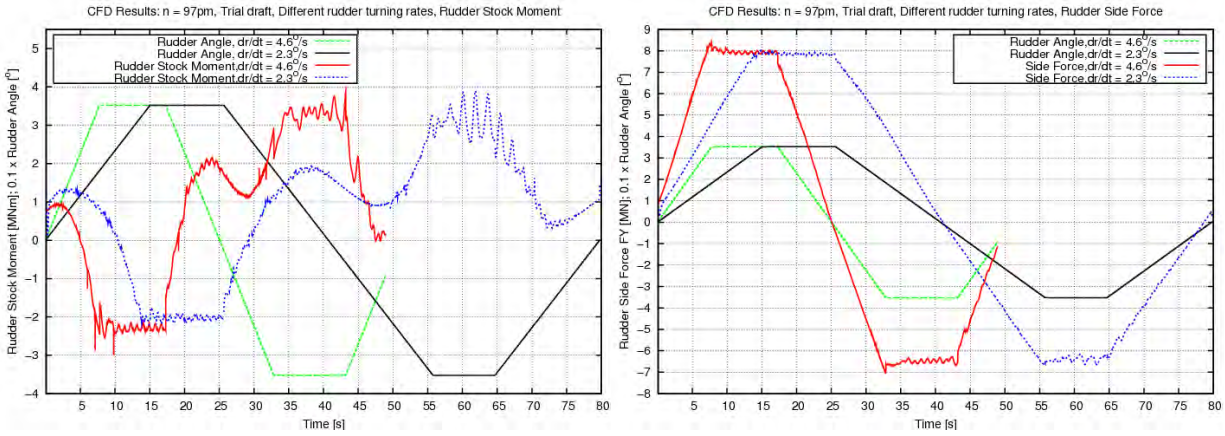

Figure 20: Change of rudder stock moment (left) and rudder side forces (right) due to doubling the rudder turning rate from about 2.3 to 4.6°/s for Container Vessel I in trial trim and draft conditions

5. *Influence of Cavitation*

A numerical cavitation model was not used in the performed simulations. Therefore, the influence of cavitation on rudder loads was neglected. To evaluate this effect, some calculations with restrained ship were post-processed by cutting the computed pressure level below the saturation pressure of water vapour at 20°C temperature. This simplified treatment of cavitation effects should provide an indication, whether the differences between

computations and measurements can be attributed to some degree to cavitation effects. Figure 21 and Figure 22 show the post-processed rudder loads for the Container Vessel I in sea trial and scantling conditions, respectively, and Figure 23 shows the post-processed rudder loads for Container Vessel II in scantling condition.

The influence of cavitation on the rudder loads is remarkable for starboard rudder angles, whereas its influence on the maximum rudder stock moments for rudder angles towards port is much smaller. The actual angle of attack of the rudder is be smaller for the first maximum rudder angle of a free running vessel, thus the saturation pressure level will be reached later. Due to ship's inertia, the second angle of attack could be much greater.

Because the influence of cavitation could not be predicted conclusively, further investigations are recommended.

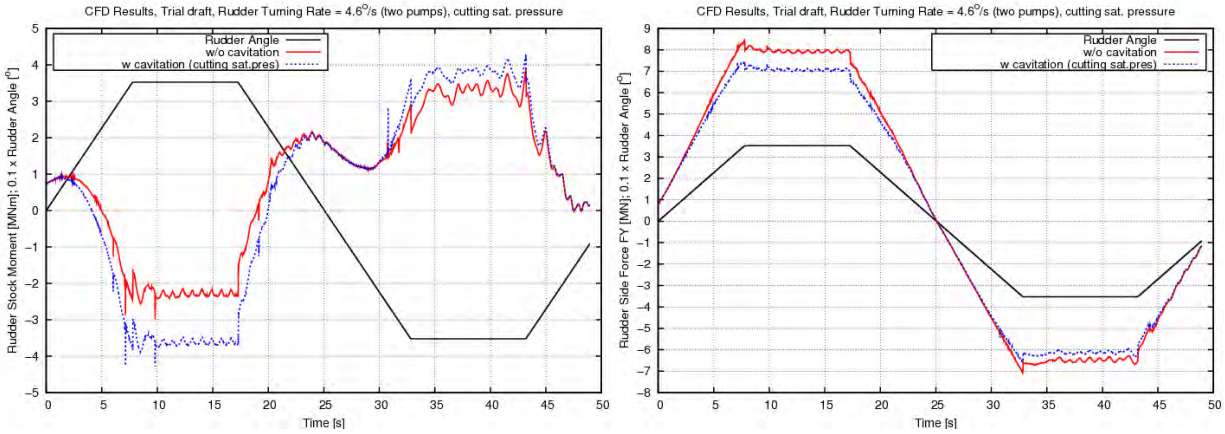

Figure 21: Change of rudder stock moment (left) and rudder side forces (right) due to cutting the pressure level at saturation pressure from the computations for Container Vessel I in trial condition

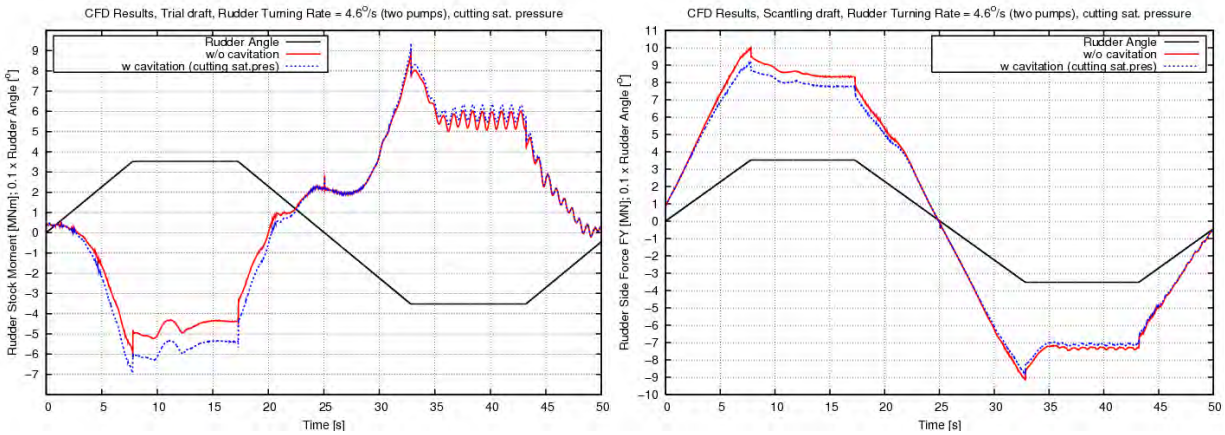

Figure 22: Change of rudder stock moment (left) and rudder side forces (right) due to cutting the pressure level at saturation pressure from the computations for Container Vessel I in scantling condition

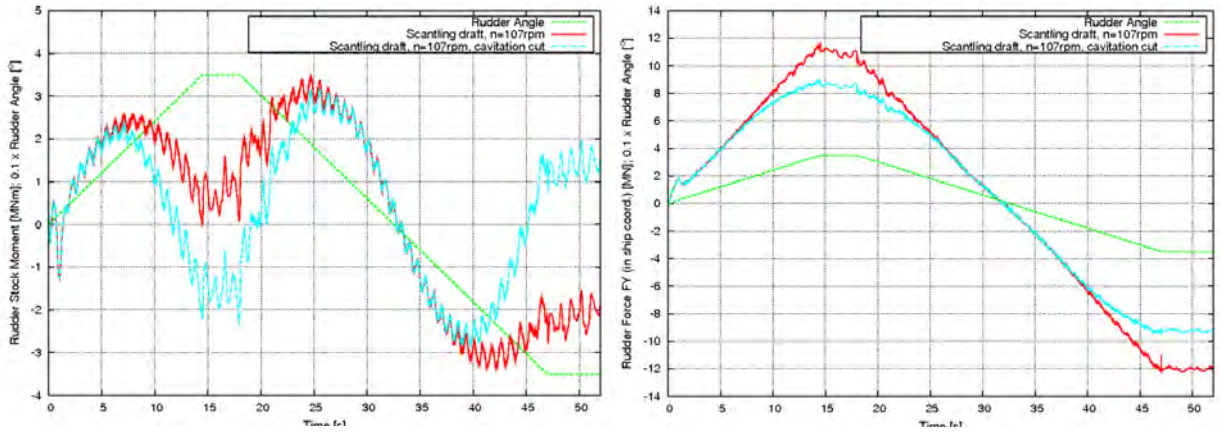

Figure 23: Change of rudder stock moment (left) and rudder side forces (right) due to cutting the pressure level at saturation pressure from the computations for Container Vessel II in scantling condition

6. *Influence of Roll and Pitch Motions*

Due to an extension of the numerical procedure in *Comet* solver, available at the end of the current project, it was possible to perform two free-running computations with the semi-spade rudder in scantling draft conditions.

Figure 24 compares time histories of the rudder loads between the simulations considering four unrestrained degrees of freedom (surge, sway, heave and yaw) and the computations with restrained ship motions. The maximum values are remarkably increased when ship motions are taken into account, and the influence of ship motions on the characteristics of time dependencies of rudder loads is also significant.

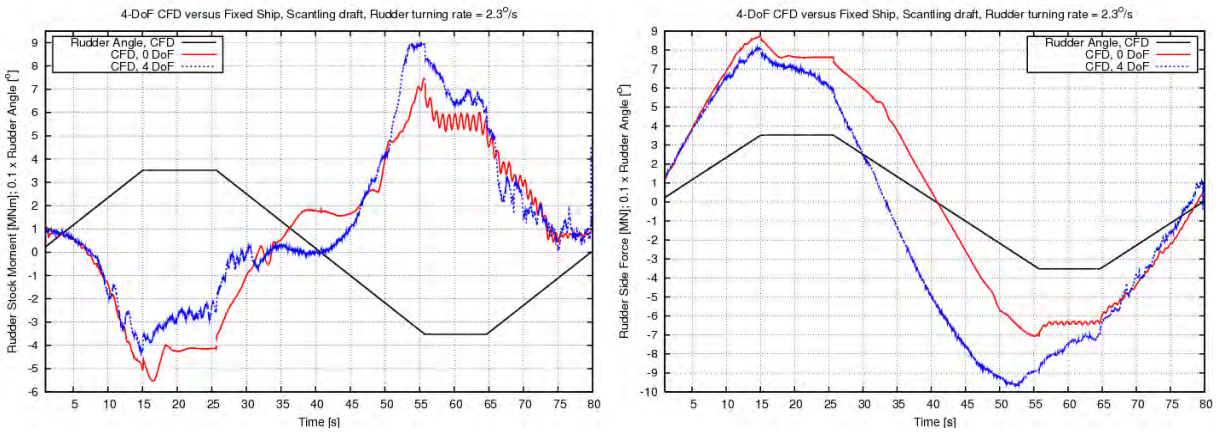

Figure 24: Time histories of rudder stock moments (left) and rudder side forces (right) with unrestrained ship motions in four degrees of freedom (blue line) and with restrained ship motions (red line) for Container Vessel I

Figure 25 compares the time histories of the rudder stock moments for container vessel I in scantling conditions. The blue line shows the results of the computations with four unrestrained degrees of freedom (yaw, surge, sway and heave), and the red line shows the loads acting on the rudder, when all degrees of freedom of ship motions are unrestrained.

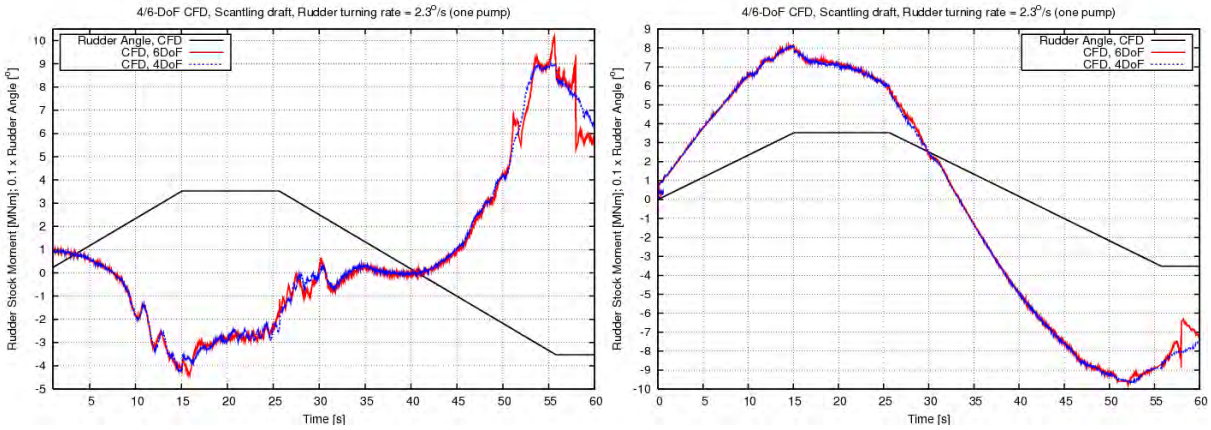

Figure 25: Time histories of rudder stock moments (left) and rudder side forces (right) from simulations with unrestrained ship motions in four (blue line) and six (red line) degrees of freedom for Container Vessel I

Figure 26 compares the ship motions between these computations. It is obvious, that the pitch and roll motions have insignificant influence on the rudder loads and can be neglected in computations of rudder loads in calm water.

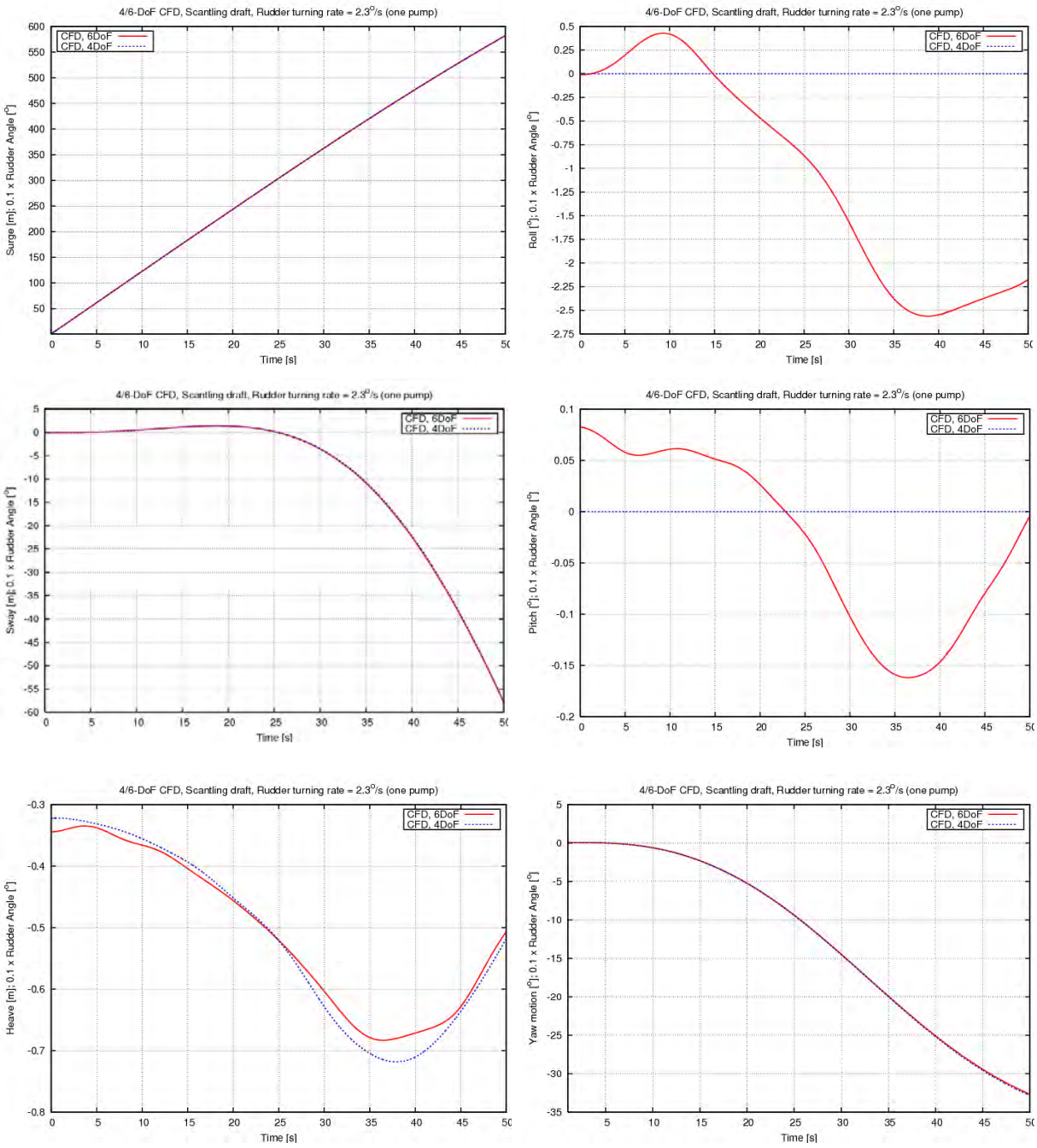

Figure 26: Time histories of computed ship motions in inertial coordinate system from computations with four (blue line) and six (red line) unrestrained degrees of freedom for Container Vessel I

UI SC247 "Emergency exit hatches to open deck (SOLAS Reg. II-2/13.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (Sept 2011)	05 September 2011	1 July 2012

- **NEW (Sept 2011)**

.1 Origin for Change:

☑ Suggestion by IACS members

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument (SOLAS Reg. II-2/13.1).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a member to discuss under the long-standing Task 4- Interpretation of IMO instruments. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *May 2011 Made by: a Member of Statutory panel*
Panel Approval: *August 2011 by: Statutory panel*
GPG Approval: *05 September 2011 (Ref. 11145_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC247:

Annex 1. **TB for New (September 2011)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI SC247 New, Sept 2011

1. Scope and objectives

The UI has the scope to clarify and harmonize the application of SOLAS Reg. II-2/13.1 to emergency exit hatches leading to open deck.

2. Engineering background for technical basis and rationale

The current text of SOLAS Reg. II-2/13.1 reads:

> *The purpose of this regulation is to provide means of escape so that persons on board can safely and swiftly escape to the lifeboat and liferaft embarkation deck. For this purpose, the following functional requirements shall be met:*
>
> *.1 safe escape routes shall be provided;*
>
> *.2 escape routes shall be maintained in a safe condition, clear of obstacles; and*
>
> *.3 additional aids for escape shall be provided as necessary to ensure accessibility, clear marking, and adequate design for emergency situations.*

It is experienced that the hatches may be heavy and hard to open, in particular for a person standing in the exit ladder below deck or if the hatch is not arranged with counterbalance weights or springs. The necessary physical force may be excessive for crewmembers, which may be a situation not in accordance with the regulation.

The subject has created disputes between owner and yard on newbuilding ships, based on common sense. In some cases, tests on board have concluded that the situation should be improved by the yard.

There is currently no regulation addressing this subject. A common IACS position is welcomed and should state the maximum force necessary to open an overhead emergency exit hatch.

3. Source / derivation of the proposed IACS Resolution

Industry standards CB/T3842-2000 & CB/T3728-95 (China) and DIN 83414 (Germany).

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC248 "Greatest Launching Height for a Free-Fall Lifeboat (LSA Code 1.1.4)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Apr 2015)	13 April 2015	1 July 2015
NEW (Sept 2011)	20 September 2011	1 July 2012

- **Rev.1 (Apr 2015)**

.1 Origin for Change:

☑ Other (Recommendation 9.7 of the IACS Observer's report of MSC 92)

.2 Main Reason for Change:

To align the UI with MSC.1/Circ.1468.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Based on recommendation 9.7 of the IACS Observer's report of MSC 92, Statutory Panel reviewed the UI under SP12006j and proposed the revision. Regarding the HF/TB file, the panel agreed that no associated HF & TB should be developed by the Panel. The UI history database was updated by IACS Permanent Secretariat.

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval: 26 March 2015 by: Statutory panel
GPG Approval: 13 April 2015 (Ref. 12229_IGe)

- **NEW (Sept 2011)**

.1 Origin for Change:

☑ Suggestion by IACS members

.2 Main Reason for Change:

Omission of a clear prescriptive requirement within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel under the long-standing Task 4 - Interpretation of IMO instruments. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *13 July 2011 made by: a Member of Statutory panel*
Panel Approval: *August 2011 by: Statutory panel*
GPG Approval: *20 September 2011 (Ref. 11147_IGc)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC248:

Annex 1. **TB for New (September 2011)**

See separate TB document in Annex 1.

◄▼►

Note: There is no Technical Background (TB) document has been prepared for Rev.1 (Apr 2015).

Technical Background for UI SC248 New, Sept 2011

1. Scope and objectives

The UI is intended to define a common understanding on the maximum height at which a free-fall lifeboat should be capable of operating.

2. Engineering background for technical basis and rationale

Resolution MSC.218(82) revised the LSA Code, removing paragraph 1.1.8 ("*Required free-fall height is the greatest distance measured from the still water surface to the lowest point on the lifeboat when the lifeboat is in the launch configuration and the ship is in its lightest seagoing condition*") with the view that it would be included in SOLAS. However, this never occurred.

At present therefore, we do not have any criteria (in SOLAS or in the 2010 LSA Code) to accept the arrangement of the free-fall lifeboat onboard the ship versus the free-fall certification height of the lifeboat.

This UI seeks to redress this omission.

This UI also seeks to clarify the greatest launching height to be used when determining the ability of the free-fall lifeboat to be safely launched against a trim of up to 10° and list of up to 20° either way.

3. Source / derivation of the proposed IACS Resolution

The applicable LSA Code paragraphs are as follows:

> LSA Code Paragraph 6.1.4.4, "*The launching appliance shall be designed and arranged so that in its ready to launch position, the distance from the lowest point on the lifeboat it serves to the water surface with the ship in its lightest seagoing condition does not exceed the lifeboat's free-fall certification height, taking into consideration the requirements of paragraph 4.7.3*."
>
> LSA Code Paragraph 4.7.3.1, "*Each free-fall lifeboat should make positive headway immediately after water entry and shall not come into contact with the ship after a free-fall launching against a trim of up to 10° and a list of up to 20° either way from the certification height when fully equipped and loaded …….*"
>
> LSA Code Paragraph 4.7.3.2, "*For oil tankers, chemical tankers and gas carriers with a final angle of heel greater than 20° calculated in accordance with the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, and the recommendations of the Organization,* as applicable, a lifeboat shall be capable of being free-fall launched at the final angle of heel and on the base of the final waterline of that calculation.*"
>
> LSA Code Paragraph 6.1.1.1, "*With the exception of the secondary means for launching for free-fall lifeboats, each launching appliance shall be so arranged that*

the fully equipped survival craft or rescue boat it serves can be safely Iaunched against unfavourable conditions of trim of up 10° and list of up to 20° either way"

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

LSA Code paragraph 6.1.4.4 describes the height at which the lifeboat should be capable of operating (the certification height, which should be not less than the distance from the lowest point on the lifeboat it serves to the water surface with the ship in its lightest seagoing condition). LSA Code Paragraph 4.7.3 describes the performance requirements at the certification height.

The lightest sea going condition is defined in SOLAS III/3.13 as, "*…. the loading condition with the ship on even keel, without cargo, with 10% stores and fuel remaining and in the case of a passenger ship with the full number of passengers and crew and their luggage*." It should be noted that this is an even keel condition, whereas for a conventional cargo ship "*without cargo, with 10% stores and fuel remaining*" the trim would be considerably by the stern. The draft at the free-fall lifeboat position would be calculated by taking the mean draft for the ship "*without cargo, with 10% stores and fuel remaining*". This would give a conservative "*distance from the lowest point on the lifeboat it serves to the water surface with the ship in its lightest seagoing condition,"* with a free-fall lifeboat in the conventional position at the stern.

Determination of the ability of the lifeboat to be safely launched against a trim of up to 10° and list of up to 20° either way, as required by LSA Code paragraphs 4.7.3 and 6.1.1.1, need not assume a launching height greater than this 'greatest launching height.'

6. Attachments if any

None

UI SC249 "Implementation of SOLAS II-1, Regulation 3-5 and MSC.1/Circ.1379"

Summary

This Unified Interpretation provides clarification regarding the application of SOLAS II-1, Reg. 3-5 and MSC .1/Circ.1379 with respect to "new installation of materials which contain asbestos". Revision 2 considers recent amendments to IMO regulatory framework and editorial changes.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Jan 2024)	10 January 2024	1 January 2025
Rev.1 (Feb 2013)	08 February 2013	1 July 2013
Corr.1 (Apr 2012)	18 April 2012 (GPG72)	-
New (Oct 2011)	28 October 2011	1 July 2012

- **Rev.2 (Jan 2024)**

1 Origin of Change:

☑ Based on IACS Requirement *(Periodic review of IACS Resolutions)*

2 Main Reason for Change:

To update the UI SC249 considering amendments to resolution MEPC.379(80) which supersedes resolution MEPC.269(68).

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

In context of IACS periodic review it was agreed to update this UI based on MEPC.379(80) (2023 Guidelines For The Development Of The Inventory Of Hazardous Materials). Further, the consideration of text from MSC.1/Circ.1426/Rev.1 was discussed but agreed to keep the original text. Editorial changes to the interpretation of the phrase "new installation of material containing asbestos" (MSC.1/Circ.1379) were agreed.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

N/A

7 Dates:

Panel Approval:	23 November 2023	(Ref: PS23036kISe)
GPG Approval:	10 January 2024	(Ref: 22183iIGd)

- **Rev.1 (Feb 2013)**

.1 Origin for Change:

☐ IACS Observer's recommendation (in report on MSC 90)

.2 Main Reason for Change:

To update the UI in light of approved text of MSC.1/Circ.1426.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Observer to MSC 90 recommended (recommendation 3.4) that UI SC49 is to be reviewed, and updated as appropriate, in light of approved text of MSC/1/Circ.1426. The revised version of the UI was unanimously agreed by the Statutory Panel. GPG agreed to the revision with a revised implementation date of 1 July 2013. PermSec prepared the history file to record the revision.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *May 2012 made by: IACS Observer to MSC90*

Panel Approval: *15 January 2013*

GPG Approval: *08 February 2013 (Ref: 11130rIGj)*

- **Corr.1 (Apr 2012)**

.1 Origin for Change:

☐ Suggestion by IACS member

.2 Main Reason for Change:

Insertion of "which contain asbestos" in Para 3 of the UI is just an editorial clarification. Read in context with the text of MSC.1/Circ.1379 it was "implied". Nonetheless, read literally, the text (before correction/clarification) could be misunderstood to mean that nothing could be installed.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The proposed correction was discussed under IACS GPG subject number 11073 and agreed at GPG72.

It was also agreed to propose to MSC90 the insertion of "which contain asbestos" into the draft MSC circular (DE56 WP-1). Read literally the statement in the draft circular at present could be misconstrued to mean no ".....replacement, maintenance or addition of materials used for the structure, machinery, electrical installations and equipment covered by the SOLAS Convention...." is allowed.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *08 February 2012 made by: a Member*

GPG Approval: *At GPG72 18 April 2012 (Also Ref. 11073_IGl)*

- **New (Oct 2011)**

.1 Origin for Change:

☐ Suggestion by IACS member
☐ Based on IMO Regulation: SOLAS Reg. II-1/3-5

.2 Main Reason for Change:

To provide a practical and reasonable means to certify, for all ships, that new installation of materials are asbestos free.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The initial proposal was slightly revised to take into account that there may be numerous items used onboard as a working part of the ship that are manufactured without an asbestos-free declaration.

During the course of development there was some discussion concerning the principle of providing certification based on signed declarations. However, it was recognized that such an approach is completely consistent with the certification provided for under the AFS Convention as per MEPC.195(61).

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *April 2011 made by: a Member*

Panel Approval: *September 2011 by: Statutory panel*

GPG Approval: *28 October 2011 (Ref. 11073_IGd)*

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC249:

Annex 1. **TB for New (Oct 2011)**

See separate TB document in Annex 1.

There is no technical background (TB) documents exist for Corr.1 (April 2012), Rev.1 (Feb 2013) and Rev.2 (Jan 2024).

Technical Background for UI SC249 New, Oct 2011

1. Scope and objectives

The UI provides a common basis for certifying that new installations on ships are asbestos-free based on declarations and supporting documentation.

2. Engineering background for technical basis and rationale

Not applicable

3. Source/derivation of the proposed IACS Resolution

SOLAS Chapter II-1, Regulation 3-5
"From 1 January 2011, for all ships, new installation of materials which contain asbestos shall be prohibited."
MSC.1/Circ.1379
"In the context of this regulation, new installation of materials containing asbestos means any new physical installation on board. Any material purchased prior to 1 January 2011 being kept in the ship's store or in the shipyard for a ship under construction, should not be permitted to be installed after 1 January 2011 as a working part."

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

The overall impetus for this UI is to provide a practical approach to verification by recognizing the responsibility (and thereby the accountability) for providing attestations from the supply side of installations (e.g., shipyards, repair yards, ship owner and equipment manufacturers).
The principle of providing certification based on signed declarations was discussed, but it was recognized that such an approach is completely consistent with the certification provided for under the AFS Convention as per MEPC.195(61).
Although Regulation 3-5 entered into force and requires new installation on all ships to be asbestos free on/after 1 January 2011, the implementation of the UI is 1 July 2012 to accommodate the fact that it would be next to impossible to retroactively require submission of declarations and documentation for ships constructed between 1 January 2011 and the implementation date.
A direct reference (as opposed to a footnote) is made to the types of installations used as a working part of the ship as per Annex 1 which are repaired, replaced, maintained or added so as to provide a practical scope of the certification carried out by the RO.

6. Attachments if any

None

UI SC250 "Fire-Extinguishing Arrangements in Cargo Spaces (IMSBC Code, as amended)"

Summary

UI SC250 was editorially updated to reflect amendments made to the IMSBC Code by resolution MSC.462(101)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Nov 2022)	03 November 2022	-
Corr.1 (July 2012)	12 July 2012	-
New (Oct 2011)	25 October 2011	1 July 2012

- **Corr.2 (Nov 2022)**

1 Origin of Change:

☑ Other: 10th anniversary review

2 Main Reason for Change:

Resolution MSC.462(101) introduced different cargo names for various SEED CAKES.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel reviewed UI SC250 when it reached its 10th anniversary and noted that the names for the referenced SEED CAKE cargoes had been changed. The UI was updated to reflect these changes and to make reference to the resolution which introduced the changes.

The changes were agreed by correspondence.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 06 July 2022	(Made by: Safety Panel members)
Panel Approval	: 14 October 2022	(Ref: PS22018gISe)
GPG Approval	: 03 November 2022	(Ref: 22119bIGb)

- **Corr.1 (July 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To introduce more clarity by means of editorial correction. The technical requirement remains the same.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Correction was raised by one member in the Panel. Due to lack of time, the decision was passed to GPG to take in consultation with Statutory Panel members.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal	: 21 June 2012	(Made by Member of Statutory panel)
GPG Approval	: 12 July 2012	(Ref: 11157_IGi)

- **New (Oct 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The mandatory requirements to install a fixed gas fire-extinguishing system for the cargo holds is stipulated by SOLAS II-2/10.7.1.3 or II-2/10.7.2 or to install an inert gas system for the cargo holds is explicitly mentioned, when applicable, in the text of the individual schedule in Appendix 1 of the IMSBC Code as amended.

In certain individual schedules of solid bulk cargoes, such as FISHMEAL (FISHSCRAP) STABILIZED UN 2216, SEED CAKE, containing vegetable oil UN 1386, SEED CAKE UN 2217, the following ventilation requirement is present:

QUOTE

If the temperature of the cargo exceeds 55°C and continues to increase, ventilation to the cargo space shall be stopped. If self-heating continues, then carbon dioxide or inert gas shall be introduced to the cargo spaces.

UNQUOTE

According to the text quoted above, it is not clear if the carbon dioxide or inert gas to be introduced in the cargo spaces (not used for fire-fighting purposes) shall be supplied by a dedicated system or not.

The development of a UI has the aim to provide guidance for IACS members.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

After a few rounds of correspondence in the Panel, where members provided their understandings and their common practice, the Panel decided that there was a common position on which to prepare a UI, to clarify the position of IACS on this specific subject.
The item of discussion was raised by a member, therefore, upon request of the Chairman, the same member proposed to the Panel the first draft UI for comments from the members.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *February 2011 made by: a Member of Statutory panel*
Panel Approval: *September 2011 by: Statutory panel*
GPG Approval: *25 October 2011 (Ref. 11157_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC250:

Annex 1. **TB for New (Oct 2011)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document available for Corr.1 (July 2012) or Corr.2 (Nov 2022).

Technical Background for UI SC250 New Oct 2011

1. Scope and objectives

The UI has the scope to clarify what systems are required in order to introduce carbondioxide or inert gas into the cargo spaces carrying the cargoes listed in Appendix 1 of Res. MSC.268(85) IMSBC Code which are subject to self-heating such as, FISHMEAL (FISHSCRAP) STABILIZED UN 2216, SEED CAKE, containing vegetable oil UN 1386, SEED CAKE UN 2217.

2. Engineering background for technical basis and rationale

Following to a review of the individual schedules in Appendix 1 of IMSBC Code, it has been noted that in each single schedule, it is merely possible to find if and what kind of fixed fire-extinguishing system is suitable for the specific cargo.

In a few individual schedules, such as FISHMEAL (FISHSCRAP) STABILIZED UN 2216, SEED CAKE, containing vegetable oil UN 1386, SEED CAKE UN 2217, on one hand a fixed fire-extinguishing system is not required, on the other hand under the item "Ventilation" the concern of possible self-heating is raised. In particular, in case that the self-heating cannot be controlled by means of stopping the ventilation system, additional measures such as the introduction of carbon dioxide or inert gas into the holds are foreseen by the Code.

Taking into account that for the cargoes above there is no compulsory requirement to install a fixed fire-extinguishing system in the cargo holds, it is concluded that the event of self-heating is regarded as an emergency situation. Therefore, in this respect any facility/system present on board that can supply carbon dioxide or inert gas is suitable for the purposes under item "ventilation", e.g. the fixed gas fire extinguishing system required by SOLAS Regulations II-2/10.7.1.3 or II-2/10.7.2. Fixed gas fire extinguishing systems or inert gas systems installed on board dedicated to the protection of spaces other than cargo spaces cannot be used for this purpose, as their use as "inerting system" would jeopardize the protection of other spaces on the ship.

3. Source/derivation of the proposed IACS Resolution

Res. MSC.268(85) IMSBC Code.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Note: Corrected in July 2012 (Ref: 11157_IGi)

UI SC251 "Controls of emergency bilge suction valve in periodically unattended machinery spaces (SOLAS regulations II-1/48.3)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (Oct 2011)	25 October 2011	1 January 2013

- **NEW (Oct 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify requirements to controls of the "valves" in the emergency bilge system.

To address the current terminology the "bilge injection system" being the same as the "emergency bilge suction line" (i.e. Reg. II-1/35-1.3.7.1) that is required for both steam and diesel ships.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Original document from a member contained only part (B) of the Interpretation. Part (A) was added by another member. All members agreed to this proposal except for editorial comments and invalid SOLAS references except for one member which was of the opinion that interpretation (B) is to be deleted because they think that this extension requirement should be applied to the valve which has the possibility of flooding through it and kept open state during the normal unattended condition.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *April 2009 made by: a Member of Machinery panel*
Panel Approval: *October 2011 by: Machinery panel*
GPG Approval: *25 October 2011 (Ref. 11040_IGd)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC251:

Annex 1. **TB for New (October 2011)**

See separate TB document in Annex 1.

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Technical Background for UI SC251 New, Oct 2011

1. Scope and objectives

To make an interpretation of the term “Bilge injection system” and set requirement to its control arrangement.

2. Engineering background for technical basis and rationale

1. SOLAS Reg. II-1/48.3 states:
The location of the controls of any valve serving a sea inlet, a discharge below the waterline or a bilge injection system shall be so sited as to allow adequate time for operation in case of influx of water to the space, having regard to the time likely to be required in order to reach and operate such controls. If the level to which the space could become flooded with the ship in the fully loaded condition so requires, arrangements shall be made to operate the controls from a position above such level.

2. Certain Port State Authorities have interpreted the above requirements for the controls of the valves serving the “bilge injection system” to apply to the valves controlling the “emergency bilge suction”.

NOTE: The ‘bilge injection’ referred in SOLAS Reg. II-1/48.3, ‘direct suction’ referred in SOLAS Reg. II-1/35-1.3.7.1 both mean the ‘Emergency bilge suction’, which is used to discharge overboard large quantities of sea water accumulated in engine room bilges using the main circulating cooling pump for steam turbine ships or using the main sea water cooling pump for gas turbine ships and diesel ships.

3. The following arguments are made with respect to the application of SOLAS Reg. II-1/48.3 to the valves serving the emergency bilge system:

a) The intent of the requirement would not appear to be to facilitate dewatering via the emergency bilge system due to the following:
i. To facilitate dewatering, such arrangement would also require addressing the elevation of the pump motor, pump controls, sources of power, etc. in addition to the elevation of the controls for the valves.
ii. The requirements for emergency dewatering arrangements are identified in Reg. II-1/35-1.3.7.1. However, these requirements make no mention regarding elevation requirements or any reference to Reg. II-1/48.3.
iii. Reg. II-1/35-1.3.7.1 in addressing emergency dewatering arrangements does not use the phrase "bilge injection system".
iv. The emergency dewatering arrangements addressed in Reg. II-1/35-1.3.7.1 are only required on passenger vessels. SOLAS does not require such systems for cargo vessels. Therefore, insofar as SOLAS is concerned, cargo vessels do not have to be fitted with such emergency dewatering arrangements.

b) The intent of the requirement would appear to be to ensure that the crew has the means and ability to close possible sources of flooding through the shell penetrations in a periodically unattended engine before the valve controls are rendered inaccessible based upon the following:.
i. The title of Reg. II-1, Reg. 48 is “Protection against flooding”.

ii. The other valves addressed in Reg. II-1/48.3 represent specific sources of flooding through shell connections.
iii. The typical "bilge injection system" arrangement as seen in steam ships could have also represented a source of flooding since the sea water would typically be immediately behind the bilge injection valve via it's connection to the sea water injection system. Since it was necessary to keep the shell valve for the sea water injection piping open in order to avoid damaging the condenser, flooding entering the engine room via the "bilge injection system" could not be readily isolated.

c) The likelihood of flooding of the engine room via the emergency bilge system appears quite remote where:
i. The emergency bilge suction valve is maintained in a normally closed position,
ii. The emergency bilge suction piping is fitted with a non-return device, and
iii. The emergency bilge suction piping can be isolated by a shell valve that is fitted with the control arrangements required by SOLAS Reg. II-1/48.3.

4. In conclusion, IACS Members have agreed that the reference to a “bilge injection system” in Reg. II-1/48.3 is not intended to include an “emergency bilge system” which is arranged with:
• a normally closed stop valve in the emergency bilge system piping,
• a non-return valve in the emergency bilge system piping, and
• inboard of a required shell valve fitted with closing arrangement complying with Reg. II-1/48.3.

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg II - 1/48.3 Bilge injection system.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC252 "Controls for releasing carbon dioxide and activating the alarm in the protected space (FSS Code 5.2.2.2)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (Oct 2011)	25 October 2011	1 July 2012

- **NEW (Oct 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Para 2.1.3.2 of Chapter 5 of FFS Code reads:

"Means shall be provided for automatically giving audible warning of the release of fire-extinguishing medium into any ro-ro spaces and other spaces in which personnel normally work or to which they have access. The pre-discharge alarm shall be automatically activated (e.g., by opening of the release cabinet door). The alarm shall operate for the length of time needed to evacuate the space, but in no case less than 20 s before the medium is released. Conventional cargo spaces and small spaces (such as compressor rooms, paint lockers, etc.) with only a local release need not be provided with such an alarm."

Para 2.2.2 of Chapter 5 of the FFS Code reads:

"Carbon dioxide systems shall comply with the following requirements:

.1 two separate controls shall be provided for releasing carbon dioxide into a protected space and to ensure the activation of the alarm. One control shall be used for opening the valve of the piping which conveys the gas into the protected space and a second control shall be used to discharge the gas from its storage containers. Positive means shall be provided so they can only be operated in that order; and

.2 the two controls shall be located inside a release box clearly identified for the particular space. If the box containing the controls is to be locked, a key to the box shall be in a break-glass-type enclosure conspicuously located adjacent to the box."

The text of 2.1.3.2 and 2.2.2.1 is somewhat contradictory. 2.1.3.2 implies that a single control is sufficient for activation of the alarm (e.g. by opening of the release cabinet door), whereas 2.2.2.1 can be read to imply that two separate controls should be provided.

The purpose of the UI is to provide a uniform interpretation also taking into account the different technical solutions used by manufacturers of carbon-dioxide fixed fire extinguishing systems.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

After several rounds of correspondence in the Panel, where members provided their comments on the matter, the comments were found consistent to one another. The item of discussion was raised by a member, therefore, upon request of the Chairman, the same member proposed to the Panel the first draft UI for comments from the members.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *April 2011 made by: a Member of Statutory panel*
Panel Approval: *October 2011 by: Statutory panel*
GPG Approval: *25 October 2011 (Ref. 11159_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC252:

Annex 1. **TB for New (October 2011)**

See separate TB document in Annex 1.

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Technical Background for UI SC252 New, Oct 2011

1. Scope and objectives

The UI has the objective to clarify and harmonize the application of paragraph 2.2.2 Chapter 5 of FSS Code in light of paragraph 2.1.3.2.

2. Engineering background for technical basis and rationale

Paragraph 2.1.3.2 of Chapter 5 of the FSS Code relevant to the pre-discharge alarm specifies that *"The pre-discharge alarm shall be automatically activated (e.g., by opening of the release cabinet door)",* where the *"opening of the cabinet door"* is a distinct and separate action from those actions related to the release of the system. It also implies that a single control is sufficient for activation of the alarm.

On the other hand, Paragraph 2.2.2.1 of Chapter 5 of the FSS Code reads, *"two separate controls shall be provided for releasing carbon dioxide into a protected space and to ensure the activation of the alarm. One control shall be used for opening the valve of the piping which conveys the gas into the protected space and a second control shall be used to discharge the gas from its storage containers."*

In analysing the wording of Paragraph 2.2.2.1 sentence by sentence:

a) *two separate controls shall be provided for releasing carbon dioxide into a protected space and to ensure the activation of the alarm.*

The sentence can be interpreted in three substantially different ways:

i) two separate controls shall be provided for releasing carbon dioxide into a protected space, and two separate controls shall be provided to ensure the activation of the alarm; or

ii) two separate controls shall be provided: one for releasing carbon dioxide into a protected space and the other to ensure the activation of the alarm; or

iii) two separate controls shall be provided, each control possessing the dual function of release of the carbon dioxide and activation of the alarm.

All of these interpretations contradict paragraph 2.1.3.2.

b) *One control shall be used for opening the valve of the piping which conveys the gas into the protected space and a second control shall be used to discharge the gas from its storage container.*

This sentence makes it clear that two separate controls shall be provided for releasing carbon dioxide into a protected space but does not clarify the means for activation of the alarm.

It is clear that two separate controls for the release of the carbon dioxide are necessary to prevent accidental release. A single control for the activation of the alarm is sufficient. This could be achieved, for example, by means of a control on the

release box door or micro-switch at the section valve which operates when this valve is opened.

By considering the various technical solutions adopted by the manufacturers of fixed carbon dioxide fire-extinguishing systems, the UI provides a common understanding on this matter for uniform application of the regulations.

In addition, it was felt necessary and useful to confirm that an operational procedure, with or without posted instructions, could not substitute a mechanical arrangement for ensuring that the two CO_2 release controls are operated in the correct order.

3. Source / derivation of the proposed IACS Resolution

Paragraphs 2.1.3.2 and 2.2.2 of Chapter 5 of the Fire Safety Systems Code.

4. Summary of Changes intended for the revised Resolution

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC253 "Fire resistance requirements for fibre-reinforced plastic (FRP) gratings used for safe access to tanker bows (IMO Res. MSC.62(67))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2016)	19 May 2016	1 January 2017
NEW (Dec 2011)	19 December 2011	1 January 2013

- **Rev.1 (May 2016)**

.1 Origin for Change:

☑ Based on IMO Regulation (IMO MSC.1/circ.1504)

.2 Main Reason for Change:

To be aligned with the IMO interpretation in MSC.1/circ.1504.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

A proposed revision of the UI was submitted to IMO that decided to amend the proposal and publish it as MSC.1/Circ.1504.

.5 Other Resolutions Changes

None

.6 Dates:

Panel Approval: 13 April 2016 (Ref: 16087_PSa/PS15002q)
GPG Approval: 19 May 2016 (Ref. 16087_IGb)

- **NEW (Dec 2011)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *27 January 2011 made by: a Member*
Panel Approval: *July 2011 by: Statutory panel*
GPG Approval: *19 December 2011 (Ref. 11167_IGc)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC253:

Annex 1. **TB for New (December 2011)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (May 2016)**

See separate TB document in Annex 2.

◄▼►

Technical Background for UI SC253 New, Dec 2011

1. Scope and objectives

The UI is intended to provide additional requirements to be considered for the use of FRP gratings in lieu of steel for safe access to tanker bows. This includes defining a common understanding for the term “fire resistant” as required by MSC.62(67) Safe access to tanker bows.

2. Engineering background for technical basis and rationale

FRP gratings are desirable for use in the marine environment because of their light weight, low thermal conductivity, and resistance to corrosion. However, these materials are typically combustible and exhibit mechanical properties different from steel and thus require careful consideration with respect to fire integrity, combustibility, and smoke generation.

3. Source / derivation of the proposed IACS Resolution

National standard of the USA: USCG Marine Safety Manual Vol. II, Para 5.C.6. Structural fire protection - Use of fibre-reinforced plastic gratings.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

1. National standard of the USA: USCG Marine Safety Manual Vol. II, Para 5.C.6. Structural fire protection - Use of fibre-reinforced plastic gratings.

2. MSC.62(67) - Guidelines for safe access to tanker bows.

POLICY FILE MEMORANDUM ON THE USE OF FIBER REINFORCED PLASTIC (FRP) GRATINGS AND CABLE TRAYS

1. **PURPOSE:** This Policy File Memorandum provides guidance on the fire test requirements for use of fiber reinforced plastic (FRP) gratings and cable trays and will be incorporated as a change to reference (a).

2. **APPLICABILITY:** This Policy File Memorandum addresses the fire performance of FRP grating and cable trays for use on inspected vessels, including mobile offshore drilling units (MODUs) and floating production platforms. It is not intended to eliminate any other design criteria or requirements pertaining to the material, construction, or performance of the grating in the non-fire condition, nor is it intended to apply retroactively to applications that have previously received approval on a case-by-case basis.

3. **BACKGROUND:** FRP gratings and cable trays are desirable for use in the marine environment because of their light weight, low thermal conductivity, and resistance to corrosion. However, these materials are typically combustible and exhibit mechanical properties different from steel and thus require careful consideration with respect to fire integrity, combustibility, and smoke generation. As a result of the development of this policy, the use of FRP grating can be expanded beyond the current guidance in reference (a) with confidence that the overall level of fire safety will be maintained.

4. **DISCUSSION:** This Policy File Memorandum addresses qualification and testing of FRP grating for structural fire integrity, and updates the requirements for flame spread, smoke, and toxicity testing of FRP gratings and cable trays. Enclosure (1) provides the fire testing requirements necessary for using FRP grating and cable trays in various locations and services.

5. **ACTION:** Enclosure (1) of this PFM shall be consulted in lieu of paragraph 5.C.6 on pages 5-4 and 5-5 of Volume II of the Marine Safety Manual. This PFM shall remain in effect until enclosure (1) is incorporated as a change to the Marine Safety Manual. Questions arising which pertain to specific issues not addressed in this policy should be referred to the Commandant (G-MSE-4), U.S. Coast Guard Headquarters, 2100 Second St., S.W., Washington, DC 20593-0001.

Encl: (1) Future Change to the Marine Safety Manual, Volume II, paragraph 5.C.6, Fiber Reinforced Plastic (FRP) Gratings

FUTURE CHANGE TO THE MARINE SAFETY MANUAL, VOLUME II, PARAGRAPH 5.C.6, FIBER REINFORCED PLASTIC (FRP) GRATINGS

5.C.6. Fiber Reinforced Plastic (FRP) Gratings.

a. General.

(1) FRP gratings are not specifically addressed in the individual vessel regulations. However, the resins typically used in the manufacture of these gratings are combustible and heat sensitive; therefore, FRP gratings use must be limited based on the requirements discussed below.

(2) These requirements are not intended to eliminate any other design criteria or requirement pertaining to the material, construction, or performance of the FRP gratings in the non-fire condition.

b. FRP Grating Material Systems.

(1) All fire integrity, flame spread, smoke, and toxicity testing, where required, shall be conducted on each material system.

(2) Changes in either the type, amount, and/or architecture, of either the reinforcement materials, resin matrix, coatings, or manufacturing processes shall require separate testing in accordance with the procedures below. Manufacturers should provide evidence, such as enrollment in a follow-up program, that the FRP gratings being installed are the same as those which were tested and approved.

c. Testing Laboratories and Approval.

(1) The testing laboratory conducting the fire testing described below shall:

(a) be engaged, as a regular part of its business, in performing inspections and tests that are the same or similar to the tests described below;

(b) have or have access to the apparatus, facilities, personnel, and calibrated instruments that are necessary to inspect and test the FRP gratings; and

(c) not be owned or controlled by the manufacturer of the FRP gratings.

(2) Requests for approval shall be submitted to the Commandant (G-MSE-4) 2100 Second St., S.W., Washington DC, 20593-0001 and shall include the following:

(a) a test report containing the information required by 46 CFR 159.005-11; and

(b) a list of the FRP gratings and grating systems for which approval is requested.

d. Fire Test Requirements.

(1) Structural Fire Integrity* – The structural fire integrity matrix in paragraph 5.C.6.f establishes the structural fire integrity characteristics that FRP gratings should possess, based on location and service. Where a specific application satisfies more than one block in the matrix, the highest level of fire integrity shall be required. The test procedures required to qualify FRP gratings to one of three levels are described in paragraph 5.C.6.e. The Marine Safety Center (MSC) and/or the OCMI shall determine the location and service of the FRP gratings keeping in mind the following considerations for each of the three performance levels:

(a) Level 1 (L1): FRP gratings meeting the L1 performance criteria are intended to be satisfactory for use in escape routes or access for firefighting, emergency operation or rescue, after having been exposed to a significant hydrocarbon or cellulosic fire incident. In addition they are also acceptable for the services and functions described for levels L2 and L3.

(b) Level 2 (L2): FRP gratings meeting the L2 performance criteria are intended to be satisfactory for use in open deck areas where groups of people are likely to assemble such as temporary safe refuge or lifeboat embarkation areas. In addition they are also acceptable for the services and functions described for level L3.

(c) Level 3 (L3): FRP gratings meeting the L3 performance criteria are intended to be satisfactory for use in egress routes and any areas that may require access for firefighting, rescue or emergency operations during exposure to or shortly after exposure to a transitory hydrocarbon or cellulosic fire.

* The structural fire integrity requirements are intended for self-supporting personnel platforms or walkways and are not intended for grating overlayed on steel decking or used in other applications such as pipe guards, seachest screenings, safety guards, etc.

(2) Fire Retardance – All FRP gratings should be fire retardant; this can be demonstrated by testing to ASTM E-84, Standard Test Method for the Surface Burning Characteristics of Building Materials with a flame spread rating not to exceed 25 or by meeting the requirements in paragraph 5.C.6.d(3)(a) or (b) below.

(3) Flame Spread – All FRP gratings, except those fitted on open decks and within tanks, cofferdams, void spaces, pipe tunnels and ducts, should have low flame spread characteristics as determined by one of the following test procedures:

(a) tested to ASTM E-84 with a flame spread rating not to exceed 20; or

(b) tested to IMO Resolution A.653(16), Recommendation on Improved Fire Test Procedures for Surface Flammability of Bulkhead, Ceiling and Deck Finish Materials and meeting the criteria for bulkheads, linings, or ceilings.

(4) Smoke Generation – FRP gratings within accommodation, service and control spaces, should have low smoke characteristics as determined by one of the following test procedures:

(a) tested to ASTM E-84 with a smoke developed rating not to exceed 10; or

(b) tested in accordance with the IMO Fire Test Procedures Code (FTPC), Resolution MSC.61(67), Part 2 – Smoke and Toxicity Test, and meeting the criteria established for materials used as bulkheads, linings, or ceilings.

e. Structural Fire Integrity Test Procedures.

(1) Level 1 – To be qualified as level 1 (L1), the FRP gratings shall meet the requirements for qualification as level 3 and level 2, and in addition shall be subjected to the following test procedures:

(a) Three (3) FRP grating specimens, after being subjected to the level 2 testing, shall be unloaded and prepared for impact testing in the manner specified for horizontal specimens in ASTM E-695, Standard Method of Measuring Resistance of Wall, Floor, and Roof Construction to Impact Loading. The test specimens shall be secured as required in section 8.3 of ASTM E-695 except that the span shall be 200 mm less than the specimen length. A lead shot bag of 40 kg mass shall be dropped once from a height of 2 m such that the point of impact is in the center of the span. The specimens shall then be uniformly loaded as required by the level 2 test procedures.

(b) The test will be considered successful if all three (3) specimens remain intact after being subjected to the impact test and the level 2 loading test. Failure will be indicated by collapse of one or more of the gratings.

(2) Level 2 – To be qualified as level 2 (L2), the FRP gratings shall meet the requirements for qualification as level 3, and in addition shall be subjected to the following test procedures:

(a) On the FRP grating specimen and the steel grating specimen subjected to the level 3 post-loaded testing, the specimen shall be gradually loaded in increments not to exceed 20 kg, placed in such a manner as to represent a uniformly distributed load across the span.

(b) The test will be considered successful if the FRP grating remains intact at a load greater than or equal to a uniform 4.5kN/m2 (94 lbf/ft2) or greater than or equal to the steel grating failure loading, whichever is less. Failure will be indicated by collapse of the grate.

(3) Level 3 – To be qualified as level 3 (L3), the FRP gratings should be subjected to the following fire test procedures for both the post-loaded and pre-loaded tests and conditions:

(a) A fire test will be conducted in accordance with ASTM E-119, Standard Test Method for Tests of Building Construction and Materials. Two tests shall be conducted in the ASTM E-119 furnace for each FRP grating design. The first fire test shall be conducted with the specimens under the specified load (pre-loaded) and the second fire test will be conducted on unloaded specimens (post-loaded). The time-temperature curve shall be the standard for E-119 or the ISO equivalent. The duration of the tests shall be as specified below.

(b) Each test specimen shall be 300-350 mm wide to allow for the differences in the spacing of longitudinal supporting members. The length of each test specimen shall be the length of the maximum span to be seen in service plus 200 mm. Four test specimens shall be prepared as described above; two of the proposed FRP gratings and two of a similar steel gratings that would be used in the same location constructed to the applicable regulations and standards (steel

gratings rated at a minimum of 4.5 kN/m2 (94 lbf/ft2) uniform loading with a 1.67 factor of safety are acceptable).

(c) The pre-loaded test shall consist of the following:

(i) one steel grating specimen and one FRP grating specimen shall be placed adjacent to one another in the furnace simply supported on two I-beams with a minimum flange width of 100 mm at an elevation of at least one half of the furnace height or a minimum of 300 mm above the burners;

(ii) the specimens shall be placed on the I-beams such that 100 mm of each side of the specimen rests on each of the two I-beams;

(iii) a static load represented by a 40 kg mass shall be placed in the center span of the test specimens;

(iv) the 40 kg mass load shall consist of a steel container filled with sand, the base of which shall be square with an area of 0.9 m2;

(v) arrangements shall be made to measure the deflection at the center of the span of each of the loaded specimens during the test with a degree of accuracy of ±5 mm.

(vi) the two specimens shall be subjected to the time-temperature curve specified in the ASTM E-119;

(vii) deflection of the two loaded test specimens shall be measured throughout the duration of the fire test and the average furnace temperature shall be recorded when each of the two specimens has deflected a distance of L/10 (failure point) from the horizontal where L is equal to the maximum unsupported span of the specimens; and

(viii) the test will be considered successful if the difference between the average furnace temperature at the time of failure of the steel grating and the average furnace temperature at the time of failure of the FRP grating is less than 100 ºC (180 ºF).

(e) The post-loaded test shall consist of the following:

(i) one steel grating specimen and one FRP grating specimen shall be placed adjacent to one another in the furnace simply supported on two I-beams with a minimum flange width of 100 mm at an elevation of at least one half of the furnace height;

(ii) the specimens shall be placed on the I-beams such that 100 mm of each side of the specimen rests on each of the two I-beams;

(iii) the two specimens shall be subjected to the time-temperature curve specified in the ASTM E-119 for a duration of 60 minutes;

(iv) at the end of the 60 minutes the specimens will be allowed to cool and shall then be subjected to a static load represented by the 40 kg mass specified in the pre-loaded test above, placed in the center span of the test specimens; and

(v) the test will be considered successful if the FRP grating specimen is intact at the end of the test and does not collapse under the 40 kg mass load.

f. Structural Fire Integrity Matrix.

Location	Service	Fire Integrity
Machinery Spaces	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	L1 See note 1
Machinery Spaces	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	L3
Cargo Pump Rooms	All personnel walkways, catwalks, ladders, platforms or access areas	L1
Cargo Holds	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	L1
Cargo Holds	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	None required
Cargo Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required See note 2
Fuel Oil Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required See note 2
Ballast Water Tanks	All personnel walkways, catwalks, ladders, platforms or access areas	None required See note 3
Cofferdams, void spaces, double bottoms, pipe tunnels, etc.	All personnel walkways, catwalks, ladders, platforms or access areas	None required See note 3
Accommodation, service, and control spaces	All personnel walkways, catwalks, ladders, platforms or access areas	L1
Lifeboat embarkation or temporary safe refuge stations in open deck areas	All personnel walkways, catwalks, ladders, platforms or access areas	L2
Open Decks or semi-enclosed areas	Walkways or areas which may be used for escape, or access for firefighting, emergency operation or rescue	L3 See note 4
Open Decks or semi-enclosed areas	Personnel walkways, catwalks, ladders, platforms or access areas other than those described above	None required

Notes:

1. If the machinery space does not contain any internal combustion machinery, other oil burning, oil heating, or oil pumping units, fuel oil filling stations, or other potential hydrocarbon fire sources and has not more than 2.5 kg/m2 of combustible storage, gratings of L3 integrity may be used in lieu of L1.
2. If these spaces are normally entered when underway, gratings of L1 integrity shall be required.
3. If these spaces are normally entered when underway, gratings of L3 integrity shall be required.
4. Vessels fitted with deck foam firefighting systems require gratings of L1 integrity for foam system operational areas and access routes.

g. Other Authorized Uses.

(1) The OCMI may authorize the use of FRP gratings without Commandant approval in applications where structural fire integrity of the FRP gratings is not a concern, provided they meet the applicable fire retardance, flame spread and smoke generation requirements as set forth in paragraphs 5.C.6.d(2), (3), & (4). Applications where the use of FRP gratings have been authorized in the past, without any structural fire integrity requirements, include the following:

(a) sea chest coverings;

(b) small sundeck awnings and supports;

(c) lifeboat bilge flooring;

(d) electrical control flooring;

(e) pipe guards on deck, in cargo holds, and in enginerooms;

(f) removable guards over hawseholes, anchor hawsepipes, and scuppers;

(g) personnel barriers, such as protection for electrical panels; and

(h) ship staging and work platforms (Occupational Safety and Health Administration (OSHA) requirements may also apply).

5.C.7 Fiber Reinforced Plastic (FRP) Cable Trays.

a. General. Cables should be supported by metal hangars as required by section 20.5 of IEEE Standard 45, Recommended Practice for Electric Installations on Shipboard. FRP cable trays may be used anywhere provided:

(1) they are fire-retardant as described in section 5.C.6.d(2) above;

(2) they comply with the applicable flame spread requirements for FRP gratings specified in paragraph 5.C.6.d(3) above;

(3) they comply with the applicable smoke generation requirements for FRP gratings specified in paragraph 5.C.6.d(4) above; and

(4) their failure, will not cause the cables they are supporting to fall and hinder escape or access by firefighters.

ANNEX 7

RESOLUTION MSC.62(67)
(adopted on 5 December 1996)

GUIDELINES FOR SAFE ACCESS TO TANKER BOWS

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING that new regulation II-1/3-3 of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as adopted by the Committee by resolution MSC.57(67), requires that all tankers, including gas carriers and chemical tankers, shall be provided with means, based on guidelines developed by the Organization, to enable the crew to gain safe access to the bow even in severe weather conditions,

HAVING CONSIDERED the recommendation made by the Sub-Committee on Ship Design and Equipment at its thirty-ninth session,

1. ADOPTS the Guidelines for Safe Access to Tanker Bows, set out in the Annex to the present resolution;

2. RECOMMENDS that all Governments concerned take appropriate steps to implement the said Guidelines.

ANNEX

GUIDELINES FOR SAFE ACCESS TO TANKER BOWS

Gangway and Access

1 Tankers, including oil tankers as defined in SOLAS regulation II-1/2.12, chemical tankers as defined in regulation VII/8.2 and gas carriers as defined in regulation VII/11.2, should be provided with means to enable the crew to gain safe access to the bow even in severe weather conditions. For tankers constructed on or after 1 July 1998, the access should be by means of either a walkway on the deck or a permanently constructed gangway of substantial strength at or above the level of the superstructure deck or the first tier of a deckhouse which should:

.1 be not less than 1 m in width, situated on or as near as practicable to the centre line of the ship and located so as not to hinder easy access across working areas of the deck;

.2 be fitted at each side throughout its length with a footstop and guard rails supported by stanchions. Such rails should consist of no less than 3 courses, the lowest being not more than 230 mm and the uppermost being at least 1 m above the gangway or walkway, and no intermediate opening should be more than 380 mm in height. Stanchions should be at intervals of not more than 1.5 m;

.3 be constructed of fire resistant and non-slip material;

.4 have openings, with ladders where appropriate, to and from the deck. Openings should not be more than 40 m apart;

.5 if the length of exposed deck to be traversed exceeds 70 m, have shelters of substantial construction set in way of the gangways or walkways at intervals not exceeding 45 m. Every such shelter should be capable of accommodating at least one person and be so constructed as to afford weather protection on the forward, port and starboard sides; and

.6 if obstructed by pipes or other fittings of a permanent nature, be provided with means of passage over such obstruction.

2 The Administration may accept alternative or modified arrangements for tankers with space constraint, such as small tankers, or tankers with large freeboard, such as gas carriers, provided that such alternative or modified arrangements achieve an equivalent level of safety for access to the bow.

3 Arrangements already approved by the Administration for the tankers constructed before 1 July 1998 may be accepted, provided that such existing arrangements achieve an equivalent level of safety for access to the bow.

***

Technical Background (TB) document for UI SC253 (Rev.1 May 2016)

1. Scope and objectives

To become in line with MSC.1/Circ.1504.

2. Engineering background for technical basis and rationale

None.

3. Source / derivation of the proposed IACS Resolution

SDC2 (and later MSC95), following a USA paper to SDC2, considered the new ASTM International F3059-14 standard for FRP gratings to be a more appropriate method than USCG MSM Vol. II to evaluate the safety of FRP gratings.

4. Summary of Changes intended for the revised Resolution:

The standard referred to is changed to ASTM F3059-14.

5. Points of discussions or possible discussions

Whether the ASTM F3059-14 Scope; item 1.2, 1.3 and 4.1 in particular prevent heavy black and toxic smoke to be developed if the epoxy is ignited. One member claimed it could prevent fire-fighters from controlling possible fire incidents.

6. Attachments if any

None.

UI SC254 "Fall Preventer Devices (MSC.1/Circ.1392 and Circ.1327)

Summary

UI SC254 was created to provide clear prescriptive requirements for FPDs which were permitted as a temporary measure until changes to SOLAS could be applied. As all lifeboats should now have complied, the UI can be deleted.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Aug 2022)	10 August 2022	-
New (Apr 2012)	12 April 20212	1 January 2013

- **Del (Aug 2022)**

1 Origin of Change:

☐ Other - Review at 10th anniversary

2 Main Reason for Change:

UI SC254 was reviewed at its 10th anniversary. It was noted that all lifeboat hooks should be compliant with the updated requirements no later than 1 July 2019. Therefore this UI is no longer applicable.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel discussed the UI by correspondence. A majority considered that the UI should be deleted.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 06 July 2022	(Made by: Safety Panel members)
Panel Approval	: 22 July 2022	(Ref: PS22018ISc)
GPG Approval	: 10 August 2022	(Ref: 22119_IGb)

- **New (Apr 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Omission of a clear prescriptive requirement within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal	: 15 July 2011	(Made by a Member)
Panel Approval	: February 2012	(By Statutory panel)
GPG Approval	: 12 April 2012	(Ref: 12021_IGd)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC254:

Annex 1. **TB for New (Apr 2012)**

See separate TB document in Annex 1.

Annex 2. **TB for Del (Aug 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC254 (New Apr 2012)

1. Scope and objectives

The UI is intended to provide guidance on the requirements for the strength and testing standards to be applied to Fall Preventer Devices (FPD).

2. Engineering background for technical basis and rationale

MSC.1/Circ.1392, Paragraph 4, strongly urges the fitting of FPDs pending verification that the lifeboat on-load release and retrieval system has been confirmed as complying with paragraphs 4.4.7.6.4 to 4.4.7.6.6 of the revised LSA Code. Guidance is contained within MSC.1/Circ.1327 regarding the fitting and use of FPDs, but standards for their strength and suitability for use in the marine environment are not given. This UI seeks to redress this omission.

3. Source/derivation of the proposed IACS Resolution

The applicable MSC Circular paragraphs are as follows:

> MSC.1/Circ.1392, Paragraph 4, *"Member Governments are strongly urged to ensure that all ships which are fitted with on-load release systems for lifeboats, are equipped with fall preventer devices as per paragraph 6 of these Guidelines at the earliest opportunity."*
>
> MSC.1/Circ.1392, Annex Paragraph 6, *"On each ship, fall preventer devices in accordance with the Guidelines for the fitting and use of fall preventer devices (FPDs) (MSC.1/Circ.1327) should be employed for each existing lifeboat release and retrieval system ……"*
>
> MSC.1/Circ.1327, Paragraph 2, *"The use of FPDs should be considered as an interim risk mitigation measure, only to be used in connection with existing onload release hooks, at the discretion of the master, pending the wide implementation of improved hook designs with enhanced safety features."*

4. Summary of Changes intended for the revised Resolution: None

5. Points of discussions or possible discussions

MSC.1/Circ.1327 covers the design, operation and use of FPDs but omits standards for their approval. At present therefore, FPDs could be fitted without having been appropriately tested.

Following discussion within the Statutory Panel it was agreed that the recognised factor of safety of 6 be applied to both locking pins and strop/sling type FPD's. Also, in the absence of dedicated environmental testing standards, it was agreed that the environment tests as set out in MSC 81 (70) Part 1, 1.2.1 and 2.4 or equivalent, should be sufficient to establish that they are rot-proof, colour-fast and resistant to deterioration from exposure to sunlight and that they are not unduly affected by seawater, oil or fungal attack.

6. Attachments if any: None.

Technical Background (TB) document for UI SC254 (Del Aug 2022)

1. Scope and objectives

The UI is no longer needed, so can be deleted.

2. Engineering background for technical basis and rationale

SOLAS III/1.5 required all lifeboat release systems to be compliant with updated requirements no later than 1 July 2019. As this date has passed the UI should no longer be required.

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI proposed for deletion

5. Points of discussions or possible discussions

During the discussion it was noted that although SOLAS III/1.5 required compliance by 1 July 2019, some FPDs may still be in use.

In addition it was noted that FPDs might be used on rescue boats as the application of the revised requirements to rescue boats is inconsistent.

For these reasons two members did not see the need to delete the UI.

6. Attachments if any

None.

UI SC255 “Fuel pump arrangement required for ships to maintain normal operation of propulsion machinery when operating in emission control areas and non-restricted areas”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Nov 2013)	05 November 2013	-
NEW (July 2012)	26 July 2012	1 July 2013

- **Corr.1 (Nov 2013)**

.1 Origin for Change:

☑ Other (IACS Observer's report of MSC 92)

.2 Main Reason for Change:

To align UI SC255 with MSC.1/Circ.1467.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In relation to the proposed action 9.6 of the Observer's report of MSC 92, the Machinery Panel unanimously agreed on the need to align UI SC255 with MSC.1/Circ.1467.

This alignment only consist in inserting the word "(third)" between the words "additional" and "fuel oil pump" in the second sentence of paragraph 2) b) of the UI, so that it reads: "In this case, one additional (third) fuel oil pump shall be provided."

GPG decided to consider this as a ‘correction’ to UI SC255.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: August 2013 (IACS Observer's report of MSC 92)
Panel Approval: 23 October 2013 by Machinery Panel
GPG Approval: 05 November 2013 (Ref: 13094oIGm)

- **NEW (July 2012)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify requirements for pump redundancy in cases where ships which are intended to exclusively use normal fuel (Heavy Fuel Oil or Marine Fuel Oil), use marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt instead.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Machinery Panel by a member to discuss pump redundancy in cases where marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt is used. After several rounds of intra-Panel correspondence, where members provided their understandings and made suggestions regarding the expressions used in the interpretation, it was agreed to draft an IACS UI as well as an associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: *February 2010 made by Machinery Panel*
Panel Approval: *February 2012 by Machinery Panel*
GPG Approval: 26 July 2012 (Ref: 11051_IGg)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC255:

Annex 1. **TB for New (July 2012)**

See separate TB document in Annex 1.

◄▼►

Note: There is no separate Technical Background (TB) document available for Corr.1 (Nov 2013).

Technical Background for UI SC255 New, July 2012

1 Scope and objectives

To develop an interpretation for the requirements related to pump redundancy when using marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt in accordance with mandatory regulations (SOLAS regulations II-1/26.3)

2 Engineering background for technical basis and rationale

1. The implementation of regulations to reduce SOx emissions in accordance with Annex VI of MARPOL (Phase III of Reg.14) and CARB (Phase II) requires the use of marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt for main engines within emission control areas.

2. On the other hand, SOLAS Reg. II-1/26.3 requires the redundancy of fuel oil supply systems.

SOLAS Reg. II-1/26.3 states:
Means shall be provided whereby normal operation of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative.

3. Shipyards and owners began developing new designs to comply with the above regulations, but there was some question regarding the degree of redundancy required for the use of marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt. Moreover, fuel oil pumps may need to be modified if marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt is used because of compatibility issues with respect to engines and boilers, i.e., low lubricity and low viscosity of the marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt.

4. The opinion that a UR or recommendation regarding not only pump redundancy but also the use of fuel oil of different grades for actual machinery and associated equipment on board ships should be established was expressed. However, it was agreed that the scope of the UI shall be limited to pump redundancy taking into account issues regarding use of marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt being discussed in this task.

5. With respect to the application of SOLAS Reg. II-1/26.3 to fuel oil pumps for the normal operation of propulsion systems, an interpretation for the arrangement of fuel pumps was developed to provide sufficient capacity for normal operation of propulsion machinery, even if one pump becomes inoperable while using marine fuels with a sulphur content not exceeding 0,1 % m/m and minimum viscosity of 2 cSt in emission control areas.

3 Source / derivation of the proposed IACS Resolution

MARPOL Annex VI/Reg.14
SOLAS Reg. II-1/26.3

4 Summary of Changes intended for the revised Resolution

None

5 Points of discussions or possible discussions

In order to aid in the harmonized implementation of this UI, we clarified the definitions of the following terms:

"The required capacity for normal operation of propulsion machinery"

The wording "the required capacity for normal operation of propulsion machinery" has been taken from SOLAS Reg.II-1/26.3 and refers to the capacity and pressure necessary for sustaining normal output for the concerned propulsion machinery as contractually specified by owners and shipyards.

6 Attachments if any

None

UI SC256 "Date of Delivery under SOLAS and MARPOL Conventions"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
NEW (June 2012)	28 June 2012	28 June 2012

- **NEW (June 2012)**

.1 Origin for Change:

☑ Inquiry from IMO Secretariat and suggestion by IACS member

.2 Main Reason for Change:

Inquiry from IMO Secretariat and suggestion by IACS member.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

In the year 2011, upon the request of IMO Secretariat, IACS submitted a reply on how IACS considers the meaning of "date of delivery". A year later, there was a renewed proposal in the Statutory Panel of developing a binding IACS UI from the perspective of determining the application of mandatory requirements of SOLAS and MARPOL Conventions on new buildings related to "date of delivery". Subsequently the Panel agreed upon an interpretation on "date of delivery" and associated HF and TB.

.5 Other Resolutions Changes

UI MPC100 (New, June 2012)

.6 Dates:

Original proposal: *27 April 2012 made by: a Member*
Panel Approval: *18 June 2012 by: Statutory panel*
GPG Approval: *28 June 2012 (Ref. 12093_IGc)*

Part B. Technical Background

List of Technical Background (TB) documents for UI SC256:

Annex 1. **TB for New (June 2012)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI SC256 New, June 2012

1. Scope and objectives

The UI provides a common approach in determining the application of mandatory requirements of the SOLAS and MARPOL Conventions to new ships related to date of delivery.

2. Engineering background for technical basis and rationale

Not applicable.

3. Source / derivation of the proposed IACS Resolution

Under certain provisions of the SOLAS and MARPOL Conventions, the application of regulations to a new ship is governed by the dates:

1. for which the building contract is placed on or after dd/mm/yyyy; or
2. in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after dd/mm/yyyy; or
3. the delivery of which is on or after dd/mm/yyyy.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

In 2011, upon the request of IMO Secretariat, IACS submitted a reply on how IACS considers the meaning of "date of delivery", in which IACS did not provide a binding unified interpretation. The current situation is still open to different interpretations in the industry. It is deemed later by IACS that a common practice and an UI on this fundamental concept will benefit all members, flag States and the industries in the long term.

In such a pursuit, it is noted that in some cases (e.g. change of shipowner at the last stage of newbuilding, or when the ship is built for speculation), the date of the Protocol of Delivery and Acceptance signed by both the Builder and Owner could be quite later than the completion date (the year, month and day) of the initial survey (that is entered on the relevant certificates), which may result in request for application of additional mandatory requirements of SOLAS and MARPOL Conventions which may enter into force between these dates.

Therefore, in such cases, as far as the technical requirements of SOLAS/MARPOL Conventions are concerned, it should be more appropriate and reasonable to use the completion date (the year, month and day) of the initial survey that is entered on the relevant certificates rather than the date of the Protocol of Delivery and Acceptance signed by both the Builder and Owner to determine the application of mandatory requirement of SOLAS and MARPOL Conventions.

Thus, from the perspective of determining the application of mandatory requirements of SOLAS and MARPOL Conventions, UI SC256 and UI MPC100 were proposed and agreed within IACS.

6. Attachments if any

None

UI SC 257 "Pilot Transfer Arrangements (SOLAS V/23 as amended by Resolution MSC.308 (88))

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Oct 2016)	03 October 2016	01 July 2013
Corr.1 (Apr 2013)	18 April 2013	01 July 2013
New (Nov 2012)	24 November 2012	01 July 2013

Rev.1 (Oct 2016)

.1 Origin for Change:

☑ Other (clarifies the issue as an operational matter)

.2 Main Reason for Change:

Clarification of the UI to avoid any misunderstandings.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IMO agreed with UI SC257 and subsequently approved MSC.1/Circ.1495. It was acknowledged that SOLAS regulation V/23, and the text of the previous SOLAS regulation (SOLAS regulation V/17), clearly prescribe that a pilot shall never have to climb a single pilot ladder more than nine metres from the surface of the water However, it was subsequently noted that there was some confusion as to the intent of the circular as it appear to specify design/installation criteria.

The IACS Accredited Representative to IMO met with IMPA and agreed to submit a paper to NCSR 3 with the intent of clarifying the text in both the UI and the MSC Circular which was subsequently agreed by the sub-committee. The revised text included in UI SC 257 Rev.1 reflects the text of the proposed revision of MSC.1/Circ.1495 (NCSR 3/29, annex 11).

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 18 June 2015 by: IACS Accredited Representative to IMO
Panel Approval: 05 September 2016 (Ref: SP14014d)
GPG Approval: 03 October 2016 (Ref: 15128bIGe)

Corr.1 (Apr 2013)

.1 Origin for Change:

☑ Other (Clarification given to IMPA)

.2 Main Reason for Change:

Clarification of the UI to avoid any misunderstandings.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Accredited Representative to IMO and a Statutory Panel Member met with IMPA in the margins of FSI 21 and clarified IACS intentions of developing the UI. IMPA withdrew their objections to the UI subject to the correction of the UI.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 13 Mar 2013 by: IACS Accredited Representative to IMO GPG
Approval: 18 April 2013 (Subject No: 11174aIGi)

New (Nov 2012)

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Clarification of a prescriptive requirement within an IMO instrument.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 12 July 2012 Made by: Statutory Panel
Panel Approval: 06 November 2011
GPG Approval: 24 November 2011 (Subject No: 11174aIGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC257:

Annex 1. **TB for New (Nov 2012)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Oct 2016)**

See separate TB document in Annex 2.

◄▲►

Notes: There is no separate Technical Background (TB) document available for Corr.1 (Apr 2013).

Technical Background document for UI SC257 (New, Nov 2012)

1. Scope and objectives

The UI is intended to clarify the circumstances under which the *"adverse list of 15°"* as quoted in SOLAS regulation V/23.3.3.1.4 should be applied to both single lengths of pilot ladder, and an accommodation ladder used in conjunction with the pilot ladder.

2. Engineering background for technical basis and rationale

SOLAS regulation V/23.3.3.1 as amended by Resolution MSC.308(88), requires that where a single length of pilot ladder is used then it should require the pilot to climb not less than 1.5m and not more than 9m with due allowance being made for all conditions of loading and trim of the ship, and for an adverse list of 15°.

Where an accommodation ladder is used in conjunction with the pilot ladder, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m, in accordance with SOLAS regulation V/23.3.3.2, no reference is made to allowance for an adverse list of 15°.

This UI seeks to clarify this omission.

3. Source / derivation of the proposed IACS Resolution

The applicable SOLAS regulation V/23.3 paragraphs are as follows:

3 Transfer Arrangements

3.3 Safe and convenient access to, and egress from, the ship shall be provided by either:

.1 a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water so positioned and secured that:

.1.4 the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the ship and due allowance is made for all conditions of loading and trim of the ship, and for an adverse list of 15°; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes;

.2 an accommodation ladder in conjunction with the pilot ladder (i.e. a combination arrangement), or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m.

4. Summary of Changes intended for the revised Resolution:

NA

5. Points of discussions or possible discussions

It is clear from SOLAS Regulation V/23.3.3.1 that where a single length of pilot ladder is used, not involving a climb of greater than 9m, "*due allowance"* is to be made for all conditions of loading and trim of the ship, and for an adverse list of 15°.

Following discussion, it was concluded that this adverse list of 15° was not one which would be experienced in normal service. It is an emergency condition and could therefore result in a climb of greater than 9m being necessary.

This "*due allowance*" therefore permits a pilot climb more than 9m by an additional length of pilot ladder.

SOLAS regulation V/23.3.3.2 and section 3 of Resolution A.1045(27) refer to the arrangement where an accommodation ladder is used in conjunction with the pilot ladder. These references do not contain a 15 degree list requirement, which is therefore not applicable for "an accommodation ladder in conjunction with the pilot ladder".

6. Attachments if any

None

Technical Background (TB) document for UI SC257 (Rev.1 Oct 2016)

1. Scope and objectives

UI SC 257 Rev.1 is intended to clarify that regulation V/23.3.3.1 prescribes an operational instruction which limits the distance a pilot shall have to climb on a single pilot ladder to 9 metres. It is not intended to address the equipment design arrangements.

2. Engineering background for technical basis and rationale

SOLAS regulation V/23.3.3.1 as amended by Resolution MSC.308(88), requires that where a single length of pilot ladder is used then it should require the pilot to climb not less than 1.5m and not more than 9m with due allowance being made for all conditions of loading and trim of the ship, and for an adverse list of 15°.

Where an accommodation ladder is used in conjunction with the pilot ladder, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m, in accordance with SOLAS regulation V/23.3.3.2, no reference is made to allowance for an adverse list of 15°.

This UI seeks to clarify that the former (regulation V/23.3.3.1) is an operational instruction.

3. Source / derivation of the proposed IACS Resolution

The applicable SOLAS regulation V/23.3 paragraphs are as follows:

3 Transfer Arrangements

3.3 Safe and convenient access to, and egress from, the ship shall be provided by either:

> *.1 a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water so positioned and secured that:*
>
> > *.1.4 the single length of pilot ladder is capable of reaching the water from the point of access to, or egress from, the ship and due allowance is made for all conditions of loading and trim of the ship, and for an adverse list of 15°; the securing strong point, shackles and securing ropes shall be at least as strong as the side ropes;*
>
> *.2 an accommodation ladder in conjunction with the pilot ladder (i.e. a combination arrangement), or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m.*

4. Summary of Changes intended for the revised Resolution:

NA

5. Points of discussions or possible discussions

SOLAS regulation V/23, and the text of the previous SOLAS regulation (SOLAS regulation V/17), clearly prescribe that a pilot shall never have to climb a single pilot ladder more than nine metres from the surface of the water.

Subsequent to the publication of MSC.1/Circ.1495 (Pilot Transfer Arrangements) IACS and IMPA noting that there existed in the industry some confusion as to the intent of the circular.

The circular addresses two issues which the IACS and IMPA believe should be addressed separately:

.1 an operational instruction; and
.2 equipment arrangement requirements.

In this regard, the operational limitation is clear in that SOLAS regulation V/23.3.3.1 limits the distance a pilot shall have to climb on a single pilot ladder to 9 metres. As such, SOLAS regulation V/23.3.3.1 prescribes an operational instruction and it is not intended to address the equipment arrangements.

6. Attachments if any

None

UI SC258 “For Application of Regulation 3-11, Part A-1, Chapter II-1 of the SOLAS Convention (Corrosion Protection of Cargo Oil Tanks of Crude Oil Tankers), adopted by Resolution MSC.289 (87) The Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks of Crude Oil Tankers”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Jan 2013)	23 January 2013	01 January 2013

• New (Feb 2013)

.1 Origin for Change:

☒ Based on IMO decision

.2 Main Reason for Change:

New UI developed for the application of IMO PSPC.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

Nippon Steel Corporation, Kobe Steel Ltd, JFE Steel Corporation and Sumitomo Metal industries Ltd.

.4 History of Decisions Made:

See technical background.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *07 March 2012 (By PT59)*
Panel Approval: *13 November 2012 (By Hull Panel)*
GPG Approval: *23 January 2013 (10105_IGi)*

Part B. Technical Background

Annex 1. **TB for New (Jan 2013)**

See separate TB document in Annex 1.

Technical Background document for UI SC258 (New, Jan 2013)

1. Scope and objectives

The UI has the scope to clarify the proposals given in Resolution MSC.289 (87), Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks.

2. Engineering background for technical basis and rationale

The Performance Standard for Alternative Means of Corrosion Protection for Cargo Oil Tanks of Crude Oil Tankers (IMO Resolution MSC.289 (87)) allows for the use of "*Corrosion Resistant Steel*". This steel is modified ship steel with micro additions of certain chemical elements that have been found to have a beneficial effect by retarding the corrosion rate in the environments found in cargo tanks of crude oil carriers.

This raises several issues for IACS:

a) The materials need to comply with strength and toughness in accordance with UR W11.

b) There is no IACS unified approach to the approval, manufacture, certification and shipyard application of these steels. Their application has no effect on fabrication in shipbuilding, but there are no requirements in the IMO resolution addressing approval, manufacture and certification and these processes need to be addressed.

c) The steel must be approved to confirm the corrosion resistance.

d) No practicable production release test is available for these steels. Although a type approval test method has been developed in the IMO PSPC it is noted that this test method allows variation in the composition of the test medium, such as concentration of H_2S. This creates uncertainty in the assessment of the corrosion resistance of the steel.

e) The application of these steels must consider a likely combination of steels from different manufacturers which may involve subtle chemical composition changes from manufacturer to manufacturer.

f) In a repair scenario these steels may be in combination with normal ship steels which require coating. For such arrangements guidance needs to be provided to industry.

g) The application of such steel needs certain control measures to prevent corrosion, for example where such steel forms a boundary between the cargo oil and a sea water ballast tank, in such cases the side of the material facing the ballast tank must be coated in the same manner as surrounding normal ship building steel. Corrosion resistant steel is not effective in seawater.

h) The IACS unified approach may be developed as a Unified Interpretation rather than a Unified Requirement as the IMO resolution is a statutory requirement.

Taking the above into account the resolution has been reviewed for clarity and where ambiguity was found, a technical proposal is given to aid the interpretation of the resolution. The interpretations are numbered in accordance to the sections they represent.

Many issues arise because Corrosion resistant Steels are newly developed materials. Indeed it has been necessary to produce a new IACS UR, W30, to explain the manufacture, testing and certification of these steels. The new UI provides an explanation into the application in construction of the materials and the detail of the process to approval the materials.

3. Source / derivation of the proposed IACS Resolution

The IMO Performance Standard comes into effect on 1 January 2013 for new building contracts. It was aimed to have a UI in place by 1 June 2012 to allow time for designs to be considered before contracts are signed.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC259 "For Application of SOLAS Regulation II-1/3-11 Performance Standard for Protective Coatings for Cargo Oil Tanks of Crude Oil Tankers (PSPC-COT), adopted by Resolution MSC.288(87)"

Summary

This resolution provides interpretations requirements for the terminology used in in IMO resolution MSC.288(87), as amended by Res.MSC.558(107).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.2 (Oct 2024)	18 October 2024	-
Corr.1 (Oct 2014)	26 October 2014	-
Rev.1 (Jun 2014)	04 June 2014	01 July 2014
Corr.1 (May 2014)	09 May 2014	-
New (Oct 2013)	16 October 2013	01 July 2014
New (Feb 2013)	21 February 2013	01 January 2014

- **Corr.2 (Oct 2024)**

1 Origin of Change:

☒ Based on IACS Requirement *(Periodic review of IACS resolutions)*

2 Main Reason for Change:

MSC 108 approved revision 1 of MSC.1/Circ.1399 and adopted Res. MSC.558(108) "amendments to the performance standards for protective coatings for cargo oil tanks of crude oil tankers (Res. MSC.288(87))". The latter provides for a new wording for the coating inspector.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

Safety panel agreed that the proposed changes are corrections and updated UI SC259 accordingly. EG/Materials and Welding agreed to these changes and included some minor editorial changes.

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	: 12 June 2024	(Made by: Panel Chair)
Panel Approval	: 25 September 2024	(Ref: PS24043dISe)
GPG Approval	: 18 October 2024	(Ref: 24121dIGb)

- **Corr.1 (Oct 2014)**

1 Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

To change reference to 'A.744(18)' to the 'A.1049(27) (2011 ESP Code), as amended' in IACS UI SC223 & UI SC259, noting that references to A.744(18) in Resolution MSC.215(82) for PSPC-WBT and MSC.288(87) for PSPC-COT has already been replaced by MSC.341(91) and MSC.342(91), respectively.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The correction pointed out by a member was confirmed by Safety Panel chairman. Permsec prepared the draft corrigenda.

5 Other Resolutions Changes:

UI SC223

6 Dates:

Original Proposal	: 12 September 2014	(Made by: Panel Membes)
GPG Approval	: 26 October 2014	(Ref: 14160_IGb)

- **Rev.1 (June 2014)**

1 Origin of Change:

☒ Suggestion by IACS Accredited Representative to IMO

2 Main Reason for Change:

To align UI SC259 with MSC.1/Circ.1479.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Accredited Representative to IMO in his Observer's report on MSC 93 (Rec 7.2) invited Members to concur that UI SC259 should be aligned with MSC.1/Circ.1479. MSC.1/Circ.1479 is based on UI SC259 and incorporates the modification to the definition of "GOOD condition" of the coating (i.e. change 5% to 3 % spot rust in the definition of 'GOOD' condition) as proposed by Intertanko (MSC 93/10/14). Intertanko proposed modification was agreed by GPG before MSC 93 (Ref: 14025fIGb).

GPG agreed to issue a new revision of UI SC259 aligned with MSC.1/Circ.1479 before its entry into force i.e. 1 July 2014.

5 Other Resolutions Changes:

None

6 Dates:

Original Proposal : 4 June 2014 (Made by: IACS Accredited Representative to IMO)
GPG Approval : 4 June 2014 (Ref: 14025fIGc)

- **Corr.1 (May 2014)**

1 Origin of Change:

☒ Suggestion by IACS PERMSEC

2 Main Reason for Change:

To correct paragraph numberings in pages 10, 11 & 12.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The typo was brought to our attention by the IMO Secretariat who are preparing the text of an MSC circular based on the generally positive outcome of SDC 1 regarding UI SC 259 (subject to Intertanko's comments in MSC 93/10/14).

Permsec corrected the UI and circulated it to Members for information and record.

5 Other Resolutions Changes:

None

6 Dates:

Original Proposal : 9 May 2014 (Made by: IACS Permsec)
GPG Approval : 9 May 2014 (Ref: 13094oIAs – GPG notified of the correction)

- **New (Oct 2013)**

1 Origin of Change:

☒ Based on IMO Decision (*DE 57 and MSC 95*)

2 Main Reason for Change:

Reviewing the outcome of MSC 92 (Document MSC 92/WP.1/Add.1 Para. 13.4), the following decisions of the committee are noted:

13.4.1
not to agree to the proposal (MSC 92/13/4, paragraph 4) to add additional text at the end of the interpretation concerning water-soluble salt limit;

13.4.2
not to agree to the proposal (MSC 92/13/4, paragraph 5) to add an additional sentence at the end of the interpretation concerning shop primer;

13.4.3
the decision of the committee to agree to delete interpretation 1 to paragraph 3.4 of PSPC 4, table 1, section 3 (Secondary surface preparation) on the use of methods such as, but not limited to, UHP Water Jetting may be considered for Secondary Surface Preparation, where it can be demonstrated that the surface conditions specified by PSPC Table 1, section 3, can be achieved before the application of the main coatings.

13.4.4
the decision of the committee to agreed to the proposal (MSC 92/13/4, paragraph 7) to modify paragraphs 4.1 and 4.3 of the interpretation concerning assistant coating inspectors to read as follows:

> "4.1 If the coating inspectors require assistance from other persons to perform part of the inspections, those persons shall perform the inspections under the

coating inspector's supervision and shall be trained to the coating inspector's satisfaction."

"4.3 Training records shall be available for verification."

In addition to that, it is recommended to amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column "Specific Activities" in row 7.1.

13.4.5
not to agree to the proposal (MSC 92/13/4, paragraph 8) to add an additional paragraph to the interpretation concerning verification of the application of the PSPC.

13.6 and 13.7
to note the decision of DE 57 not to include in the unified interpretation text referring to section 8 (Alternative systems) of the PSPC COT .

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Noting the decisions of the committee at MSC 92 (Document MSC 92/WP.1/Add.1 Para. 13.4), following decisions has been made:

13.4.1
No changes necessary.

13.4.2
No changes necessary.

13.4.3
Consequently, as decided by the committee this part will be deleted from IACS UI SC223.

However, it is realized that such deletion in fact bans certain Countries from building ships under the IMO PSPC regime, in case such countries for environmental or health reasons decided to prohibit dry grit blasting during second stage building in open air, by law or local regulations.

It remains the believe of SG/Coatings that deleting this interpretation is not in line with the invitation of IMO to encourage the development of novel technologies. It also remains the believe of SG/Coatings that it does not matter HOW a Standard is achieved, just THAT the Standard is achieved. Moreover, in case such Standard, or even a higher Standard, can be achieved by less foot print on the environment by other methods, such method(s) should not be rejected without strong arguments.

13.4.4
Text of UI SC 259 is to be adjusted.

In addition to that, SG/Coatings recommends to amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column "Specific Activities" in row 7.1.

13.4.5
No changes necessary.

13.6 and 13.7
Related section is to be deleted.

However, IACS SG/Coatings refers to the IMO PSPC BWT and PSPC COT,

QUOTE// 'INVITES Governments to encourage the development of novel technologies aimed at providing for alternative systems and to keep the Organization advised of any positive results.'

and further the

QUOTE // ' it is not intended to exclude suitable alternative coating systems, providing a performance at least equivalent to that specified in this Standard is demonstrated. Acceptance criteria for alternative systems are provided in section 8.'//UNQUOTE

Based on that, the IMO PSPC BWT and PSPC COT does provide room for the use of coating and/or coating systems not applied in accordance with Table 1 of the PSPC, provided they have proved equivalency by test methods provided by the right columns (acceptance criteria for alternative systems) of acceptance criteria in the ANNEX of the PSPC BWT and PSPC COT.

Based on IACS' own experience and on feedback from the Industry however, Section 8, in particular 8.1 of the PSPC BWT and PSPC COT, defining 'Alternative Systems';

QUOTE//All systems that are not an epoxy-based system applied according to table 1 of this Standard are defined as an alternative system//UNQUOTE,

was found to be vague and IACS SG/Coatings considers that a Uniform Interpretation is still deemed necessary.

With reference to 13.7, it is not clear on which base the committee concluded to delete the subject Uniform Interpretation. GPG decided that the version of UI SC259 currently on the IACS website (i.e. UI SC259 (New Feb 2013)) to be replaced with UI SC259 (New Oct 2013) with implementation date 1 July 2014 (there will not be a Rev.1 document or underline version of the changes made).

5 Other Resolutions Changes:

Amend UR Z23 and table 1 of UR Z23 to verify coating inspectors respectively assistance inspectors qualification in the column "Specific Activities" in row 7.1.

6 Dates:

Original Proposal	: August 2013	(Made by: SG/Coating)
GPG Approval	: 16 October 2013	(Ref: 13094oIGj)

- **New (Oct 2013)**

1 Origin of Change:

☒ Suggestion by IACS members

2 Main Reason for Change:

To develop the interpretation for PSPC-COT of Resolution MSC.288(87) in the same

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

EG/Coating, as Task 36, planned to develop a new unified interpretation for PSPC-COT of Resolution MSC.288(87) that retains the same structure given in UI SC223, however, due to the disbandment of EG/Coating, the development of a new UI was transferred from EG/Coating via GPG to the Statutory Panel.

The Statutory Panel developed the new UI taking into account a decision made by the EG/Coating to keep the same structure given in UI SC223. Therefore, the new UI is in line with UI SC223 except for some change originated from the difference between PSPC-WBT and PSPC-COT.

5 Other Resolutions Changes:

None

5 Dates:

Original Proposal : by EG/Coating
Panel Approval : 12 January 2013
GPG Approval : 21 February 2013 (Ref: 9638fIGj)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC259:

Annex 1. **TB for New (Feb 2013)**

See separate TB document in Annex 1.

Note: *There is no separate Technical Background (TB) documents for New (Oct 2013), Corr.1 (May 2014), Rev.1 (June 2014), Corr.1 (October 2014) and Corr.2 (October 2024).*

Technical Background (TB) document for UI SC259 New (Feb 2013)

1. Scope and objectives

To develop the interpretation for PSPC-COT of Resolution MSC.288(87) in the same manner of UI SC223 for PSPC-WBT of Resolution MSC.215(82).

2. Engineering background for technical basis and rationale

The Statutory Panel developed the new UI taking into account a decision made by the EG/Coating to keep the same structure given in UI SC223. Therefore, the new UI is in line with UI SC223 except for some changes originated from the difference between PSPC-WBT and PSPC-COT as follows:

PSPC-COT 4 Table 1:1 Design of coating system:

Considering that selected vessels are different between WBT and COT in nature, the IACS REC No.116 paragraph 2.3 as quoted below for Method B (5 years field exposure) was incorporated with some modification by the members' suggestion.

QUOTE

- *At least one tank is exposed to minimum temperature of 58 degree C*
- *For field exposure the ship should be trading in varied trade routes and carrying substantial varieties of crude oils to ensure a realistic sample: for example, three ships on three different trade areas with different varieties of crude cargoes*

UNQUOTE

EG/Coatings discussed the matter of harmonizing the lab test and the field experience approvals and was of the view that the 58 degree C for the Method B-5 years field exposure test in REC No. 116 should be harmonized with the requirements for coatings to be approved based on 5 years Field Experience in MSC.288(87).

Table 1 of the PSPC-COT in MSC.288(87) under 1.3 reads ..... 'or which have documented field exposure for 5 years with a final coating condition of not less than Good, may be accepted.' The Lab Testing for approval of PSPC-COT coatings designated to be applied underdeck (in the inerted upper area of the tank) is specified by Appendix 1 of MSC.288(87), "Gas Tight Cabinet Test", where the temperature of the test atmosphere shall be 60 +/- 3 Degree C.

Therefore, 58 degree C in REC No.116 is considered to be better defined into 60 +/- 3 Degree C.

In addition, the Statutory Panel agreed that Marintek B1 specified in Method C (Existing Marintek B1 Approval) of UI SC223 is not for COT. Therefore, "Method C: Existing Marintek B1 approvals" is removed from the new UI for COT.

3. Source/derivation of the proposed IACS Resolution

Resolution MSC.288(87)
IACS UI SC223(Rev.2)

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

PSPC-COT 2 DEFINITIONS:

The Statutory Panel agreed that the definition of wording "GOOD" should change from the definition interpreted in UI SC223 in accordance with MSC/Circ.1399.

PSPC-COT 4 Table 1: Footnotes of Standards and Annex 1 Footnotes of Standards:

A proposal to update the referred ISO standards was made by a Statutory Panel member, however the Statutory Panel agreed that making changes to the referred ISO standards would lead to be beyond Resolution MSC.288(87) and the current referred ISO standards should be retained.

6. Attachments if any

None

UI SC260 "Sample Extraction Smoke Detection System (FSS Code / Chapter 10 / 2.4.1.2 as amended by MSC.292 (87))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2015)	04 June 2015	01 January 2016
New (Mar 2013)	26 March 2013	01 January 2014

- **Rev.1 (June 2015)**

.1 Origin for Change:

☒ Other (MSC.1/Circ.1487)

.2 Main Reason for Change:

To align SC260 with text of MSC.1/Circ.1487.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The inquiry was raised by the IACS Permanent Secretariat. The IACS Safety Panel agreed with the proposal.

.5 Other Resolutions Changes

None

.6 Dates:

Revision 1: 24 March 2015 (By a Permanent Secretariat)
Panel Approval: 15 May 2015(By Safety Panel SP12019c)
GPG Approval: 04 June 2015 (Ref: 13071_IGh)

• **New (Feb 2013)**

.1 Origin for Change:

☒ Suggestion by IACS member

.2 Main Reason for Change:

To clarify the definition of Fire control station for the purpose of the application of FSS Code 10.2.4.1.2 amended by MSC.292(87).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

.4 History of Decisions Made:

The inquiry was raised by a member to seek the IACS statutory panel member's view regarding the arrangement of panels of Sample Extraction Smoke Detection Systems where control panel is located in CO2 room and indicating units (repeater panels) are located in the navigation bridge and fire control station whether this arrangement is regarded to satisfy the requirement of FSS Code 10.2.4.1.2 amended by MSC.292(87) .

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: *09 July 2012 (By a Member)*
Panel Approval: *09 March 2013 (By Statutory Panel)*
GPG Approval: *26 March 2013 (13071_IGb)*

Part B. Technical Background

Annex 1. **TB for New (Mar 2013)**

See separate TB document in Annex 1.

◄▼►

Note: There are no separate Technical Background (TB) documents for the Rev.1 (June 2015).

Technical Background document for UI SC260 (New, March 2013)

1. Scope and objectives

The UI is intended to clarify the definition of Fire control station for the purpose of the application of FSS Code 10.2.4.1.2 amended by MSC.292(87).

Since CO2 room with CO2 control equipment complying with the provision of the FSS Code Chapter 5 is considered to be a fire control station, control panel of Sample Extraction Smoke Detection System could be located in CO2 room when applying the requirement of the regulation of FSS Code 10.2.4.1.2.

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

At the initial stage of discussion on this matter, the draft UI is intended to approach in the way that the repeater panel having same functionality with control panel can be regarded as control panel. So when the repeater panel of Sample Extraction Smoke Detection System is located on the bridge and fire control station, it should be considered that the FSS Code 10.2.4.1.2 is satisfied by a repeater panel which can be regarded as control panel.

However, the draft was amended to focus on the definition of fire control station especially regarding CO2 room rather than the functional similarity between the control panel and repeater panel after discussion among the panel members.

Some of panel members raised concerns that PSC may object to the control panel in the CO2 room no matter that the repeater panel in the bridge or fire control station has the same functionality. And it would be acceptable to locate control panel that a fire in the space or spaces protected will not put the system out of action/function other than fire control station or navigation bridge provided that fire control station or navigation bridge is provided with a repeater panel having same functionality with control panel.

In addition, previous FSS Code adopted by Res.MSC.98(73) 10.2.4.1.1, which applied to the ships constructed on or after 1st July 2002 before 1st January 2012, requires that control panel shall be located on the navigating bridge or in the continuously manned central control station.

However, there is no definition of control panel of Sample Extraction Smoke Detection System in the previous FSS Code before amended by MSC.292 (87) but previous FSS

code 10.2.2.3 only requires that the control panel shall permit observation of smoke in the individual sampling pipe.

In this regard, the panel of Sample Extraction Smoke Detection System located in navigation bridge which permits observation of smoke in the individual sampling pipe by visual or electrical mean should be regarded as a control panel and considered to satisfy the requirement of FSS Code 10.2.4.1.1.

6. Attachments if any

None

UI SC261 "Interpretation of Performance Standards for voyage data recorders (VDRs)"

Summary

This UI was revised due to adoption of MSC.494(104) amending MSC.333(90)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Apr 2022)	27 April 2022	1 July 2022
New (May 2013)	08 May 2013	1 July 2014

- **Rev.1 (Apr 2022)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Rev.1 was developed due to IMO adopting Resolution MSC.494(104) which amends Resolution MSC.333(90)

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Rev.1 proposal to update the UI to take account of Resolution MSC.494(104) agreed by the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: January 2022	(Made by: Safety Panel)
Panel Approval	: 29 March 2022	(Ref: PS22006_)
GPG Approval	: 27 April 2022	(Ref: 22039_IGb)

- **New (May 2013)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

UI SC261 was developed to clarify the application of Resolution MSC.333(90), the phrase “installed on or after 1 July 2014”.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal	: February 2013	made by Statutory Panel
Panel Approval	: April 2013 by	Statutory Panel
GPG Approval	: 08 May 2013	(Ref: 13107_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC261:

Annex 1. **TB for New (May 2013)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Apr 2022)**

See separate TB document in Annex 2.

Technical Background (TB) document of UI SC 261 (New May 2013)

1. Scope and objectives

The original version of the UI clarifies the scope of application of Resolution MSC.333(90), the phrase “installed on or after 1 July 2014”.

2. Engineering background for technical basis and rationale

Not applicable.

3. Source / derivation of the proposed IACS Resolution

The source of the interpretation of “install” is similar to MSC.1/Circ.1375/Rev.1 given therein.

4. Summary of Changes intended for the revised Resolution

Not applicable.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

Technical Background (TB) document for UI SC261 (Rev.1 Apr 2022)

1. Scope and objectives

Revision 1 updates UI SC 261 to include ‘installed on or after 1 July 2022’ as per resolution MSC.494(104) which amends MSC.333(90)

2. Engineering background for technical basis and rationale

Not applicable

3. Source / derivation of the proposed IACS Resolution

The source of the interpretation of “install” is similar to MSC.1/Circ.1375/Rev.1 given therein**.**

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

None***.***

6. Attachments if any

None

UI SC262 "Fixed Foam Fire Extinguishing Systems, Foam-generating Capacity (FSS Code / CHAPTER 6 / 3.2.1.2 and 3.3.1.2 as amended by Res. MSC.327(90))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2015)	21 May 2015	01 January 2016
New (June 2013)	21 June 2013	01 January 2014

- **Rev.1 (May 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify a definition of the term "largest protected space" together with explanatory figures and other fire risk items, taking into account the comments made by Member States at SSE1 held in March 2014.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS UI SC262 was submitted to SSE1 and the following views were expressed by Member States at SSE 1;

.1 the proposal was not considered an interpretation; in particular, regarding paragraph 5 of the UI, referring to the fire risk objects defined in SOLAS regulation II-2/3.34, the view was expressed that not only these but other fire risk items should also be considered, such as exhaust gas boilers and oil tanks or other expansion oil tanks placed high up in the engine casing; and

.2 the use of term "casing" was considered ambiguous and, therefore, a clear definition may be necessary.

Consequently, based on IACS Observer's proposed action 11.10 of SSE1, the Safety Panel reviewed UI SC262 taking into account the above views and developed a new draft revised version which was subsequently submitted to SSE2 (SSE2/11/10). The Sub-Committee agreed to the Unified Interpretation of chapter 6 of FSS Code, which

was developed in line with the draft revised version of UI SC262 submitted by IACS, for submission to MSC96 for approval.

In accordance with an instruction from GPG Chairman (13131_IGj of 14 January 2015), the revised IACS UI SC262 was finalised by the Safety Panel and was forwarded to GPG for approval.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: 19 August 2014 (SP12004pPCw) by Safety Panel
Panel Approval: 29 December 2014
GPG Approval: 21 May 2015 (Subject No: 13131_IGl)

- **NEW (June 2013)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify criteria to be adopted when determining the size of the “largest protected space” to be filled within the time prescribed in FSS Code Ch. 6

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a member with a view toward consistent application of requirements in question, noting the lack of appropriate definitions in the Code and the likelihood for diverging approaches.

After several rounds of intra-Panel correspondence, where members provided their understandings, it was initially proposed to seek clarification from IMO, by means of an appropriate submission to FP56, prior to IACS committing to the development of a Unified interpretation.

Further rounds of correspondence ensued, where members made suggestions regarding the contents and format of the paper, however, it was later agreed that such draft submission paper should not be submitted but rather a Unified interpretation as well as associated HF and TB be developed instead. Such UI could then be submitted to IMO under standing Agenda Item.

.5 Other Resolutions Changes

None

.6 Dates:

Original proposal: May 2012 (SP12004p) by Statutory Panel
Panel Approval: 22nd May 2013
GPG Approval: 21 June 2013 (Subject No: 13131_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution (June, 2013)**

See separate TB document in Annex 1.

◄▼►

Note: There is no Technical Background (TB) document available for Rev.1 (May, 2015).

Technical Background for UI SC262 (New, June 2013)

1 Scope and objectives

This UI has the intent to clarify criteria to be adopted when determining the size of the "largest protected space" as referred to in FSS Code Ch. 6 (as amended by MSC Res. 327(90)).

2 Engineering background for technical basis and rationale

1. FSS Code Ch. 6 (as amended by MSC Res. 327(90), entering into force on 01 Jan 2014) includes a number of requirements making reference to the "largest protected space" (Paragraphs 3.1.19, 3.2.1.2, 3.2.2.2, 3.3.1.2, 3.3.2.2).
   Paragraph 3.2.1.2 and 3.3.1.2 reads:
   "*Sufficient foam-generating capacity shall be provided to ensure the minimum design filling rate for the system is met and in addition shall be adequate to completely fill the largest protected space within 10 min".*

2. As these systems, are, amongst others intended for the protection of machinery spaces of category A (as referred to in SOLAS II-2/10.4.1.1.2), they may be used, for instance, within spaces containing internal combustion machinery, such as engine rooms, which often include an engine casing which is not separated from the space where the engine(s) is (are) located by A-class boundaries, thus forming part of the same space from a structural fire protection perspective. In that context, when considering the extent of the space to be protected by the system it may be recognized that the engine casing may not contain equipment presenting a risk of fire, or, if present such equipment can only occupy a limited portion of the casing. It was therefore considered necessary to clarify the application criteria to be used when assessing the "largest protected space", noting that to fulfil the above-mentioned requirements different technical solutions can be proposed, and there was considered to be a need for a common understanding to ensure consistent implementation.

3. After a number of iterations of discussion it was therefore considered that the criteria to be used, when assessing if the engine casing (partly or in its entirety) is to be included/excluded in the *largest protected space,* should be based on whether or not there exists fire risk objects, such as those listed in SOLAS regulation II-2/3.31 and as defined in 3.34.

4. It should be underlined that, irrespective of how the size of the "largest protected space" is determined, the system remains to be designed such that the design fill rate (determined from the results of tests in appendix 2 of MSC.1/Circ. 1384) is adequate to completely fill the largest protected space in 10 minutes or less. It was further underlined that consideration should also be given to cases where the above mentioned fire risk objects may be in the lower part of the machinery space, rather than in its casing, with, however, their highest point being in the casing, i.e. above the lowest part of it (that being intended as the horizontal plane separating the lower part of the machinery space from the casing, see Figure 1 below). The text was further analysed to take account of such designs and it was therefore concurred with that the required 10 minute fill time should include the time for filling foam up to a level which shall be not less than 1m above the highest point of the fire risk objects within the machinery space, i.e. it shall not be less than:

- 1 m above the highest point of any such object; or
- the lowest part of the casing,

whichever is higher.

5. For information, the figure of 1m was mentioned as a recommendation in BS 5306-6.2: 1989 (Fire extinguishing installations and equipment on premises — Part 6: Foam systems — Section 6.2 Specification for medium and high expansion foam systems; Paragraph 19.3 (reported below for reference):

   19.3 Submergence depth
   The system shall produce, throughout the protected area, a depth of foam sufficient to cover and extinguish the highest hazard.
   COMMENTARY AND RECOMMENDATIONS ON
   19.3. *In unsprinklered enclosures of combustible construction the submergence depth should be sufficient to fill the enclosure. For combustible solids, in enclosures which are sprinklered or are of non-combustible construction the submergence depth should be sufficient to cover the highest hazard with* 1 m, *or.1 times the height of the highest hazard, in metres, whichever is the greater, of foam.*
   For flammable liquids the submergence depth should be determined by test, and may be considerably more than for combustible solids.
   It should however be noted the above standard has in the meantime been withdrawn and replaced by BS EN 13565-2:2009, where such recommendation no longer appears.
   Additionally reference can be made (as reported) to NFPA 11 “STANDARD FOR LOW-, MEDIUM-, AND HIGH-EXPANSION FOAM” Paragraph 6.12.5.2.1.1, which states: "*The minimum total depth of foam shall not be less than 1.1 times the height of the highest hazard but in no case less than 0.6m (2 ft) over this hazard."*
   It is however noted that the foam discharge rate specified in NFPA 11 is not the same as (and more complicated than) that in the FSS Code (i.e., *"completely fill the largest protected space within 10 min."*).

3 Source / derivation of the proposed IACS Resolution

FSS Code Ch. 6 (as amended by MSC Res. 327(90))

4. Summary of Changes intended for the revised Resolution.

Not applicable

5 Points of discussions or possible discussions

“Fire risk object” remain a potentially vague concept, and, although it is acknowledged an exhaustive and comprehensive definition may not be achievable, further work may need to be done to provide enhanced guidance to designers, builders, manufacturers, Administration etc. This may possibly be done in the form of positive and negative examples (what they may be, what they are not), including drawings, if appropriate.
The panel may want to consider pursuing submission of the UI to FP57.

6 Attachments if any

None

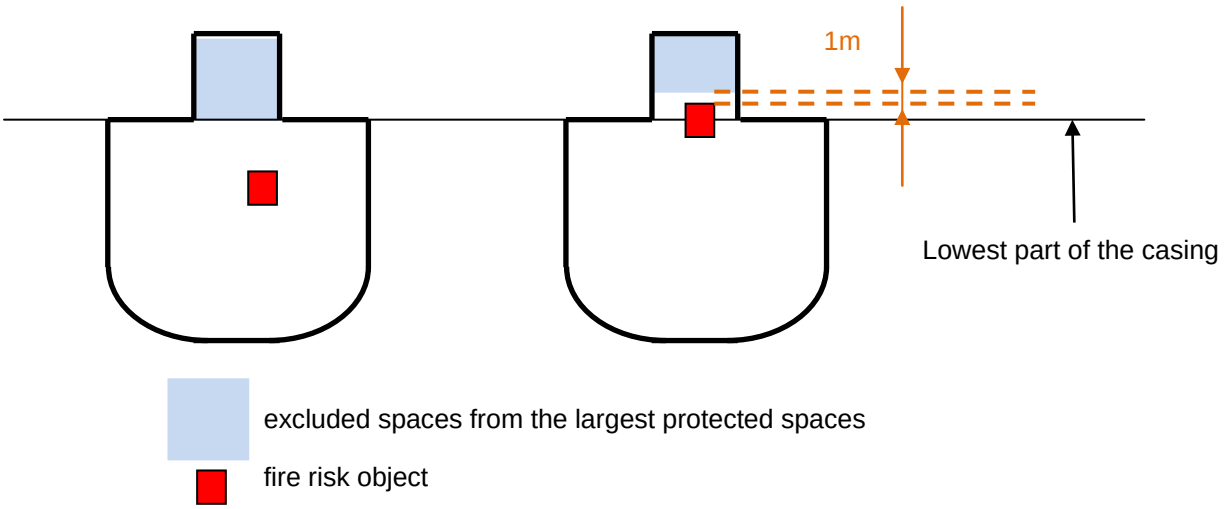
1m
Lowest part of the casing
excluded spaces from the largest protected spaces
fire risk object

Figure 1

UI SC263 "Gaskets in fixed gas fire-extinguishing systems (SOLAS II-2/10.4, IMO FSS Code Ch 5)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (June 2014)	10 June 2014	-
New (Oct 2013)	04 October 2013	01 July 2014

- **Delete (June 2014)**

GPG decided to delete the UI in light of the comments received at SSE 1 (Ref: 13244IIGe - SSE 1 - 10-14 March 2014 - IACS Observer's report).

- **NEW (Oct 2013)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

Not applicable.

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a Member. After some discussion, taking into account similar text for fixed foam fire-extinguishing systems in IMO FSS Code Ch.6, as amended by IMO Res. MSC.327(90), where gaskets are excluded from the requirement for piping, fittings and related components inside the protected spaces to be designed to withstand 925°C, it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: *March 2013* made by a Member
Panel Approval: *17th September 2013*
GPG Approval: *04 October 2013 (Ref: 13218_IGb)*

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

◄▼►

UI SC264 "Non-combustible material as 'steel or equivalent' for ventilation ducts (SOLAS II-2/Reg. 9.7.1.1)"

Summary

This UI provides an interpretation of the term "non combustible material" for ventilation ducts (SOLAS II-2/Reg.9.7.1.1. Corr.1 considers the amendments to SOLAS text (MSC.365(93)) that entered into force 1 January 2016, the interpretation remains unchanged.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Dec 2023)	11 December 2023	-
New (Dec 2013)	20 December 2013	01 July 2015

- **Corr.1 (Dec 2023)**

1 Origin of Change:

☑ Based on IACS Requirement (Periodic review of IACS Resolutions)

2 Main Reason for Change:

Update IACS resolution according to SOLAS amendments Resolution MSC.365(93) (2014).

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Discussed by correspondence in the Safety Panel:

- The most recent version of SOLAS II-2/9.7.1 to be referred
- UI updated accordingly, i.e. considering amended text of SOLAS. No amendments to the interpretation necessary.

Original Unified Interpretation has been agreed by IMO in 2016 (MSC.1/Circ.1527).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

N/A

7 Dates:

Panel Approval: 23 November 2023 (Ref: PS23036hISf)
GPG Approval: 11 December 2023 (Ref: 22183iIGb)

- **New (Dec 2013)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify criteria to be adopted when non-combustible materials can be accepted as 'steel or equivalent'.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel by a member with a view toward consistent understanding of the wording 'steel or equivalent material' in context of SOLAS regulation II-2/9.7.1.1 in case of the proposed use of non-combustible materials and the testing requirements, noting the lack of appropriate definition and the likelihood for diverging approaches. The understanding reached (as reflected in the UI) is not meant to be applicable to those ducts required to be constructed solely of steel under SOLAS regulations II-2/7.2.1, 7.2.2 and 7.3.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 04 June 2013 made by a Statutory Panel Member
Panel Approval: 04 December 2013
GPG Approval: 20 December 2013 (Ref: 13253_IGc)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution (Dec 2013)**

See separate TB document in Annex 1.

Annex 2. **TB for Corr.1 (Dec 2023)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC264 New (Dec 2013)

1. Scope and objectives

To clarify criteria to be adopted when non-combustible materials can be accepted as 'steel or equivalent'.

2. Engineering background for technical basis and rationale

A member of Statutory Panel had been approached by a client to approve a non-combustible material as 'steel or equivalent' in order to be used for ventilation ducts (SOLAS II-2/9.7.1.1). As there is at this time no testing method available to prove steel equivalence, the approach discussed was to perform a fire test with steel ducts and ducts made of this non-combustible material for half-an-hour (considered as non-load bearing) and to perform afterwards a strength test in order to check the integrity of the duct made of non-combustible material. Subject to satisfactory tests the material would then be equivalent to steel (used as non-load bearing structure only). It was found that the fire test should be a standard fire test according to part 3 of the FTP Code as non-load bearing structure for 30 minutes following the requirements for testing "B" class divisions.
It was recognized that this does not apply to ventilation ducts which are required to be made of solely steel by other regulations of SOLAS Chapter II-2 (e.g., ventilation ducts provided for the ventilation of machinery spaces of category A, galleys, vehicle spaces, ro-ro spaces or special category spaces as well as ducts which are part of the structure). Consequently e.g. ducts made of the non-combustible material should then not be used for galley exhaust ventilation systems.
The conclusion was the unanimously agreed unified interpretation.

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/9.7.1.1

4. Summary of Changes intended for the revised Resolution

Not applicable.

5. Points of discussions or possible discussions

Refer to Section 2.

6. Attachments if any

None

Technical Background (TB) document for UI SC264 Corr.1 (Dec 2023)

1. Scope and objectives

See Annex 1

2. Engineering background for technical basis and rationale

See Annex 1

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/9.7.1 as amended by IMO Resolution MSC.365(93).

4. Summary of Changes intended for the revised Resolution:

SOLAS text in UI SC 264 updated according to SOLAS amendments. No changes made to the IACS interpretation.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC265 "Code of safe practice for cargo stowage and securing – Annex 14"

Summary

Unified Interpretation SC 265 is deleted as all recommendations are considered by MSC.1/Circ.1352/Rev.1.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Nov 2023)	23 November 2023	-
New (Dec 2013)	21 December 2013	1 January 2015

- **Del (Nov 2023)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolutions)

2 Main Reason for Change:

MSC.1/Circ.1352/Rev.1, which amends the mandatory CSS Code, completely consider the interpretations (underlined):

- 6.2.1.1 The minimum clearance for transit areas should be at least 2 m high and 600 mm wide (see table in supplement, dimensions B, J, K1).
- 6.2.2.1.1 the need for containers to be stowed within safe reach of the personnel using the lashing position so that the horizontal operating distance from the securing point to the container does not exceed 1,100 mm and not less than 220 mm for lashing bridges and 130 mm for other positions (see table in supplement, dimensions C1, C2, C3)
- 6.2.2.2 The width of the lashing positions should preferably be 1,000 mm, but not less than 750 mm (see table in supplement, dimensions A, GL, GT, I, K).
- 6.2.2.3.1 750 mm between top rails of fencing (see table in supplement, dimension F); and
- 6.2.2.3.2 a clear minimum of 600 mm between storage racks, lashing cleats and any other obstruction (see table in supplement, dimension F1).
- 6.4.1 & 4: adding a footnote reading: For the upper tier of a lashing bridge, lights at the port and starboard extremities are generally adequate.
- Further, the UI section "Container securing dimensions" is considered by the section "Supplement".

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Discussed by correspondence in the Safety Panel.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7. Dates:

Panel Approval	: 23 October 2023	Ref: PS23036lISb
GPG Approval	: 23 November 2023	Ref: 22183fIGb

- **New (Dec 2013)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

Omission of a clear prescriptive requirement within an IMO instrument.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

UI SC266 "Revised guidelines for cargo securing manual and code of safe practice for cargo stowage and securing– scope of application"

6 Dates:

Original Proposal	: 6 March 2013	Made by: a Statutory Panel Member
Panel Approval	: 4 December 2013	by Statutory Panel
GPG Approval	: 21 December 2013	Ref: 13254_IGb

Part B. Technical Background

List of Technical Background (TB) documents for UI SC265:

Annex 1. **TB for Original Resolution (New December 2013)**

See separate TB document in Annex 1.

Annex 1- Technical Background (TB) document for UI SC265 (New Dec 2013)

1. Scope and objectives

The UI is intended to define a common understanding for dimensions and arrangements specified in:

- MSC.1/Circ.1352 – Annex - Amendments to the Code of Safe Practice for Cargo Stowage and Securing (CSS Code) : Annex 14 – Guidance on Providing Safe Working Conditions for Securing of Containers on Deck

2. Engineering background for technical basis and rationale

The proposed interpretations of dimensions are based on the standards of other applicable organisations.

3. Source/derivation of the proposed IACS Resolution

MSC.1/Circ.1352
The applicable paragraphs in Circular 1352 are as follows:

6 Design
6.2 Provisions for safe access
6.2.1 General provisions
6.2.1.1. *The minimum clearance for transit areas should be at least 2 m high and 600 mm wide.*

6.2.2 Lashing position design (platforms, bridges and other lashing positions)
6.2.2.1. *Lashing positions should be designed to eliminate the use of three high lashing bars and be positioned in close proximity to lashing equipment stowage areas. Lashing positions should be designed to provide a clear work area which is unencumbered by deck piping and other obstructions and take into consideration:*

.1. *the need for containers to be stowed within safe reach of the personnel using the lashing position so that the horizontal operating distance from the securing point to the container does not exceed 1,100 mm and not less than 220 mm for lashing bridges and 130 mm for other positions*;

6.2.2.2. *The width of the lashing positions should preferably be 1,000 mm, but not less than 750 mm.*
6.2.2.3. *The width of permanent lashing bridges should be:*

.1. *750 mm between top rails of fencing; and*
.2. *a clear minimum of 600 mm between storage racks, lashing cleats and any other obstruction.*

6.4 Lighting design
A lighting plan should be developed to provide for:

.1. *the proper illumination of access ways, not less than 10 lux (1 foot candle) see footnote , taking into account the shadows created by containers that may be stowed in the area to be lit, for example different length containers in or over the work area;*

.4. *the illumination intensity should take into consideration the distance to the uppermost reaches where cargo securing equipment is utilized.*

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Appendix 7 – Cargo spaces

6 Accesses, openings, ladders, coamings and passageways

6.11 Passageways

Where a means of access to a cargo space includes a passageway, such passageway must have a vertical clearance of 2 metres and a width of 750 mm except that, in entrance doorways and openings through structural members such as bulkheads or web-frames, width may be reduced to 550 mm and the vertical clearance may be reduced by the height of any sill. Such sill must not be more than 450 mm in height.

Appendix 16 - Unitised cargo

1 Access to containers or shipborne barges

1.2 *Where securing devices, such as lashing bars, lashing wires and rigging screws are to be manually attached to, or removed from, stacks of containers stowed on a ship, a minimum distance of 550 mm in breadth between adjacent ends of containers must be provided at all times.*

Note: It is recommended that a working space be provided that is clear of all obstructions over a width of at least 550mm.

1.3 *Where the stow of containers extends to the side of the ship, and the Cargo Securing Manual requires that the containers at the side of the ship be secured by lashing devices such as lashing bars, lashing wires and rigging screws, a platform with dimensions, clear of all lashing points and attachments, not less than 550 mm by 550 mm, must be provided extending to the side of the ship at a height convenient for the persons required to secure or release the lashing devices.*

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

Further to the interpretations proposed in the UI, the following concerns are identified, for future consideration, regarding MSC Circular 1352.

6 Design
6.2 Provisions for safe access
6.2.2 Lashing position design (platforms, bridges and other lashing positions)

6.2.2.5. Toe boards (or kick plates) should be provided around the sides of elevated lashing bridges and platforms to prevent securing equipment from falling and injuring people. Toe boards should preferably be 150 mm high, however, where this is not possible they should be at least 100 mm high.

Concern – Deep, solid toe boards may trap water, rendering the location hazardous. Many vessels have a “bent bar” type which appears, from service experience, to satisfactorily prevent objects, and personnel, from slipping from the edge of the platform, and does not trap water.

6.2.3 Fencing design

6.2.3.2. The top rail of fencing should be 1 m high from the base, with two intermediate rails. The opening below the lowest course of the guard rails should not exceed 230 mm. The other courses should be not more than 380 mm apart.

Concern – In some locations it is necessary to reach through the fencing to secure and tighten lashings. With two intermediate rails, there is the temptation to climb over the fencing to achieve this, which places the lasher in a hazardous situation. It is considered that a single intermediate rail, located such that no vertical gap exceeds 500mm, provides a more suitable solution in many cases.

6.3 Lashing systems
6.3.4 Turnbuckle design

6.3.4.4. To prevent hand injury during tightening or loosening motions, there should be a minimum distance of 70 mm between turnbuckles.

Concern – In practice, lashing rods and turnbuckles, due to their design, do not lie in a perfectly straight line and frequently the deviation from straight causes them to touch, or bear against each other. Whilst safe clearance between the turnbuckles, for fingers, is desirable, in practice it is difficult to survey this dimension. It would be preferable for this paragraph to specify that “*To prevent hand injury during tightening or loosening motions, lashing plates should be positioned so that turnbuckles do not press against each other, preferably with a design minimum distance of 70 mm between turnbuckles*”.

6. Attachments if any

None

UI SC266 "Revised guidelines for cargo securing manual and code of safe practice for cargo stowage and securing– scope of application"

Summary

Unified Interpretation SC 266 has been deleted since the text of interpretation is duly considered in the revised IMO circulars MSC.1/Circ.1352 or MSC.1/Circ.1353 (which are non-mandatory in nature, but relevant and applies to a mandatory instrument - CSS Code).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Del (Feb 2024)	14 February 2024	-
New (Dec 2013)	21 December 2013	1 January 2015

- **Del (Feb 2024)**

1 Origin of Change:

☐ Based on IACS Requirement (Periodic review of IACS Resolutions)

2 Main Reason for Change:

MSC.1/Circ.1352/Rev.1 and MSC.1/Circ.1353/Rev.2 completely consider the interpretations.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Discussed by correspondence in the Safety Panel and GPG.

5 Other Resolutions Changes:

N/A

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Panel Approval : 05 February 2024 (Ref: PS23036mISh)
GPG Approval : 14 February 2024 (Ref: 22183kIGe)

- **New (Dec 2013)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

Omission of a clear prescriptive requirement within an IMO instrument.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

UI SC265 "Code of safe practice for cargo stowage and securing – Annex 14"

6 Dates:

Original Proposal : 6 March 2013 Made by: Statutory Panel Member
Panel Approval : 4 December 2013 by Statutory Panel
GPG Approval : 21 December 2013 (Ref: 13254_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC 266:

Annex 1. **TB for New (Dec 2013)**

See separate TB document in Annex 1.

Annex 1- Technical Background (TB) document of UI SC266 (New Dec 2013)

1. Scope and objectives

The UI is intended to define a common understanding for scope of application of the following documents:

- MSC.1/Circ.1352 – Annex - Amendments to the Code of Safe Practice for Cargo Stowage and Securing (CSS Code) : Annex 14 – Guidance on Providing Safe Working Conditions for Securing of Containers on Deck

- MSC.1/Circ.1353 – Revised Guidelines for the Preparation of the Cargo Securing Manual

2. Engineering background for technical basis and rationale

MSC Circulars 1352 and 1353 state that they are applicable to containerships. However, it is unclear whether they are intended to apply only to fully cellular vessels which are designed exclusively for the carriage of containers, or whether they are also applicable to other ship types which, in part, are designed for the carriage of containers in similar manner to the dedicated vessels.

It is considered that the content of the circulars is equally applicable and beneficial to all vessels which are designed for the carriage of containers on deck.

3. Source/derivation of the proposed IACS Resolution

The applicable paragraphs in the two Circulars are as follows:

> MSC.1/Circ.1352
>
> *2. Member Governments are invited to bring the annexed Amendments to the CSS Code to the attention of shipowners, ship operators, shipmasters and crews and all other parties concerned and, in particular, encourage shipowners and terminal operators to:*
>
> *.1. apply the annexed amendments in its entirety for containerships, the keels of which were laid or which are at a similar stage of construction on or after 1 January 2015;*
>
> *.2. apply sections 4.4 (Training and familiarization), 7.1 (Introduction), 7.3 (Maintenance) and section 8 (Specialized container safety design) to existing containerships, the keels of which were laid or which are at a similar stage of construction before 1 January 2015; and*
>
> *.3. apply the principles of this guidance contained in sections 6 (Design) and 7.2 (Operational procedures) to existing containerships as far as practical by the flag State Administration with the understanding that existing ships would not be required to be enlarged or undergo other major structural modifications as determined.*

4. Member Governments are invited to bring these Guidelines to the attention of all parties concerned, with the aim of having Cargo Securing Manuals carried on board ships prepared appropriately and in a consistent manner, and to:

.1. apply the revised guidelines in its entirety for containerships, the keels of which were laid or which are at a similar stage of construction on or after 1 January 2015; and

.2. apply chapters 1 to 4 of the revised guidelines to existing containerships, the keels of which were laid or which were at a similar stage of construction before 1 January 2015.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC267 "Implementation of the requirements relating to lifeboat release and retrieval systems (LSA Code Paragraph 4.4.7.6 as amended by resolution MSC.320(89))"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.2 (Sept 2016)	28 September 2016	1 January 2017
Rev.1 (Jan 2016)	6 January 2016	1 July 2016
New (Jan 2015)	1 January 2015	1 January 2016

- **Rev.2 (Sept 2016)**

.1 Origin for Change:

☑ IACS Observer recommendation (in report on MSC 96)

.2 Main Reason for Change:

To align the text of the UI with MSC.1/Circ.1529.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Observer to MSC96 recommended (recommendation 6.3) that members are invited to consider if UI SC267 should be aligned, in terms of the PREN, with MSC.1/Circ.1529 on Unified interpretations of paragraph 4.4.7.6 of the LSA Code. Members unanimously agreed with aligning IACS UI SC267 with MSC.1/Circ.1529.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: June 2016 made by IACS Observer to MSC96
Panel Approval: 07 September 2016 (Ref: SP13007d)
GPG Approval: 28 September 2016 (Ref: 13261_IGh)

Rev.1 (Jan 2016)

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify scope of application of the LSA Code and IACS UI SC267 to the inner cables of the control cable in a lifeboat.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised by a member as to whether the inner cables of the control cable in a lifeboat are subject to the LSA Code and IACS UI SC267.

The Safety Panel discussed the issue and concluded that inner cables are inside the lifeboat and usually covered with a sheath (i.e. they are not in a corrosive environment) and thus IACS UI SC267 and the LSA Code would not prohibit the “inner cables” being made of 304 type stainless steel and accordingly the wording of the IACS UI SC267 could be amended to specifically exclude such inner control cables from the requirements of the UI.

Consequently, the Safety Panel agreed to the revised UI SC267(Rev.1) to add the following interpretation after the first paragraph.

For operating cables covered with sheath and installed inside the lifeboat, inner cables made of austenitic stainless steels 304 are acceptable without the corrosion test above.

Further, the following implementation scheme was agreed by the Panel.
The “approvals issued” specified in Note 1 and 2 of IACS UI SC267 means:

- New certificates issued
- Renewals issued
- Modifications to the certificate that refer to items covered by the UI

The UI will not be applied retrospectively.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: September 2015 made by Safety Panel
Panel Approval: Dec 2015 (Ref: SP13007d)
GPG Approval: 6 January 2016 (Ref: 13261_IGf)

- **New (Jan 2015)**

.1 Origin of Change:

☑ Suggestion by IACS members

.2 Main Reason for Change:

As a result of observer comments at MSC 90, relating to lifeboat release and retrieval systems, IACS panel members were asked to consider developing new Unified Interpretations of the following LSA Code Paragraphs, as amended by resolution MSC.320 (89). The relevant paragraphs of the LSA Code are re-produced for ease of reference in Part B, Annex 1, Section 2 of this document.

Paragraph 4.4.7.6.9

- Provision of a Unified Interpretation relating to the components in a lifeboat which are to be of material that is corrosion resistant in the marine environment and agreement that "safety interlocks" (mechanical protection of on-load release) should be clarified.

Paragraphs 4.4.7.6.7.2 and 4.4.7.6.6

- Provision of a Unified Interpretation relating to release mechanism/ interlock devices (hydrostatic or other means).

Paragraph 4.4.7.6.14

- Provision of a UI relating to the mass and design factor of safety that is to be applied to hanging off and fall preventer arrangements of the release gear mechanism.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Statutory Panel, and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: June 2012 Made by: Statutory Panel
Panel Approval: 17 December 2014 (By: Safety Panel)
GPG Approval: 1 January 2015 (Ref: 13261_IGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC267:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

◄▼►

Note: *There are no separate Technical Background (TB) documents for UI SC267 Rev.1 (Jan 2016) and Rev.2 (Sept 2016).*

Technical Background for UI SC 267 (New, Jan 2015)

1. Scope and objectives

This new UI is intended to define consistent interpretations of the following sub-paragraphs of 4.4.7.6 from the LSA Code, as amended by resolution MSC.320 (89):

Paragraph 4.4.7.6.9 of the LSA Code, as amended by resolution MSC.320 (89)

Paragraph 4.4.7.6.7.2 of the LSA Code, as amended by resolution MSC.320 (89)

Paragraph 4.4.7.6.6 of the LSA Code, as amended by resolution MSC.320 (89)

Paragraph 4.4.7.6.14 of the LSA Code, as amended by resolution MSC.320 (89)

2. Engineering background for technical basis and rationale

As an outcome of discussions, and the agreed IACS positions at DE 57, the IACS statutory panel were asked to develop new Unified Interpretations of the sub-paragraphs noted in Section 1, to clarify further the requirements for lifeboat release and retrieval systems.

The proposals (based on MSC 90/9/3) and understandings that follow were debated by IACS members, and after some discussion a qualifying majority of the Panel agreed to the text of the new UI.

Paragraph 4.4.7.6.9 of the LSA Code, as amended by resolution MSC.320 (89) requires that:

".9 all components of the hook unit, release handle unit, control cables or mechanical operating links and the fixed structural connections in a lifeboat shall be of material corrosion resistant in the marine environment without the need for coatings or galvanizing ..."

IACS noted in MSC 90/9/3 concern that the amended resolution MSC.320 (89) makes no reference to the appropriate corrosion tests to be applied to components identified in paragraph 4.4.7.6.9 of the LSA Code, as amended by resolution MSC.320 (89).

Discussions were had over the grade of stainless steels to be used, an appropriate corrosion resistance test standard and the pitting resistance equivalent number (PREN) of the metals which should be used to determine the grades of metal that would be subject to a corrosion test.

After consideration and debate amongst IACS members it was agreed by a qualifying majority to apply the ISO standard 9227:2012, which is referenced in resolution MSC.81 (70). This was deemed to be an appropriate corrosion test method.

It was also agreed that grades of stainless steel that had a PREN number 25 or more did not need to be subjected to a corrosion resistance test, but those that were below PREN 25 would be required to demonstrate compliance against the standard.

Within MSC 90/9/3 IACS also noted that the safety interlock, which is not specifically noted in the list of components for the release gear (section 4.2.3 of MSC.1.Circular 1205), shall also be of material corrosion resistant in the marine environment.

IACS members initially used the following text in the 1st sentence of the new UI:

> *"The "safety interlock", is a component of the hook unit, and shall also be of material corrosion resistant in the marine environment."*

However, after further consideration it was decided to re-word the text as follows:

> *"All Interlocks" ("mechanical protection" of on load release), which include hydrostatic components of the operating mechanism, shall also be of material corrosion resistant in the marine environment."*

IACS members agreed that the revised text would keep consistency with the wording of "interlock" in MSC.1.Circular 1205, and that it would also cover all interlock devices, which are not specifically noted in Paragraph 4.4.7.6.9 of the LSA Code.

Paragraph 4.4.7.6.7.2 of the LSA Code, as amended by resolution MSC.320 (89) requires that:

> *"... This release mechanism shall be provided with a hydrostatic interlock unless other means are provided to ensure that the boat is waterborne before the release mechanism can be activated. In case of failure or when the boat is not waterborne, there shall be a means to override the hydrostatic interlock or similar device to allow emergency release ..."*
>
> Paragraph 4.4.7.6.6 of the LSA Code, as amended by resolution MSC.320 (89) requires that:
>
> *".6 if a hydrostatic interlock is provided, it shall automatically reset upon lifting the boat from the water."*

In MSC 90/9/3, IACS raised the point that it considers that the reset function as required by paragraph 4.4.7.6.6 is also to apply to the "other means" or "similar device" referred to in paragraph 4.4.7.6.7.2.

After consideration by IACS members it was agreed by a qualifying majority to use the text proposed in MSC 90/9/3, as noted below, for the interpretation of the requirements referred to in paragraphs 4.4.7.6.7.2 and 4.4.7.6.6 of the LSA Code:

> *"The reset function as required by paragraph 4.4.7.6.6 is also to apply to the "other means" or "similar device" referred to in paragraph 4.4.7.6.7.2."*
>
> *"Where a safety pin is fitted to facilitate compliance with SOLAS regulation III/1.5, then in line with paragraph 4 of the annex to MSC.1/Circ.1327 IACS understands that the safety pin arrangement must be acceptable to the hook manufacturer (as defined in paragraph 9.9 of the annex to MSC.1/Circ.1392)."*

Paragraph 4.4.7.6.14 of the LSA Code, as amended by resolution MSC.320 (89) requires that:

".14 the load-bearing components of the release mechanism and the fixed structural connections in the lifeboat shall be designed with a calculated factor of safety of 6 based on the ultimate strength of the materials used, and the mass of the lifeboat when loaded with its full complement of persons, fuel and equipment, assuming the mass of the lifeboat is equally distributed between the falls, except that the factor of safety for the hanging-off arrangement may be based upon the mass of the lifeboat when loaded with its full complement of fuel and equipment plus 1,000 kg; ...

IACS noted in MSC 90/9/3 that for many hook designs the Safe Working Load requirement for a Fall Preventer Device (FPD) is the Total Davit Load, i.e. boat + equipment + complement of persons; whereas the maintenance lug on the release hook is designed for the empty boat weight plus 1,000 kg.

Although it was noted that MSC.1/Circ.1327 includes a provision for strops and slings to have a factor of safety of six, Resolution MSC.81(70) does not provide any requirements regarding the hanging off/FPD arrangement of the release gear mechanism (e.g. testing procedures to prove the safety factor of the maintenance lug on the release hook), nor does it include any prescriptive text to verify the LSA Factor of Safety of six for the fixed structural connections of the release mechanism in the lifeboat and davit.

Based on the above IACS agreed that that all elements of an FPD and connections to the lifeboat release and retrieval system (RRS) and davit are required to have a Factor of Safety of at least six.

Following a qualifying majority amongst IACs members the following text is proposed for the new UI:

"The hanging off arrangement (including the connections to the lifeboat RRS and davit) shall be designed with a calculated factor of safety of 6 based on the ultimate strength of the materials used, and mass of the lifeboat when loaded with its full complement of fuel and equipment plus 1,000 kg equally distributed between the falls."

3. Source / derivation of the proposed IACS Resolution

IMO and ILO Conventions and Codes [Performance Standards, Technical Standards, Resolutions and Circulars]

4. Summary of Changes intended for the revised Resolution

None

5. Points of discussions or possible discussions

Refer to Section 2 above.

6. Attachments if any

None

UI SC 268 “Arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Mar 2014)	21 March 2014	1 July 2015

- **New (Mar 2014)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide unified interpretation of which “any other tanks and spaces” referred to in SOLAS Chapter II-2, Regulation 4.5.7.3.1, shall be provided with fixed gas detection.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The Statutory Panel developed Recommendation no.123 related to IMO instruments - MSC.1/Circ.1370 “Guidelines for the design, construction and testing of fixed hydrocarbon gas detection systems” and Resolution MSC.292 (87) “Amendments to the FSS Code Chapter 16 Fixed Hydrocarbon Gas Detection Systems”. The recommendation included an interpretation of which tanks and spaces were required to be provided with a fixed gas detection system as per SOLAS Chapter II-2, Regulation 4.5.7.3.1 as follows:

Taking into account that it is assumed that the intention of the requirement is to cover ballast tanks and similar spaces, as well as void spaces and dry compartments; and that gas detection in fuel tanks is considered to be impracticable due to the nature of e.g. heated fuel oil vapour and potential for clogging of small gas sampling lines:

3.1.1 it is not recommended to apply these requirements to fuel tanks located adjacent to cargo tanks;

3.1.2 it is recommended to apply these requirements to ballast pump rooms, bow thruster rooms etc. located under the bulkhead deck adjacent to cargo or slop tanks; and*

3.1.3 it is recommended to apply these requirements to freshwater tanks located under the bulkhead deck adjacent to cargo or slop tanks.*

**) excluding slop tanks used solely for the retention of oily water.*

Due to disagreement between the IACS members related to the interpretation of the term “adjacent”, document FP 56/9/6 was submitted to FP for clarification of whether a space or tank with a corner to corner situation with a cargo tank was considered to be hazardous and thus required to have fixed gas detection. FP56 concluded that it is, referring to MSC/Circ.1120 (interpretation of Reg.4.5.1). At FP56, the IACS observer advised the Sub-Committee of their intention to proceed with an interpretation on fixed hydrocarbon gas detection system on the basis of the advice provided. Accordingly this IACS UI is to be submitted.

.5 Other Resolutions Changes

None.

.6 Dates:

Original Proposal: 13 May 2013 Made by: An IACS Member
Panel Approval: 20 December 2013 by Safety Panel
GPG Approval: 21 March 2014 (Ref: 14034_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC 268:

Annex 1. **TB for New (Mar 2014)**

See separate TB document in Annex 1.

◄▼►

Technical Background for UI SC 268 (New, Mar 2014)

1 Scope and objectives

This UI provides interpretations of SOLAS Ch.II-2 Reg. 4.5.7.3.1 with respect to which spaces and tanks the regulation shall apply to.

2 Engineering background for technical basis and rationale

In the discussions concerning SOLAS Ch.II-2 Reg. 4.5.7.3.1, there have been deviating interpretations in terms of which tanks and spaces shall be provided with fixed gas detection as per the regulations.

It is assumed that the intention of the requirement is to cover any tank or space into which cargo and/or cargo vapour can leak through structural failures.

The vast majority of oil tankers use their slop tanks as cargo tanks. The slop tanks would contain washing water only in those cases where tank washing with water has been carried out. For oil tankers carrying crude this would normally only be the case in connection with dry-docking. For oil product carriers it could be on every ballast voyage. However, one member indicated that some tankers had slop tanks dedicated for the storage of oily water only. As it was agreed that a leak of oily water from a slop tank into an adjacent space or tank, would result in a negligible hazard, it was agreed to include this scenario in the UI, i.e. that the term “cargo tank” in above regulations includes spaces and tanks adjacent to slop tanks, except those arranged for the storage of oily water only.

In the course of the discussions, the IACS members could not agree on a common interpretation of the term “adjacent to a cargo tank”. Some IACS members considered that any tank or space forming a cruciform contact with such cargo tanks, were considered to be adjacent to cargo tanks in accordance with MSC/Circ.1120. Others considered that cruciform contact did not fall within the definition based on MSC.1/Circ.1239. Accordingly, IACS submitted FP 56/9/6 to FP56 for clarification. FP56 concluded that MSC/Circ.1120 applies and that any tank or space forming a cruciform contact with cargo tanks shall be deemed to be located adjacent to cargo tanks and shall thus be provided with fixed gas detection as per SOLAS Ch.II-2 Reg.4.5.7.3.1.

Lastly, there was some disagreement between members as to whether fuel oil tanks located adjacent to cargo tanks were required to be provided with gas detection. Fuel tanks are not always full and would as per requirements require both top and bottom sampling points. Due to the nature of fuel oil, it is obvious that small diameter sampling lines (both top and bottom) would be highly exposed to clogging and malfunction. At the same time, heating of fuel may release fuel vapour that could activate alarms under normal operation and not caused by cargo leakages. It was therefore agreed to interpret that the requirement need not be applied to fuel tanks located adjacent to cargo tanks. For the sake of good order it should be noted that fixed gas detection system has been installed in double hull spaces on most oil tankers for the past 10 years based on Oil Major requirements. As far as we can see, the practice has not been to require such gas detection in fuel oil tanks. Accordingly, by exempting fuel tanks from the requirements, the requirements are in line with industry practice and experience.

3 Source / derivation of the proposed IACS Resolution

SOLAS Chapter II-2, Regulation 4.5.7.3.1.
IACS Recommendation no.123
MSC.1/Circ.1370
Resolution MSC.292 (87)
IMO MSC/Circ.1120
IMO FP 56/23 paragraph 9.11 & 9.12

4. Summary of Changes intended for the revised Resolution.

SOLAS Chapter II-2, Regulation 4.5.7.3.1

In addition to the requirements in paragraphs 5.7.1 and 5.7.2, oil tankers of 20,000 tonnes deadweight and above, constructed on or after 1 January 2012, shall be provided with a fixed hydrocarbon gas detection system complying with the Fire Safety Systems Code for measuring hydrocarbon gas concentrations in all ballast tanks and void spaces of double-hull and double-bottom spaces adjacent to the cargo tanks, including the forepeak tank and any other tanks and spaces under the bulkhead deck adjacent to cargo tanks.

Interpretations:

The term "*cargo tanks*" in the phrase "*spaces adjacent to the cargo tanks*" includes slop tanks except those arranged for the storage of oily water only.

The term "*spaces*" in the phrase "*spaces under the bulkhead deck adjacent to cargo tanks*" includes dry compartments such as ballast pump-rooms and bow thruster rooms and any tanks such as freshwater tanks, but excludes fuel oil tanks.

The term "*adjacent*" in the phrase "*adjacent to the cargo tanks*" includes ballast tanks, void spaces, other tanks or compartments located below the bulkhead deck located adjacent to cargo tanks and includes any spaces or tanks located below the bulkhead deck which form a cruciform (corner to corner) contact with the cargo tanks.

5 Points of discussions or possible discussions

None

6 Attachments if any

None

UI SC 269 "Means of escape from the steering gear space in cargo ships"

Summary

IACS UI SC269 provides unified interpretations of SOLAS regulation II-2/13.4.2.2 and 13.4.3.2 relating to means of escape from the steering gear space in cargo ships. Revision 2 clarifies that the conditions for the provision of one means of escape should apply regardless of the ship's size.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev. 2 (Nov 2024)	08 November 2024	1 January 2026
Rev. 1 (Dec 2016)	02 December 2016	1 January 2018
New (Dec 2014)	17 December 2014	1 July 2016

- **Rev.2 (Nov 2024)**

1 Origin of Change:

☑ Other (Follow up SSE 6/12/9 and 8/15/1)

2 Main Reason for Change:

IACS noted that the first sentence of SOLAS regulation II-2/13.4.2.2 contains the clear application of the dispensation to a ship of less than 1,000 gross tonnage.

At the same time, the dispensation mentioned in the second sentence of the same SOLAS regulation II-2/13.4.2.2 appears to apply to the same category of a ship (i.e. to a ship of less than 1,000 gross tonnage), on the basis that the sentence begins with the words "In addition" (i.e. in addition to the first sentence). IACS opines that it would make no sense to dispense with the requirement in SOLAS regulation II-2/13.4.2.1.1 (which requires the fire enclosure for the means of escape for all cargo ships regardless of their size) without any qualification.

However, when it comes to SOLAS regulation II-2/13.4.2.2, IACS notes that it would be difficult to argue why the dispensation in the last sentence of that regulation should be limited to ships less than 1,000 gross tonnage.

IACS is of the understanding that regulation II-2/13.4.2.2, under the heading "Dispensation from two means of escape", discusses different situations where two means of escape might not be required. Therefore, the last sentence of regulation II-2/13.4.2.2 should be read independently from the previous sentences. This understanding was confirmed by the FP Correspondence Group to SSE 10, as per paragraph 4 – 6 of SSE 10/13.

Based on the feedback from SSE on its earlier proposals, the text in respect to a "direct access to the open deck" was removed from this revised version and the interpretation regarding the last sentence of SOLAS regulation II-2/13.4.2.2 was added.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

The FP correspondence group report to SSE 10 (SSE 10/13) considered document SSE 8/15/1 by IACS. The CG did not indicate a particular objection to the technical content of the proposed draft UI. Nevertheless, the Correspondence Group concluded that a new output might be needed. SSE 10 agreed that a UI was not needed and, therefore, invited IACS to note the comments made and to take action, as appropriate.

See also PS24022eIAa.

5 Other Resolutions Changes:

None.

6 Dates:

Original Proposal:	28 June 2016	Made by: Safety Panel Member
Panel Approval:	18 October 2024	(Ref: PS24022e)
GPG Approval:	08 November 2024	(Ref: 24139cIGb)

- **Rev.1 (Dec 2016)**

1 Origin of Change:

☑ Other (Based on the concern raised by some Administrations during the discussion on original UI at SSE 3)

2 Main Reason for Change:

To reconsider this UI based on the insufficient support to original UI gained at the third meeting of IMO Sub-Committee on Ships Systems and Equipment and particular concern expressed later by one Administration by correspondence in respect to the fire integrity of escape route to be equivalent to the space(s) through which it travels.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:
After original UI was not accepted by SSE 3 and in accordance with PA 9.1 of SSE 3 – (14 to 18 March 2016) IACS Observer's Report, approved by GPG by 15115lIGi dated 3 June 2016, IACS Accredited Representative to IMO contacted one Administration to ascertain its concerns. Based on that Administration reply three Members provided the draft revisions to paragraph 3 of original UI. The revised draft UI was unanimously agreed at the 6th Safety Panel Meeting hold in Mumbai, 23 to 25 August 2016.

5 Other Resolutions Changes:

None.

6 Dates:

Original Proposal: 28 June 2016 Made by: Safety Panel Member
Panel Approval: 27 September 2016 (Ref: PS16019_ISg)
GPG Approval: 02 December 2016 (Ref: 13232fIGf)

- **New (Dec 2014)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To clarify the arrangement of means of escape from the steering gear space in cargo ships, i.e. whether the second means shall be provided.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

A member of the Machinery Panel raised the issue of steering gear space within cargo ships provided with a single means of escape on the basis the aforementioned space is considered as machinery space other than one of category A which is entered occasionally with no particular attention to whether the emergency steering position is located in that space or not. After discussion in Machinery Panel, MP members unanimously supported the proposal of handling this task under the Safety Panel in light of the nature of task and accordingly decided to forward this task to Safety Panel for your consideration. After several rounds of intra-Panel correspondence within Safety Panel it was agreed to draft an IACS UI with associated HF and TB on the matter and subsequently propose an amendment to SOLAS requesting that the last sentence in SOLAS Ch. II-2 Reg.13.4.2.2 be reproduced in Reg. II-2/13.4.2.3.

5 Other Resolutions Changes:

None.

6 Dates:

Original Proposal: June 2014 Made by: Machinery Panel
Panel Approval: 28 November 2014 (By: Safety Panel)
GPG Approval: 17 December 2014 (Ref: 13232fIGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC269:

Annex 1. **TB for New (Dec 2014)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Dec 2016)**

See separate TB document in Annex 2.

◄▲►

Note: There is no separate Technical Background (TB) document for UI SC269 Rev.2 (Nov 2024).

Technical Background for UI SC 269 (New, Dec 2014)

1 Scope and objectives

To develop an interpretation for the requirements related to arrangement of means of escape from the steering gear space in cargo ships, i.e. whether a second means shall be provided (SOLAS Chapter II-2, Regulation 13.4.2.3).

2 Engineering background for technical basis and rationale

SOLAS Reg. II-2/13.4.2.1 requires two means of escape from machinery spaces of category A meeting requirements specified in 4.2.1.1 or 4.2.1.2.
Reg. 4.2.2 allows for dispensation from two means of escape from machinery spaces of category A. But, at the same time, Reg. 4.2.2 contains a requirement for a second means of escape from the steering gear space if the emergency steering position is located in that space unless direct access to the open deck is provided. The steering gear space is defined as category 7 (Other Machinery spaces), provided no additional machinery is located in the same space which could change this definition. It is understood that the last sentence in SOLAS Reg.II-2/13.4.2.2 does not allow single means of escape from steering gear spaces containing the emergency steering position, unless there is direct access to the open deck. Notwithstanding the above confusion is possible because ship designers and shipbuilders often consider the steering gear space as machinery space other that one of category A which is entered occasionally with no concern given to whether the emergency steering position is located in that space or not. Consequently they provide a single means of escape only in accordance with requirement 4.2.3.

3 Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-2/13.4.2.2
SOLAS Regulation II-2/13.4.2.3
SOLAS Regulation II-2/9.2.3.3.2
SOLAS Regulation II-2/3.30

4 Summary of Changes intended for the revised Resolution

Not Applicable.

5 Points of discussions or possible discussions

In order to aid in the harmonized implementation of this UI, steering gear space was identified as category 7 (Other Machinery spaces) in context of definitions in SOLAS Regulation II-2/9.2.3.3.2 and SOLAS Regulation II-2/3.30, provided no additional machinery is located in the same space which could change this categorization.

In addition the wording “direct access to the open deck” was clarified in the following terms: “Escape route that passes only through stairways and/or corridors that are protected equivalently to steering gear spaces from the viewpoint of the fire integrity is considered as “direct access to the open deck””.

6 Attachments, if any

None

Technical Background (TB) document for UI SC269 (Rev.1 Dec 2016)

1 Scope and objectives

To revise the UI to ensure that the fire integrity of escape route is at least equivalent to the space(s) through which it travels.

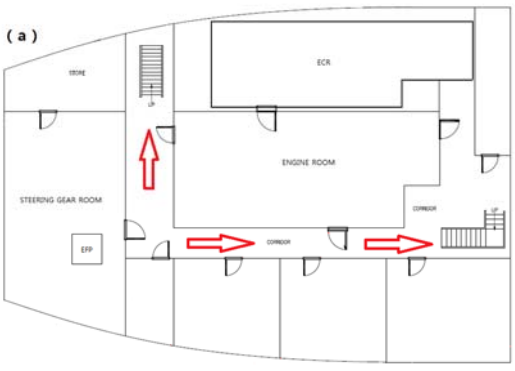
2 Engineering background for technical basis and rationale

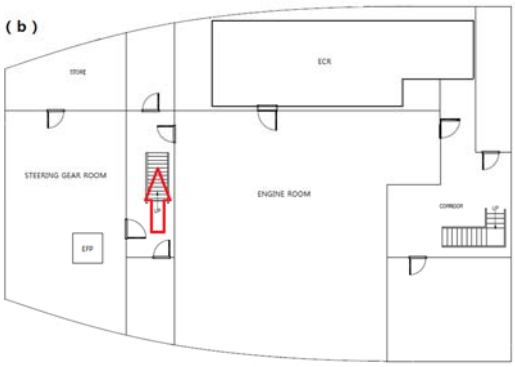
Reading the original UI some Administrations raised concern that escape route from the steering gear spaces that pass only through stairways and/or corridors and with the fire integrity protection as low as A-0 (the standard protection for steering gear room) could be accepted as equivalent to “direct access to the open deck” by IACS. Such understanding was considered as the amendment to SOLAS by those Administrations.

From Safety Panel point of view the confusion was caused by the original wording of paragraph 3 of UI “*Escape routes that pass only through stairways and/or corridors that have fire integrity protection equivalent to steering gear spaces are considered as providing a "direct access to the open deck*” and concern that the stairways/corridors would have less fire integrity by categorizing them as Other machinery spaces (7) in the same way as steering gear room as for, for instance, the bulkhead between “Machinery spaces of Category A” and “Stairways” used for escape from steering gear room. The stairway for SGR is normally categorized as “Stairways (4)” and thus the bulkhead between the stairways and E/R room is required to have fire integrity of A-60; however, if the stairway is categorized as “Other machinery spaces (7)”, the bulkhead is allowed to be A-0. The same can be applied, mutatis mutandis, for the fire integrity of the deck between E/R room and the corridor the stairway from SGR is leading to.

Having no intention to undermine the SOLAS requirements, noting that SOLAS regulation II-2/9.2.3.3.2 states, inter alia, *“...where it is possible to assign two or more classifications to a space, it shall be treated as a space within the relevant category having the most stringent boundary requirements. …”* and to ensure the clear understanding of the UI text, Safety Panel suggested the revision of paragraph 3 of the original UI, clarifying what boundary requirements are acceptable for the escape route from SGR equivalent to “direct access to the open deck”.

Moreover, the figures below represent possible arrangements of the “escape routes that pass only through stairways and/or corridors” in the paragraph 3 of UI, which should be considered as effective.





3 Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-2/13.4.2.2
SOLAS Regulation II-2/13.4.2.3
SOLAS Regulation II-2/9.2.3.3.2
SOLAS Regulation II-2/3.30

4 Summary of Changes intended for the revised Resolution

Paragraph 3 of the original UI is revised to read:
"*3. Direct access to the open deck*
Escape routes that pass only through stairways and/or corridors are considered as providing a "direct access to the open deck", provided that the escape routes from the steering gear spaces have fire integrity protection equivalent to:
-- steering gear spaces; or
-- stairways / corridors , whichever is more stringent. "

5 Points of discussions or possible discussions

None.

6 Attachments, if any

None.

UI SC270 “Fire pumps in ships designed to carry five or more tiers of containers on or above the weather deck (Res. MSC.365(93), SOLAS II-2/10.2.1.3, II-2/10.2.2.4.1.2, II-2/10.7.3.2.3, II-2/19.3.1 and IMO FSS Code Ch. 12.2.2.1.1)”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Dec 2015)	18 December 2015	1 January 2017
Corr.2 (Sept 2015)	9 September 2015	-
Corr.1 (Mar 2015)	17 March 2015	-
New (Jan 2015)	14 January 2015	1 January 2016

- **Rev.1 (Dec 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify the minimum capacity of main fire pumps and the diameter of the fire main.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by a Member.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 12 February 2015, made by: Safety Panel
Panel Approval: 30 November 2015 (Ref: SP14017h)
GPG Approval: 18 December 2015 (Ref: 14198eIGg)

- **Corr.2 (Sept 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To correct the text in the UI from SOLAS II-2/10.2.2.4.1.2 as per MSC.365(93).

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The error was pointed out by a member and Safety Panel prepared corrigenda.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 24 June 2015, made by: a member
GPG Approval: 9 September 2015 (Ref: 14198eIGe)

- **Corr.1 (Mar 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To correct the text in the UI from SOLAS II-2/10.2.2.4.1.2. The interpretation part is not changed.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The error was pointed out by the Safety Panel Chairman and GPG authorised Permsec to carry out the correction.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 17 March 2015, made by: Safety Panel Chairman
GPG Approval: 17 March 2015 (Ref: 14198eIGc)

- **New (Jan 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by a Member.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: October 2014, made by: a Member
Panel Approval: 30 December 2014, by: Safety Panel
GPG Approval: 14 January 2015 (Ref: 14198eIGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC270:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Dec 2015)**

See separate TB document in Annex 2.

◄▼►

Note: *There are no separate Technical Background (TB) documents for Corr.1 (Mar 2015) and Corr.2 (Sept 2015).*

Technical Background (TB) document for UI SC270 (New, Jan 2015)

1. Scope and objectives

The UI has the scope to clarify requirements to sizing of main and emergency fire pumps on board cargo ships designed to carry five or more tiers of containers on or above the weather deck.

2. Engineering background for technical basis and rationale

UI SC 270 contains interpretations to SOLAS II-2/10 2.2.4.1.2, II-2/10.7.3.2.3 as amended by IMO Res MSC.365(93) and IMO FSS Code Ch. 12.2.2.1.1.The interpretation and associated references consider the sizing of main and emergency fire pumps on board cargo ships designed to carry five or more tiers of containers on or above the weather deck.

Members agreed that the amendment to SOLAS II-2/10.2.2.4.1.2 could indicate that for a cargo ship designed to carry five or more containers on or above the weather deck, where the mobile water monitors are not connected to the main fire pumps and fire main, but connected to a separate pump and piping systems the main fire pumps must be sized based on four thirds of the quantity required under II-1/35-1, and for those ships there would no longer be an opening for the total capacity of the main fire pumps to not exceed 180 m3/h.

Further, members were of the opinion that it may not have been IMO's intention to increase the amount of water available at the fire hydrants for fire-fighting purposes on these vessels, but rather to allow the use of the main fire pumps and fire main to provide water to the mobile fire-fighting equipment and clarify that in such cases the main fire pumps and fire main may need to be increased beyond 180 m3/h to provide sufficient amount of water for simultaneous operation of the mobile water monitors and two jets of water from fire hoses at the required pressure values. (If carrying dangerous goods, the capacity of fire pumps and fire main diameter shall also comply with regulation 19.3.1.5, as far as applicable to on-deck cargo areas.)

Lastly members agreed that taking into account the above the size of the emergency fire pump, required by the FSS Code to be not less than 40% of the total capacity required by II-2/10.2.2.4.1.2, should not be required to be calculated based on main fire pump capacity greater than 180 m3/h for ships designed to carry five or more tiers of containers on or above the weather deck because the emergency fire pump is intended to be used to protect the space in which the main fire pumps are located and it is not expected that it would be used to supply water to the mobile fire monitors on deck.

3. Source / derivation of the proposed IACS Resolution

- SOLAS II-2/10.2.2.4.1.1
- SOLAS II-2/10.2.2.4.1.2
- SOLAS II-2/10.7.3.2.3
- IMO FSS Code Ch. 12.2.2.1.1

4. Summary of Changes intended for the revised Resolution

Not applicable.

5. Points of discussions or possible discussions

None.

6. Attachments, if any

None.

Technical Background (TB) document for UI SC270 (Rev.1, Dec 2015)

1. Scope and objectives

The revised UI has the scope to clarify requirements to the diameter of the fire main and the minimum total capacity of the of the main fire pumps in cases where;

.1 the mobile water monitors are supplied by the main fire pumps; and

.2 the mobile water monitors and the fixed arrangement of the water spray system are supplied by the main fire pumps.

on board cargo ships designed to carry five or more tiers of containers on or above the weather deck.

2. Engineering background for technical basis and rationale

1) Mobile water monitors supplied by the main fire pumps

The amended SOLAS regulation II-2/10.2.2.4.1.2 would imply that “those included in paragraph 7.3.2” seem to mean “cargo ships designed to carry five or more tiers of containers on or above the weather deck“, subsequently the total capacity of the required fire pumps in the ships would be required to be four thirds of the quantity required under regulation II-1/35-1. However, in large container ships, the total capacity so required may reach a huge amount of capacity, for example 520 m3/h while the actual necessary total capacity sufficient for simultaneously operated four water monitors and two jets of water by fire hoses is about 280 m3/h, this being determined by a hydraulic calculation technique.

Having paid due attention to paragraphs 16 and 18 of FP55/11, the intention of the amendments by resolution MSC.365(93) was only to disable “180 m3/h limit” on cargo ships designed to carry five or more tiers of containers on or above the weather deck and that providing the actual necessary total capacity sufficient for simultaneously operated four water monitors and two jets of water by fire hoses is in accordance with the purpose of the amendments by resolution MSC.365(93), on condition that the actual necessary total capacity is not less than that required on ordinary cargo ships not carrying five or more tiers of containers on or above the weather deck.

Consequently, it was agreed that the total capacity of required main fire pumps shall be sufficient for simultaneously supplying both the required number of fire hoses and mobile water monitors.

2) Both mobile water monitors and fixed arrangement of the water spray system supplied by the main fire pumps

The ships carrying dangerous goods are subject also to SOLAS regulation II-2/19 and thus the main fire pumps are required to supply 4 nozzles and water spray system by the regulations II-2/19.3.1.2 and II-2/19.3.1.3 respectively. The question was raised whether or not the total capacity of the main fire pumps should cover “4 nozzles of water” + “mobile water monitors” + “water spray system” at the same time. Having noted that the regulations are based on the single fire scenario and that SOLAS regulation II-2/10.7.3.2.3 states that “If carrying dangerous goods, the capacity of fire

pumps and fire main diameter shall also comply with regulation 19.3.1.5, as far as applicable to on-deck cargo areas.", the mobile water monitors for on-deck cargo area and the water spray system for underdeck cargo spaces do not need to be supplied by the main fire pump simultaneously. Accordingly, it was agreed that the total capacity of the main fire pumps should be capable of supplying "4 nozzles of water + mobile water monitors" or "4 nozzles of water + water spray system", whichever is greater.

3) Diameter of the fire main

Interpretations on the diameter of the fire main and water service pipes are also included into IACS UI SC270 in the same manner as total capacity of the of the main fire pump as mentioned in items 2) and 3) above.

3. Source / derivation of the proposed IACS Resolution

- SOLAS II-2/10.2.1.3
- SOLAS II-2/10.2.2.4.1.2
- SOLAS II-2/10.7.3.2.3
- SOLAS II-2/19.3.1

4. Summary of Changes intended for the revised Resolution

None

5. Points of discussions or possible discussions

None.

6. Attachments, if any

None.

UI SC 271 "Additional indicating unit in the cargo control room in accordance with amended FSS Code Chapter 9.2.5.1.6"

Summary

This UI clarifies the categorisation of a space in which a cargo control console is installed but that does not serve as a dedicated cargo control room.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corrigenda 1	08 June 2025	-
New	15 January 2015	1 January 2016

- **Corr.1 (June 2025)**

1 Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

The FSS Code was amended by resolution MSC.555(108) by the addition of new paragraphs 9.2.5.1.2 to 9.5.2.1.4 and the subsequent renumbering of the following paragraphs, i.e. paragraph 9.2.5.1.3 became 9.2.5.1.6.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

One member mentioned that the reference to FSS Code, Ch. 9.2.5.1.3 should be updated in accordance with recent amendments to the FSS Code (Res.MSC.555(108)).

After discussions, all members of the Safety Panel agreed with the changes that are handled as a corrigendum.

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	: 2 May 2025	(Made by: IACS member)
Panel Approval	: 23 May 2025	(Ref: PS25018lISc)
GPG Approval	: 8 June 2025	(Ref: 25082hIGb)

- **New (Jan 2015)**

1 Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

To provide unified interpretation of "Additional indicating unit of fire detection and fire alarm systems in the cargo control room in accordance with amended FSS Code Chapter 9.2.5.1.3" related to FSS Code ,Ch.9.2.5.1.3.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

One member raised an issue that whether an additional indicating unit is required, in accordance with the amended FSS Code, Ch. 9.2.5.1.3, in such spaces that do not serve as a cargo control room, for example, a ship's office or a machinery control room, but are installed with a cargo control console.

After several rounds of discussions, all members of the Safety Panel agreed with the understanding that a space in which a cargo control console is installed, but does not serve as a dedicated cargo control room (e.g. ship's office, machinery control room), should be regarded as a cargo control room for the purposes of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91), and therefore be provided with an additional indicating unit.

Based on the above understanding, an IACS common view was drafted and provided to SSE1 in the paper SSE 1/20/2, the Sub-Committee agreed with the understanding of IACS in relation to paragraph 2.5.1.3 of chapter 9 of the International Code for Fire Safety Systems (FSS Code), as amended.

Based on the SSE1 sub-committee's consideration, majority of the Safety Panel agreed to develop a UI draft for this issue based on views mentioned above and submission to SSE2 once again

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	: 3 December 2013	(Made by: IACS member)
Panel Approval	: 5 January 2015	(Ref: xxxxxx)
GPG Approval	: 15 January 2015	(Ref: 13244aIGd)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC271:

Annex 1. **TB for New (Jan 2015)**

See separate TB document in Annex 1.

Technical Background (TB) for UI SC 271 (New, Jan 2015)

1. Scope and objectives

This UI provides interpretations of FSS Code, Ch.9.2.5.1.3 with respect to additional indicating unit of fire detection and fire alarm systems in the cargo control room in accordance with amended FSS Code Chap 9.2.5.1.3.

2. Engineering background for technical basis and rationale

In the discussions concerning FSS Code, Ch. 9.2.5.1.3, Safety Panel members agreed that a space in which a cargo control console is installed, but does not serve as a dedicated cargo control room (e.g. ship's office, machinery control room), should be regarded as a cargo control room for the purposes of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91), and therefore be provided with an additional indicating unit.

Based on the above understanding, clarification was drafted and provided to SSE1 in SSE 1/20/2, the Sub-Committee 'agreed' the understanding of IACS in relation to paragraph 2.5.1.3 of chapter 9 of the International Code for Fire Safety Systems (FSS Code), as amended.

Based on the SSE1 sub-committee's consideration, majority of Safety Panel agreed to develop an UI draft for this issue base on views mentioned above and submission to SSE 2 once again.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

FSS Code chapter 9.2.5.1.3

4. Summary of Changes intended for the revised Resolution:

FSS Code chapter 9.2.5.1.3

2.5.1.3 In passenger ships, an indicating unit that is capable of individually identifying each detector that has been activated or manually operated call point that has operated shall be located on the navigation bridge. In cargo ships, an indicating unit shall be located on the navigation bridge if the control panel is located in the fire control station. In ships constructed on or after 1 July 2014, with a cargo control room, an additional indicating unit shall be located in the cargo control room. In cargo ships and on passenger cabin balconies, indicating units shall, as a minimum, denote the section in which a detector has activated or manually operated call point has operated.

Interpretation:

A space in which a cargo control console is installed, but does not serve as a dedicated cargo control room (e.g. ship's office, machinery control room), should be regarded as a cargo control room for the purposes of paragraph 2.5.1.3 of chapter 9 of the FSS Code, as amended by resolution MSC.339(91), and therefore be provided with an additional indicating unit.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC272 "Inert gas supply to double-hull spaces (SOLAS II-2/4.5.5.1)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (July 2016)	25 July 2016	1 January 2017
New (Dec 2015)	22 December 2015	1 January 2017

- **Rev.1 (July 2016)**

.1 Origin for Change:

☑ IACS Observer recommendation (in report on SSE 3)

.2 Main Reason for Change:

To align the text of the UI with the agreed text at SSE 3 contained in Annex 8 of SSE 3/16.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

IACS Observer to SSE 3 recommended (recommendation 9.14) that UI SC 272 should be aligned with the draft MSC Circular developed at SSE 3 (Refer to Annex 8 of SSE 3/16). The revised version of the UI SC 272 was unanimously agreed by the Safety Panel. GPG agreed to the revision with implementation date being retained as earlier i.e. 1 January 2017.

At MSC 97 the Committee approved MSC.1/Circ.1555 on Unified interpretations of SOLAS Chapter II-2, which includes IACS' UI proposal (SSE3/12/12, IACS UI SC272 on inert gas supply for double-hull spaces).

IACS Observer's Report to MSC 97 recommended (recommendation 7.7) that the text of IACS UI SC272 should be aligned with the text of this MSC circular.

Following discussion, the Safety Panel unanimously agreed that no amendments need to be made to the text of UI SC272.

*Underlined text added on 17 July 2017 (Ref: 15115bIGi)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: March 2016 made by: IACS Observer to SSE 3
Panel Approval: 03 July 2016 (Ref: PS15003c)
GPG Approval: 25 July 2016 (Ref:15115bIGg)

- **New (Dec 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide interpretation of a vague expression within an IMO instrument.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel.

After some discussion, it was agreed that there is a link between the double-hull space mentioned, but not defined, in SOLAS II-2/4.5.5.1.3(or SOLAS II-2/4.5.5.1.4 as amended by Res.MSC.365(93)) and the requirements in SOLAS II-2/4.5.7.3 for *"fixed hydrocarbon gas detection system in all ballast tanks and void spaces of double-hull and double-bottom spaces adjacent to the cargo tanks, including the forepeak tank and any other tanks and spaces under the bulkhead deck adjacent to cargo tanks"* except where such spaces are "*provided with constant operative inerting systems*".

The Panel agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: February 2015 made by a member
Panel Approval: 29 September 2015 (Ref: PS15003c)
GPG Approval: 22 December 2015 (Ref: 15115bIGe)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC272:

Annex 1. **TB for New (Dec 2015)**

See separate TB document in Annex 1.

◄▲►

Note: There is no separate Technical Background (TB) document for Rev.1 (July 2016)

Technical Background (TB) document for UI SC272 (New Dec 2015)

1. Scope and objectives

The UI has the scope to define “double-hull spaces” in SOLAS II-2/4.5.5.1.

2. Engineering background for technical basis and rationale

The term “double-hull spaces” is not defined within SOLAS. However, it was noted that:

- the mandatory ESP Code states “1.2.1 Double hull oil tanker is a ship which is constructed primarily for the carriage of oil in bulk, which have the cargo tanks protected by a double hull which extends for the entire length of the cargo area, consisting of double sides and double bottom spaces for the carriage of water ballast or void spaces” and 1.2.13 Cargo area is that part of the ship which contains cargo tanks, slop tanks and cargo/ballast pump-rooms, cofferdams, ballast tanks and void spaces adjacent to cargo tanks and also deck areas throughout the entire length and breadth of the part of the ship over the above mentioned spaces.

- SOLAS II-2/3.6 states: “Cargo area is that part of the ship that contains cargo holds, cargo tanks, slop tanks and cargo pump rooms including pump-rooms, cofferdams, ballast and void spaces adjacent to cargo tanks and also deck areas throughout the entire length and breadth of the part of the ship over the aforementioned spaces.

- SOLAS II-2/4.5.7.3.1 states “In addition to the requirements in paragraphs 5.7.1 and 5.7.2, oil tankers of 20,000 tonnes deadweight and above, constructed on or after 1 January 2012, shall be provided with a fixed hydrocarbon gas detection system complying with the Fire Safety Systems Code for measuring hydrocarbon gas concentrations in all ballast tanks and void spaces of double-hull and double-bottom spaces adjacent to the cargo tanks, including the forepeak tank and any other tanks and spaces under the bulkhead deck adjacent to cargo tanks.”

Considering the link between the double-hull space mention, but not defined, in SOLAS II-2/4.5.5.1.4 for IG supply and in SOLAS II-2/4.5.7.3 for fixed hydrocarbon gas detection systems, it was concluded that the spaces addressed in SOLAS II-2/4.5.7.3.1 and in SOLAS II-2/4.5.5.1.4 should be the same despite that SOLAS II-2/4.5.7.3.1 discerns double-hull spaces from the forepeak tank.

3. Source / derivation of the proposed IACS Resolution

SOLAS Reg. II-2/4.5.7.3 Arrangements for fixed hydrocarbon gas detection systems in double-hull and double-bottom spaces of oil tankers.

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

None.

6. Attachments if any

N/A.

UI SC273 "Inclusion of mediums of the fire-fighting systems in lightweight (SOLAS II-1/2.21, SOLAS II-2/3.28) and lightship condition (IS Code 2008 Paragraph 2.23)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2016)	10 May 2016	1 January 2017
New (Nov 2015)	10 November 2015	1 January 2017

- **Rev.1 (May 2016)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To align the text of the UI SC273 with the draft interpretations to SOLAS Convention Chapter II-1 as agreed by SDC 3 prepared for submission to MSC 96.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue originated by the decision taken by Sub-Committee SDC 3 where Rev.0 of UI SC273 has been agreed with slight changes, and the modified text has been included in the draft interpretations to SOLAS Chapter II-1 for submission to MSC 96.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: March 2016 made by the Safety Panel
Panel Approval: April 2016 (Ref: PS15003d)
GPG Approval: 10 May 2016 (Ref: 15145dIGg)

- **New (Nov 2015)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify if the weight of mediums of the fire-fighting systems are included in the lightweight.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by a member and after some discussion a qualifying majority of the Panel agreed to draft an IACS UI and associated HF & TB.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: February 2015 made by the Safety Panel
Panel Approval: 6 October 2015 (Ref: PS15003d)
GPG Approval: 10 November 2015 (Ref: 15145dIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC273:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (May 2016)**

See separate TB document in Annex 2.

◄▼►

Technical Background (TB) document for UI SC273 (New Nov 2015)

1. Scope and objectives

To develop an interpretation in order to establish if the weight of mediums of the fire-fighting systems are included in the lightweight.

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-1/2.21
SOLAS Regulation II-2/3.28
2008 IS Code para. 2.23

4. Summary of Changes intended for the Resolution

Not applicable

5. Points of discussions or possible discussions

The definitions of lightweight in SOLAS and Intact Stability Code are:

- SOLAS defines "lightweight" as "the displacement of a ship in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, and passengers and crew and their effects" (SOLAS regulations II-1/2.21 and II-2/3.28); and

- 2008 IS Code defines "lightship condition" as "a ship complete in all respects, but without consumables, stores, cargo, crew and effects, and without any liquids on board except that machinery and piping fluids, such as lubricants and hydraulics, are at operating levels" (2008 IS Code, para. 2.23).

Considering that CO_2 is not explicitly mentioned in the above definitions and a fixed quantity of CO_2 - depending on the types and category of the spaces - is to be available on board according to the requirements of the FSS Code (FSS Code, Ch. 5 para. 2.2.1), it is not clear weather CO_2 medium of the fire-fighting system is to be considered as:

1. a consumable and counted in the deadweight; or

2. a weight invariable during normal ship operation (to be constant and in compliance with the FSS Code requirements) and part of the lightweight.

Following on from the above members agreed to develop a UI also considering the possibility to extend the UI to all fire-extinguishing mediums stored on board. The inclusion of such mediums is in line with the provision to include machinery and piping fluids, such as lubricants and hydraulics, as well as chemical powder, at operating levels "in the lightship definition". Members also agreed that life-saving appliances

should be part of the lightweight, but it was decided not to include them in the UI because this UI is intended to clarify whether or not the weight of mediums of the fire-fighting systems is included in lightweight, other than life-saving appliances.

Moreover, there was a discussion on whether or not water for fixed water-based local application fire-fighting systems or automatic sprinkler systems should be included in the lightweight , and it was decided not to include water in the UI taking into account of the current practice of shipyards that fresh water for fire-fighting systems, such as a fixed water-based local application fire-fighting systems and a fixed high-expansion foam fire-fighting systems, has not been included in the lightweight for the reason that SOLAS Reg.II-1/2.21 and Reg.II-2/3.28 clearly state that fresh water to be excluded from lightweight.

Finally a new Unified Interpretation has been agreed.

6. Attachments if any

None

Technical Background (TB) document for UI SC273 (Rev.1 May 2016)

1. Scope and objectives

To align the text of the UI with the text agreed in SDC 3 unified interpretations to Chapter II-1 on the “Inclusion of the weight of mediums of the fire-fighting systems in lightweight”.

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-1/2.21
SOLAS Regulation II-2/3.28
2008 IS Code para. 2.23

4. Summary of Changes intended for the Resolution

None

5. Points of discussions or possible discussions

The definitions of lightweight in SOLAS and Intact Stability Code are:

- SOLAS defines "lightweight" as "the displacement of a ship in tonnes without cargo, fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, and passengers and crew and their effects" (SOLAS regulations II-1/2.21 and II-2/3.28); and

- 2008 IS Code defines "lightship condition" as "a ship complete in all respects, but without consumables, stores, cargo, crew and effects, and without any liquids on board except that machinery and piping fluids, such as lubricants and hydraulics, are at operating levels" (2008 IS Code, para. 2.23).

The UI SC273 proposed by IACS at SDC 3 did not take into account the fresh water stored on board to be used as fire-extinguishing medium.

Taking into account that the Sub-Committee agreed the text of the UI with the addition to the amount of “fresh water” stored on board as fire-extinguishing medium, and included the modified text in the unified interpretations to SOLAS Chapter II-1 for submission to MSC 96, IACS members decided, after a short round of discussions to align the text of the UI SC273 with the unified interpretations under submission to MSC 96 by SDC3.

Following the IMO’s decision to include fresh water used for the fixed fire-fighting systems in the ship's light weight, there was further discussion in the Panel concerning the source of fresh water that should be included: that in dedicated tanks, that in the piping system and/or that in shared use tanks. After discussion the Panel agreed that:

“1. The weight of water used as the medium for the fixed fire-fighting systems means the weight of water (including any surplus margin of water as may be so specified) for the operation of all fixed fire-fighting systems installed onboard that is carried in dedicated tanks (i.e. system + quantity of water in dedicated tanks for fire-fighting); and

2. The water for the fixed fire-fighting systems in shared use tank should not be included into lightweight due to the problems associated with free surface effects of that tank.”

*Underlined text added on 17 July 2017 (Ref: 15145dIGk).

Finally a new Unified interpretation has been agreed.

6. Attachments if any

None

UI SC274 “Hazardous area classification in respect of selection of electrical equipment, cables and wiring and positioning of openings and air intakes”

Summary

In UI SC274(Rev.1), changes have been made to specify references to industry standards and IMO instruments in a consistent manner and to clarify that this revision applies to new ships only.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Feb 2020)	15 February 2021	1 July 2022
New (Nov 2015)	1 December 2015	1 January 2017

- **Rev.1 (Feb 2021)**

1 Origin of Change:

☑ Other (Periodical review to reflect the latest IMO Resolutions and update to comply with the required format when industry standards are referred to)

2 Main Reason for Change:

There was a need to update this UR to reflect the latest IMO Resolutions related to SOLAS Chapter II-2 and to comply with the following format when industry standards are referred to:

[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

To take this opportunity, references to IMO instruments have been specified in the following format based upon confirmation of amendments up to the latest one:

In case where the number of amendments is large:

regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

In addition, requirements of the IGC Code referred to in Annex of this UI have been updated so as to cover new ships constructed on or after 1 January 2022 only and to avoid unintentional retroactive application.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

None

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	28 October 2019 (Ref: PM18939_IMd)
Panel Approval:	9 November 2020 (Ref: PM20906_IMf)
GPG Approval:	15 February 2021 (Ref: 20206aIGc)

- **New (Nov 2015)**

1 Origin for Change:

☑ Based on IMO Regulation *(Specify: SOLAS Regulation II-1/45.11, IBC Code Chapter 10.1.4 and IGC Code Chapter 10.1.4)*

2 Main Reason for Change:

The intended benefit of this task will be clarification of the IACS position concerning the zoning concept for hazardous area classification addressed by IEC 60092-502 (1999) as well as clarification of vague statements in the IEC standard.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

Suggestion from a Machinery Panel Member was discussed by correspondence within Machinery Panel. The development of this UI was undertaken through a series of iterations from the original proposal.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal: 10 June 2010 Made by a Machinery Panel Member
Panel Approval: 10 November 2015 (Ref: PM9919)
GPG Approval: 1 December 2015 (Ref: 15119_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (Feb 2020)**

See separate TB document in Annex 2.

◄▼►

Technical Background (TB) document for UI SC274 (New Dec 2015)

1. Scope and objectives

Development of the common IACS position for hazardous area classification issues related to IEC 60092-502 (1999). The objective of the task should be to develop a new UI for SOLAS Regulation II-1/45.11.

2. Engineering background for technical basis and rationale

The IEC standard is referenced by SOLAS Regulation II-1/45.11, IBC Code Chapter 10.1.4 and IGC Code Chapter 10.1.4. The IEC standard addresses the zoning concept for hazardous area classification and contains requirements for electrical installations. However, there are differences between SOLAS & related codes and IEC Standards and Machinery Panel concurred that the prescriptive requirements in SOLAS and Codes take the precedence.

3. Source / derivation of the proposed IACS Resolution

N/A.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

IEC TC18's work on revision of IEC 60092-502 temporarily ceased due to retirement of the Maintenance Team (MT) Convener in 2014. Machinery Panel decided to reconfirm the UI with 60092-502:1999 since the revision work was at a standstill and besides the Panel's work on the comparison table was based on the committee draft of IEC 60092-502. At the 24th IEC TC18 meeting in October 2014, a new convenor for MT3 in charge of IEC 60092-502 was appointed until the next plenary meeting and has resumed the work on revision of IEC 60092-502.

At the 21st Panel Meeting, it was agreed that the comparison table "Annex 1 - Summary of Discrepancies on the Hazardous Area Classification Issues among SOLAS/IBC/IGC and IEC 60092-502" to be reconfirmed with 60092-502:1999 should be submitted to the convenor of MT3 to make him aware of the discrepancies and consequently take action as appropriate.

6. Attachments if any

N/A.

Technical Background (TB) document for UI SC274 (Rev.1 Feb 2021)

1. Scope and objectives

UI SC274 (Original version) does not reflect the latest IMO Resolutions (in particular, Resolution MSC.392(95)) or the agreed format for referencing the IEC standards. Rev.1 has been developed to comply with the agreed format.

2. Engineering background for technical basis and rationale

A) Format for references to Industry standards

Format:
[Standard Designation], [version/revision, if applicable], [year of publication] (examples: API Spec 2F, 6th Edition, 1997; ISO 4624, 2002), where [version/revision, if applicable] and/or [year of publication] are decided by IACS and are not necessarily to be the current/latest version.

B) Format for references to IMO instruments

Format:
regulation/paragraph x.x.x of SOLAS Chapter X/MARPOL Annex X/the XXX Code, as amended by IMO resolutions up to MSC.xx(xx)/MEPC.xx(xx)

C) Application

Only new ships constructed on or after 1 January 2022 so as to avoid unintentional retroactive application

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

UI SC274 has been updated to specify the revision/version of the IEC standards as follows:

IEC Publications in UI SC274	Replaced by
60092-502	60092-502:1999
60092-201	60092-201:2019

In this revision, deletion of the IGC Code (1993) requirements and replacement of a requirement of SOLAS Chapter II-2 also have been made while columns SOLAS, IBC and IGC in the Table of Annex to UI SC274 were amended in order to unify the format for industry standards and references to IMO instruments. Furthermore, item 2 of SOLAS in Annex has been updated, taking into account the amendment to SOLAS II-2/Reg.11.6.2 by Res.MSC.392(95).

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC275 "Suitable number of spare air cylinders to be provided in connection with drills"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (Sept 2016)	14 September 2016	1 January 2017
New (Jan 2016)	6 January 2016	1 January 2017

- **Rev.1 (Sept 2016)**

.1 Origin for Change:

☑ Aligning with draft IMO Circular included in Annex 8 of the Report of SSE 3

.2 Main Reason for Change:

Follow up action no. 9.20 from the SSE 3 Observer's Report, which states the following.

"9.20 Safety Panel will review the IACS UI SC 275 (attached to SSE 3/12/18) based on MSC Circular having been approved at MSC 97, with a view to align the text of the IACS UI SC 275 on suitable number of spare cylinders for breathing apparatus, under Subject No. SP14004e. Safety Panel should align UI SC275 to the draft MSC circular developed at SSE 3 without waiting for the MSC 97 approval of the circular, taking into account that MSC 97 will be in November 2016 and the UI is to be implemented on 1 January 2017."

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Revision agreed in the Safety Panel.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 03 June 2016 by Safety Panel as a FUA in SSE 3 Observer's Report
Panel Approval: 22 June 2016 (Ref: SP14004e)
GPG Approval: 14 September 2016 (Ref: 15115jIGd)

- **New (Jan 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Question was raised by a Member to the Safety Panel, following the new regulation SOLAS II-2/15.2.2.6 as adopted by MSC.338(91).

The new regulation needs an interpretation on the “suitable number”:

SOLAS regulation II-2/15.2.2.6
An onboard means of recharging breathing apparatus cylinders used during drills shall be provided or a suitable number of spare cylinders shall be carried on board to replace those used.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Interpretation agreed in the Safety Panel.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 2 February 2014 by Safety Panel
Panel Approval: 22 December 2015 (Ref: SP14004e)
GPG Approval: 6 January 2016 (Ref: 15115jIGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC275:

Annex 1. **TB for New (Jan 2016)**

See separate TB document in Annex 1.

◄▼►

Annex 2. **TB for Rev.1 (Sept 2016)**

See separate TB document in Annex 2.

◄▲►

Technical Background (TB) document for UI SC275 (New Jan 2016)

1. Scope and objectives

The UI should clarify what is considered to be a “suitable number” of spare cylinders.

2. Engineering background for technical basis and rationale

The Safety Panel recognized it was difficult to define the “suitable number” of spare cylinders on the basis of the reasons that the number of spare cylinders to be onboard depends on the content of drills which would vary with the intension of each ship owner, and agreed to develop the interpretation of not “suitable number” but “minimum number” of spare cylinders.

3. Source / derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

Date of application:
Some member(s) suggested to apply the UI only to new air cylinders placed on board after a certain date (in the future). This was not supported.

IACS notes that self-contained breathing apparatus is required to be carried on board all ships in accordance with SOLAS regulations II-2/10.10.2 (for ships constructed on or after 1 July 2002), II-2/17.3 (for ships constructed before 1 July 2002), II-2/18.5.1.6 and II-2/19.3.6.2, and other IMO instruments such as the IMSBC, IBC and IGC Codes. IACS discussed which "breathing apparatus" required by various SOLAS regulations and Codes should be provided with spare cylinders to take account of those used during fire drills. Consequently, IACS agreed that the spare cylinders required by SOLAS regulation II-2/15.2.2.6 should be provided for the breathing apparatus required by SOLAS regulations II-2/10.10.2 as well as II-2/17.3 and II-2/18.5.1.6. That is to say, IACS considers that the breathing apparatus required by SOLAS regulation II-2/19 and the other Codes (i.e. the IMSBC, IGC and IBC Codes) would not be subject to SOLAS regulation II-2/15.2.2.6.

Noting that SCBA may have different cylinder combinations, for example SCBA sets normally have one cylinder for each fire-fighters outfits, but older SCBA sets sometimes have two smaller cylinders, it was agreed that ‘Set of cylinders’ means the number of cylinders which is required to operate the breathing apparatus.

6. Attachments if any

N/A.

Technical Background (TB) document for UI SC275 (Rev.1 Sept 2016)

1. Scope and objectives

Safety Panel revised UI SC275 in order to align its text with MSC Circular to be approved at MSC97.

2. Engineering background for technical basis and rationale

At SSE3, the delegation from Marshall Islands stated that the minimum number of spare cylinders to replace those used in the training depends on the safety management system of each ship, and proposed the modification of the UI to reflect this stance. With some editorial improvements by IACS, SSE3 agreed with the revised UI, which reads:
"A suitable number of spare cylinders" to be carried on board to replace those used for fire drills should be at least one "set of cylinders" for each mandatory breathing apparatus, unless additional spare cylinders are required by the shipboard safety management system (SMS).
"Set of cylinders" means the number of cylinders which are required to operate the breathing apparatus.
No additional cylinders are required for fire drills for breathing apparatus sets required by SOLAS regulation II-2/19, IMSBC Code, the IBC Code or IGC Code.

3. Source / derivation of the proposed IACS Resolution

SSE 3/16, Annex 8

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

It was agreed within the Safety Panel that the intention of the modification was that "one set of cylinders for each mandatory breathing apparatus" specified in IACS UI is the minimum number; that is to say, even if SMS requires less number of spare cylinders, at least one set of cylinders should be provided for each mandatory breathing apparatus.

6. Attachments if any

N/A.

UI SC276 "Escape from machinery spaces on passenger ships"

Summary

This UI provides unified interpretations of vague requirements for means of escape in machinery spaces on passenger ships as required by SOLAS II-2/13.4.1. Revision 1 clarifies the term "safe position".

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2024)	14 May 2024	1 July 2025
New (Jan 2016)	26 January 2016	1 February 2016

- **Rev.1 (May 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Clarification of the term "safe position" in relation to means of escape from machinery spaces through the steering gear space.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

5 History of Decisions Made:

IACS submitted document SDC 10/10/4 to SDC 10, proposing to clarify that steering gear spaces may be regarded as "safe position" for the purpose of exiting the protected enclosure from machinery spaces, also if hydraulic oils for the steering gear equipment are stowed in the space. SDC 10 agreed to the intent of the proposal and developed draft amendments to MSC.1/Circ.1511 accordingly. UI SC276 Revision 1 reflects the draft amendments agreed at SDC 10, as per Annex 3 to SDC 10/WP.7.

6 Other Resolutions Changes:

None.

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original Proposal:	18 January 2023	(Made by: ABS)
Panel Approval:	19 April 2024	(Ref: PS17010b)
GPG Approval:	14 May 2024	(Ref: 23041hIGd)

• New (Jan 2016)

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To provide unified interpretation of existing vague requirements for means of escape in machinery spaces on passenger ships as required by SOLAS II-2/13.4.1.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issues were raised, amongst others, within the Statutory Panel, by a member in 2010. The issues were discussed within the Panel between 2010 and 2013, and after several rounds of correspondence, the Panel decided to form a project team to deal with selected issues in greater detail. The PT worked between June 2013 and November 2015 and developed a number of interpretations including the one subject of this document. The draft UI was submitted to SDC2 as paper SDC 2/21/4 and subsequently approved by MSC 95 and issued as the part of IMO circular MSC.1/Circ.1511.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal:	24 May 2014	(by PT33 to Safety Panel)
Panel Approval:	Dec 2015	(Ref: SP10003e)
GPG Approval:	26 January 2016	(Ref: 13078_IGg)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC276:

Annex 1. **TB for New (Jan 2016)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (May 2024)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC276 (New Jan 2016)

1. Scope and objectives

This UI provides interpretations of SOLAS II-2/13.4.1 with respect to the means of escape from machinery spaces on passenger ships.

2. Engineering background for technical basis and rationale

In the discussions concerning SOLAS II-2/13.4.1, PT members focused on the clarification of vague expressions, such as "safe position", and unclear specifications, including the design criteria for inclined ladders and the internal dimensions of protected enclosures.

Regarding "safe position"

The intent of the requirement for one of the means of escape (to be provided for compliance with SOLAS Ch. II-2 Reg. 13.4) to lead to a safe position outside the space is considered to be that such space should be safe with respect to the space the persons are escaping from, and which is assumed to be the space of origin of the fire.

Such space would be a location from which they can safely reach the open deck or the embarkation deck. As a result it would therefore be deemed that the vast majority of the types of spaces where the escape route can lead to/terminate in may fulfil that criteria and role, also taking into account the level of separation and fire protection they would be given from the machinery space from which the escape is being considered. It was however considered that lockers, cargo pump rooms and spaces where flammable liquids are stowed, may not be suitable for that purpose, taking into account the inherent risks which they could pose, mainly related to the potential for presence of flammable vapours. It was equally considered that cargo spaces should be excluded, as they are not typically intended to be provided with means of escape, to the same extent as accommodation spaces, service space, control stations and machinery space, then leading to the open deck or the embarkation deck, nor requirements for them are available in Reg. 13. It was not considered that special category spaces and ro-ro-spaces should have been excluded, also noting that doing that might have been regarded as an amendment, as the matter being already addressed, and for passenger ships only, in Reg. 13.5.2. With respect to that latest referenced requirement, it should in fact be pointed out that it does not prohibit one of the two means of escape from machinery spaces where crew is normally employed to access the special category space, but only that one of them, i.e. one of the two required ones, should not access it.

Regarding "inclined ladders"

It was considered that design and sizing criteria for such ladders should be such as to allow for easy and safe movement for access and rescue, comparable with those which may be provided by those inside protected enclosures, and on that basis it was considered that the specified minimum width and maximum inclination were commonly required and widely applied average values, and appropriate for such purpose. It should also be noted that such ladders would also, in future, need to comply with the forthcoming requirements of new Ch. II-2 Reg. 13.4.1.5 and 13.4.2.4, coming into force on 01 January 2016, (MSC Res. 365(93) refers).

Regarding "working platform and passageways"

The text of the interpretation was based on the principle of maintaining the underlying concept enunciated in the regulations that two means of escape should be available from such spaces. Therefore when the vertical extent of the machinery space is such to span more than one deck level (and it is acknowledged that 'tweendeck height may vary, even considerably, depending on s ship type and design) it was considered necessary that two means of escape should be available from any of those levels. At the lowest level the two escapes should be either upwards or one up and one at the lower level, as already well described in the regulations (Ch. II-2 Reg. 13.4.1.1 and 13.4.2.1, and their subparagraphs). At any level above that the intent was to make clear that either two means of escape should be provided by means of inclined, not enclosed, ladders (which may, typically, for instance be at least one going up and one down), or one such ladder and one access to the protected enclosure required by the regulations. To ensure consistency in the level of protection afforded to the protected enclosure it was considered appropriate to include the requirement for any door to the protected enclosure to be self-closing.

Furthermore, it was also considered necessary and appropriate to briefly point out at the beginning of the interpretation the context of application, and clarify which lower level of the space the interpretation was intended to apply should be regarded as the lowest deck level (without trying to define a multi-level machinery space, which might have been beyond the scope of the interpretation). Finally, it was deemed equally crucial to make clear that other platforms/partial deck/levels which would typically exist in most machinery spaces for access to, and inspection or maintenance of, equipment and components (especially larger ones such engines, reduction gear, boilers etc.) need not be included in the scope.

Regarding "hatches in protected enclosure"

It should be noted that the regulations being interpreted do indicate that the steel ladders providing escape, should be "… leading to doors in the upper part of the space …". It was the intention of the interpretation to clarify that when such ladders are in a protected enclosure, a hatch can be accepted as fulfilling that requirement. In connection with that, it was therefore equally considered necessary to point out that the minimum internal dimensions of that hatch should be the same as those required by those regulations for the protected enclosure itself.

Regarding "internal dimensions"

The size of the protected enclosure should allow for both safe escape from the space in case of a need, and for safe access for fire-fighting and rescue purposes. To achieve the above it was considered that the internal dimensions may be read as the diameter of a theoretical circular clear free passage which should be ensured, within an enclosure which would generally be square of rectangular in section. Starting from that approach, and recognising that the presence of equipment and fittings within any such enclosure may be possible and is in any case not specifically prohibited (including, but may not be limited to, electric cables, light fixtures, pipes, etc,), and that similarly the presence of structures within them is most likely (including, but may not be limited to horizontal or vertical stiffeners, stringers or girders, deck cut outs, supports etc.), the project team developed the figure to show how they should be considered. They should not interfere with, or reduce, the dimensions of the clear passage specified above.

Notwithstanding the above, also taking into account the overlap between a person moving within the enclosure and the location of the ladder used by such person, it was not considered necessary to also exclude the ladder from the determination of such free passage.

The project team also recognised that the case may sometimes exist for such protected enclosures to include horizontal portions, especially in larger or complex design (e.g. passenger ships, ro-ro ships, etc.), where the arrangement of machinery spaces and superstructures may be such as to require shifting of the path of the protected enclosure in the longitudinal or transversal direction. It therefore considered that it was appropriate for consistent, even if basic, guidance to be included in the same interpretation. To that intent it decided to indicate a minimum clear width, and a measure of 600 mm was considered sufficient to address the objectives mentioned above.

Based on the discussion, the unified interpretation was drafted and provided to SDC2 in paper SDC 2/21/4.

At SDC 2, Sub-Committee concurred with a proposal by Cyprus that any escape from a machinery space to a "safe position" on a vehicle/ro-ro deck should be maintained clear of obstacles to the embarkation decks. Also, the Netherlands and IMarEST questioned whether the 800mm 'free area' of an escape truck should, or should not, include any ladder. The compromise reached was that there should be a minimum of 600 mm 'in front' of the ladder. Interpretation is revised in accordance with SDC 2 decision.

Finally, MSC 95 approved the interpretation which was issued as the part of IMO circular MSC.1/Circ.1511.

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/13.4.1.1
SOLAS II-2/13.4.1.2
SOLAS II-2/13.4.1.4

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

Regarding "inclined ladders"

It is acknowledged that, when considering the arrangement and location of the potentially numerous inclined ladders which are commonly found in machinery spaces, without being located in a protected enclosure, it may be questionable (or a matter of discussion between designers and class) which of those should be rightfully considered as forming part of, or providing access to, escape routes, and which of those need not. It is considered that, as a minimum, they should include any ladder which forms part of the means of escape required by Ch. II-2 Reg. 13.4, without being required them to be within a protected enclosure (irrespective of the deck level, if more than one, in the machinery space, from which they are originate).

Regarding "working platform and passageways"

Some of the terminology used in the interpretation may be regarded as potentially vague, i.e. "smaller" platforms; however after extensive discussion in the project team at the drafting stage, it was considered that being overly prescriptive (e.g. in terms of size A<"x" m2 or height from nearest deck level H<"y" m) might have been counterproductive, open to controversy and unnecessarily restrictive. Another point which was discussed as a possible contentious point was the formulation for the lower part of the space, which, depending on the design of the ship or space, may potentially lead to different understanding. It was the intention for that to be the lowest space where crew may normally be employed/working, and from which they should escape in normal circumstances.

Regarding "hatches in protected enclosure"

The PT discussed the possibility that, albeit limited, there may be a potential for the interpretation to be regarded as an amendment, in extending the meaning of the term "door" used in the regulation to hatches. Still it should be recognised that none of the two is defined in SOLAS in the context of the application of these particular regulations,

that the use of hatches in such circumstances is consolidated, that the replacement of such hatches, when used, with deckhouses or companionways accommodating doors may not be practicable, and that it would still be preferable for the escape to lead directly to the open deck, rather than to an internal space at a lower level, if at all possible, only for the purpose of fitting a door.

Regarding "internal dimensions"

It was noted that a reference was made in MSC/Circ. 847, when interpreting SOLAS Ch,

II-2, Reg. 28.3.1.1.1 and 45.3.1 (SOLAS 2001 Consolidated Edition 1997 refers) when stating that "One of the means of escape required by regulation [II-2/28.3.1.1.1] [II-2/45.3.1] … should be arranged as follows: should have a free opening of at least 800 mm x 800 mm. The ladder may be included in that area". However, such text was not brought forward when MSC/Circ. 1120 was developed. Whilst the project team could note establish the reason for such omission, or if it was voluntary or accidental, it also noted that the wording used therein was in any case different from the one now used in SOLAS, which refers to "internal dimensions", rather than "free opening", and it considered that in any case, the interpretation now developed was more comprehensive and detailed, and deemed to address the letter and intent of the regulations.

In connection with the access for fire fighting and rescue the project team also discussed the opportunity to include in the interpretation complementary or alternative text referring to project specific performance of tests with crew wearing complete fire fighter's outfits, or carrying stretchers, but it was concluded that might have been complicated, controversial or counterproductive, as methods of test and acceptance criteria might have also needed to be developed for that purpose.

6. Attachments if any

None.

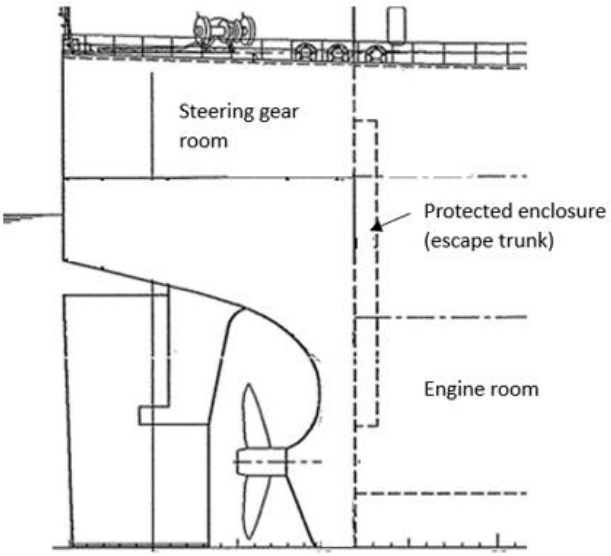
Technical Background (TB) document for UI SC276 (Rev.1 May 2024)

1. Scope and objectives

Clarification of the term “safe position” in relation to means of escape from machinery spaces through the steering gear space.

2. Engineering background for technical basis and rationale

IACS notes that for some ships, the means of escape within the protected enclosure is arranged to the steering gear room, for example as illustrated in the figure below.



The steering gear space is often used for stowage of hydraulic oil to the power-operated steering gear. While the hydraulic oil for the steering gear typically has a flashpoint of more than 150°C, MSC.1/Circ.1321 on Guidelines for measures to prevent fires in engine-rooms and cargo pump-rooms considers hydraulic oils as flammable liquids. "Flammable liquids" is not defined in SOLAS chapter II-2.

MSC.1/Circ.1511 states that lockers, storerooms, cargo spaces and spaces where flammable liquids are stowed cannot be considered a "safe position". Accordingly, the means of escape through a protected enclosure, to a steering gear space where hydraulic oil is stowed, is regularly subject to consideration.

MSC.1/Circ.1511 explicitly permits special category spaces and ro-ro spaces to be considered as safe positions, and IACS would in general expect the steering gear space to contain less flammable liquid than a vehicle space (special category spaces and ro-ro spaces). This expectation is supported by SOLAS regulation II-2/9.2.2.3.2.2(10), classifying steering gear spaces on passenger ships as "auxiliary machinery spaces having little or no fire risk".

Spaces where flammable vapours may be present are generally not suitable as a "safe position". However, the hydraulic oil for the steering gear is not heated and IACS considers the risk of flammable vapours to be low.

It is recognized that the "steering gear space" is not a defined space in SOLAS chapter II-2 in the same way as "special category spaces" and "ro-ro spaces". However, as neither "lockers", "storerooms" and "spaces where flammable liquids are stowed" are defined terms, it is understood that the interpretation in MSC.1/Circ.1511 intends to describe the content and use of a space, rather than only referring to spaces covered by defined terms.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

N/A.

3. Source/derivation of the proposed IACS Resolution
SOLAS II-2/13.4.1 (passenger ships, ref. UI SC 276)
SOLAS II-2/13.4.2 (cargo ships, ref. UI SC277)

SOLAS regulations II-2/13.4.1 and II-2/13.4.2 specify the requirements for means of escape from machinery spaces on passenger and cargo ships, respectively. Those regulations require one of the two means of escape from machinery spaces to be located inside a protected enclosure that leads to a "safe position" outside the machinery spaces.

The term "safe position" is used only in connection with this protected enclosure (i.e. the escape trunk) and is not defined in SOLAS. IACS understands that the intention of the term is to clarify an appropriate space to exit the protected enclosure (escape trunk).

4. Summary of Changes intended for the revised Resolution:

IACS prepared Revision 1’s of UI SC276 and UI SC277 to clarify that steering gear spaces may be regarded as "safe position" for the purpose of exiting the protected enclosure from machinery spaces, also if hydraulic oils for the steering gear equipment are stowed in the space.

5. Points of discussions or possible discussions

See item 3 above.

6. Attachments if any

None.

UI SC277 "Escape from machinery spaces on cargo ships"

Summary

This UI provides unified interpretations of vague requirements for means of escape in machinery spaces on cargo ships as required by SOLAS II-2/13.4.2. Revision 1 clarifies the term "safe position".

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (May 2024)	14 May 2024	1 July 2025
New (Jan 2016)	26 January 2016	1 February 2016

- **Rev.1 (May 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

Clarification of the term "safe position" in relation to means of escape from machinery spaces through the steering gear space.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

5 History of Decisions Made:

IACS submitted document SDC 10/10/4 to SDC 10, proposing to clarify that steering gear spaces may be regarded as "safe position" for the purpose of exiting the protected enclosure from machinery spaces, also if hydraulic oils for the steering gear equipment are stowed in the space. SDC 10 agreed to the intent of the proposal and developed draft amendments to MSC.1/Circ.1511 accordingly. UI SC276 Revision 1 reflects the draft amendments agreed at SDC 10, as per Annex 3 to SDC 10/WP.7.

6 Other Resolutions Changes:

None.

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original Proposal:	18 January 2023	(Made by: ABS)
Panel Approval:	19 April 2024	(Ref: PS17010b)
GPG Approval:	14 May 2024	(Ref: 23041hIGd)

• New (Jan 2016)

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To provide unified interpretation of existing vague requirements for means of escape in machinery spaces on cargo ships as required by SOLAS II-2/13.4.2.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issues were raised, amongst others, within the Statutory Panel, by a member in 2010. The issues were discussed within the Panel between 2010 and 2013, and after several rounds of correspondence, the Panel decided to form a project team to deal with selected issues in greater detail. The PT worked between June 2013 and November 2015 and developed a number of interpretations including the one subject of this document. The draft UI was submitted to SDC2 as paper SDC 2/21/4 and subsequently approved by MSC 95 and issued as the part of IMO circular MSC.1/Circ.1511.

5 Other Resolutions Changes

None

6 Dates:

Original Proposal:	24 May 2014	(by PT33 to Safety Panel)
Panel Approval:	Dec 2015	(Ref: SP10003e)
GPG Approval:	26 January 2016	(Ref: 13078_IGg)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC277:

Annex 1. **TB for New (Jan 2016)**

See separate TB document in Annex 1.

Annex 2. **TB for Rev.1 (May 2024)**

See separate TB document in Annex 2.

Technical Background (TB) document for UI SC277 (New Jan 2016)

1. Scope and objectives

This UI provides interpretations of SOLAS II-2/13.4.2 with respect to the means of escape from machinery spaces on cargo ships.

2. Engineering background for technical basis and rationale

In the discussions concerning SOLAS II-2/13.4.2, PT members focused on the clarification of vague expressions, such as "safe position", and unclear specifications, including the design criteria for inclined ladders and the internal dimensions of protected enclosures.

Regarding "safe position"

The intent of the requirement for one of the means of escape (to be provided for compliance with SOLAS Ch. II-2 Reg. 13.4) to lead to a safe position outside the space is considered to be that such space should be safe with respect to the space the persons are escaping from, and which is assumed to be the space of origin of the fire.

Such space would be a location from which they can safely reach the open deck or the embarkation deck. As a result it would therefore be deemed that the vast majority of the types of spaces where the escape route can lead to/terminate in may fulfil that criteria and role, also taking into account the level of separation and fire protection they would be given from the machinery space from which the escape is being considered. It was however considered that lockers, cargo pump rooms and spaces where flammable liquids are stowed, may not be suitable for that purpose, taking into account the inherent risks which they could pose, mainly related to the potential for presence of flammable vapours. It was equally considered that cargo spaces should be excluded, as they are not typically intended to be provided with means of escape, to the same extent as accommodation spaces, service space, control stations and machinery space, then leading to the open deck or the embarkation deck, nor requirements for them are available in Reg. 13. It was not considered that special vehicle and ro-ro-spaces should have been excluded, also noting that doing that might have been regarded as an amendment, as the matter being already addressed, and for passenger ships only, in Reg. 13.5.2. With respect to that latest referenced requirement, it should in fact be pointed out that it does not prohibit one of the two means of escape from machinery spaces where crew is normally employed to access the special category space, but only that one of them, i.e. one of the two required ones, should not access it.

Regarding "inclined ladders"

It was considered that design and sizing criteria for such ladders should be such as to allow for easy and safe movement for access and rescue, comparable with those which may be provided by those inside protected enclosures, and on that basis it was considered that the specified minimum width and maximum inclination were commonly required and widely applied average values, and appropriate for such purpose. It should also be noted that such ladders would also, in future, need to comply with the forthcoming requirements of new Ch. II-2 Reg. 13.4.1.5 and 13.4.2.4, coming into force on 01 January 2016, (MSC Res. 365(93) refers).

Regarding "working platform and passageways"

The text of the interpretation was based on the principle of maintaining the underlying concept enunciated in the regulations that two means of escape should be available from such spaces. Therefore when the vertical extent of the machinery space is such to span more than one deck level (and it is acknowledged that 'tweendeck height may vary, even considerably, depending on s ship type and design) it was considered necessary that two means of escape should be available from any of those levels. At the lowest level the two escapes should be either upwards or one up and one at the lower level, as already well described in the regulations (Ch. II-2 Reg. 13.4.1.1 and 13.4.2.1, and their subparagraphs). At any level above that the intent was to make clear that either two means of escape should be provided by means of inclined, not enclosed, ladders (which may, typically, for instance be at least one going up and one down), or one such ladder and one access to the protected enclosure required by the regulations. To ensure consistency in the level of protection afforded to the protected enclosure it was considered appropriate to include the requirement for any door to the protected enclosure to be self-closing.

Furthermore, it was also considered necessary and appropriate to briefly point out at the beginning of the interpretation the context of application, and clarify which lower level of the space the interpretation was intended to apply should be regarded as the lowest deck level (without trying to define a multi-level machinery space, which might have been beyond the scope of the interpretation). Finally, it was deemed equally crucial to make clear that other platforms/partial deck/levels which would typically exist in most machinery spaces for access to, and inspection or maintenance of, equipment and components (especially larger ones such engines, reduction gear, boilers etc.) need not be included in the scope.

Regarding "hatches in protected enclosure"

It should be noted that the regulations being interpreted do indicate that the steel ladders providing escape, should be "… leading to doors in the upper part of the space…". It was the intention of the interpretation to clarify that when such ladders are in a protected enclosure, a hatch can be accepted as fulfilling that requirement. In connection with that, it was therefore equally considered necessary to point out that the minimum internal dimensions of that hatch should be the same as those required by those regulations for the protected enclosure itself.

Regarding "internal dimensions"

The size of the protected enclosure should allow for both safe escape from the space in case of a need, and for safe access for fire-fighting and rescue purposes. To achieve the above it was considered that the internal dimensions may be read as the diameter of a theoretical circular clear free passage which should be ensured, within an enclosure which would generally be square of rectangular in section. Starting from that approach, and recognising that the presence of equipment and fittings within any such enclosure may be possible and is in any case not specifically prohibited (including, but may not be limited to, electric cables, light fixtures, pipes, etc,), and that similarly the presence of structures within them is most likely (including, but may not be limited to horizontal or vertical stiffeners, stringers or girders, deck cut outs, supports etc.), the project team developed the figure to show how they should be considered. They should not interfere with, or reduce, the dimensions of the clear passage specified above.

Notwithstanding the above, also taking into account the overlap between a person moving within the enclosure and the location of the ladder used by such person, it was not considered necessary to also exclude the ladder from the determination of such free passage.

The project team also recognised that the case may sometimes exist for such protected enclosures to include horizontal portions, especially in larger or complex design (e.g. passenger ships, ro-ro ships, etc.), where the arrangement of machinery spaces and superstructures may be such as to require shifting of the path of the protected enclosure in the longitudinal or transversal direction. It therefore considered that it was appropriate for consistent, even if basic, guidance to be included in the same interpretation. To that intent it decided to indicate a minimum clear width, and a measure of 600 mm was considered sufficient to address the objectives mentioned above.

Regarding "travel distance"

The PT considered possible ways of providing useful guidance on the matter within the constraints of existing generic requirements. Although it is acknowledged that it may not be fully exhaustive, also bearing in mind the lack of clarity of the background of the original SOLAS text (Reg. II-2/45.5 (SOLAS 2001 Consolidated Edition and MSC/Circ. 847), it is deemed the proposed interpretation provides further information supplementing the basic content of the SOLAS regulation itself, which may be beneficial for designers, IACS members and other parties.

Based on the discussion, the unified interpretation was drafted and provided to SDC2 in paper SDC 2/21/5.

At SDC 2, Sub-Committee concurred with a proposal by Cyprus that any escape from a machinery space to a “safe position” on a vehicle/ro-ro deck should be maintained clear of obstacles to the embarkation decks. Also, the Netherlands and IMarEST questioned whether the 800mm ‘free area’ of an escape truck should, or should not, include any ladder. The compromise reached was that there should be a minimum of 600 mm ‘in front’ of the ladder. Interpretation is revised in accordance with SDC 2 decision.

Finally, MSC 95 approved the interpretation which was issued as the part of IMO circular MSC.1/Circ.1511.

3. Source/derivation of the proposed IACS Resolution

SOLAS II-2/13.4.2.1
SOLAS II-2/13.4.2.3

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

Regarding "inclined ladders"

It is acknowledged that, when considering the arrangement and location of the potentially numerous inclined ladders which are commonly found in machinery spaces, without being located in a protected enclosure, it may be questionable (or a matter of

discussion between designers and class) which of those should be rightfully considered as forming part of, or providing access to, escape routes, and which of those need not. It is considered that, as a minimum, they should include any ladder which forms part of the means of escape required by Ch. II-2 Reg. 13.4, without being required them to be within a protected enclosure (irrespective of the deck level, if more than one, in the machinery space, from which they are originate).

Regarding "working platform and passageways"

Some of the terminology used in the interpretation may be regarded as potentially vague, i.e. "smaller" platforms; however, after extensive discussion in the project team at the drafting stage, it was considered that being overly prescriptive (e.g. in terms of size A<"x" m2 or height from nearest deck level H<"y" m) might have been counterproductive, open to controversy and unnecessarily restrictive. Another point which was discussed as a possible contentious point was the formulation for the lower part of the space, which, depending on the design of the ship or space, may potentially lead to different understanding. It was the intention for that to be the lowest space where crew may normally be employed/working, and from which they should escape in normal circumstances.

Regarding "hatches in protected enclosure"

The PT discussed the possibility that, albeit limited, there may be a potential for the interpretation to be regarded as an amendment, in extending the meaning of the term "door" used in the regulation to hatches. Still it should be recognised that none of the two is defined in SOLAS in the context of the application of these particular regulations, that the use of hatches in such circumstances is consolidated, that the replacement of such hatches, when used, with deckhouses or companionways accommodating doors may not be practicable, and that it would still be preferable for the escape to lead directly to the open deck, rather than to an internal space at a lower level, if at all possible, only for the purpose of fitting a door.

Regarding "internal dimensions"

It was noted that a reference was made in MSC/Circ. 847, when interpreting SOLAS Ch, II-2, Reg. 28.3.1.1.1 and 45.3.1 (SOLAS 2001 Consolidated Edition 1997 refers) when stating that "One of the means of escape required by regulation [II-2/28.3.1.1.1] [II-2/45.3.1] … should be arranged as follows: should have a free opening of at least 800 mm x 800 mm. The ladder may be included in that area". However such text was not brought forward when MSC/Circ. 1120 was developed. Whilst the project team could note establish the reason for such omission, or if it was voluntary or accidental, it also noted that the wording used therein was in any case different from the one now used in SOLAS, which refers to "internal dimensions", rather than "free opening", and it considered that in any case, the interpretation now developed was more comprehensive and detailed, and deemed to address the letter and intent of the regulations.

In connection with the access for firefighting and rescue the project team also discussed the opportunity to include in the interpretation complementary or alternative text referring to project specific performance of tests with crew wearing complete fire fighter's outfits, or carrying stretchers, but it was concluded that might have been complicated, controversial or counterproductive, as methods of test and acceptance criteria might have also needed to be developed for that purpose.

6. Attachments if any

None.

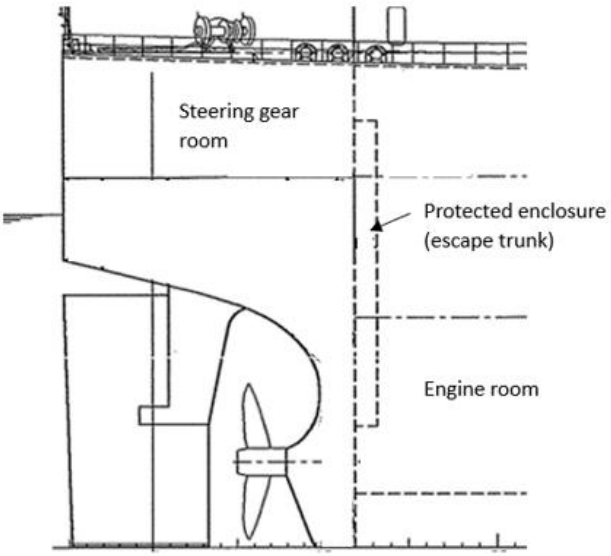
Technical Background (TB) document for UI SC277 (Rev.1 May 2024)

1. Scope and objectives

Clarification of the term “safe position” in relation to means of escape from machinery spaces through the steering gear space.

2. Engineering background for technical basis and rationale

IACS notes that for some ships, the means of escape within the protected enclosure is arranged to the steering gear room, for example as illustrated in the figure below.



The steering gear space is often used for stowage of hydraulic oil to the power-operated steering gear. While the hydraulic oil for the steering gear typically has a flashpoint of more than 150°C, MSC.1/Circ.1321 on Guidelines for measures to prevent fires in engine-rooms and cargo pump-rooms considers hydraulic oils as flammable liquids. "Flammable liquids" is not defined in SOLAS chapter II-2.

MSC.1/Circ.1511 states that lockers, storerooms, cargo spaces and spaces where flammable liquids are stowed cannot be considered a "safe position". Accordingly, the means of escape through a protected enclosure, to a steering gear space where hydraulic oil is stowed, is regularly subject to consideration.

MSC.1/Circ.1511 explicitly permits special category spaces and ro-ro spaces to be considered as safe positions, and IACS would in general expect the steering gear space to contain less flammable liquid than a vehicle space (special category spaces and ro-ro spaces). This expectation is supported by SOLAS regulation II-2/9.2.2.3.2.2(10), classifying steering gear spaces on passenger ships as "auxiliary machinery spaces having little or no fire risk".

For cargo ships, footnote (i) of tables 9.5 and 9.6 of MSC/Circ.1120 indicates that also steering gear room on cargo ships including tankers can be interpreted as "machinery space having little or no fire risk".

Spaces where flammable vapours may be present are generally not suitable as a "safe position". However, the hydraulic oil for the steering gear is not heated and IACS considers the risk of flammable vapours to be low.

It is recognized that the "steering gear space" is not a defined space in SOLAS chapter II-2 in the same way as "special category spaces" and "ro-ro spaces". However, as neither "lockers", "storerooms" and "spaces where flammable liquids are stowed" are defined terms, it is understood that the interpretation in MSC.1/Circ.1511 intends to describe the content and use of a space, rather than only referring to spaces covered by defined terms.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

N/A.

3. Source/derivation of the proposed IACS Resolution
SOLAS II-2/13.4.1 (passenger ships, ref. UI SC 276)
SOLAS II-2/13.4.2 (cargo ships, ref. UI SC277)

SOLAS regulations II-2/13.4.1 and II-2/13.4.2 specify the requirements for means of escape from machinery spaces on passenger and cargo ships, respectively. Those regulations require one of the two means of escape from machinery spaces to be located inside a protected enclosure that leads to a "safe position" outside the machinery spaces.

The term "safe position" is used only in connection with this protected enclosure (i.e. the escape trunk) and is not defined in SOLAS. IACS understands that the intention of the term is to clarify an appropriate space to exit the protected enclosure (escape trunk).

4. Summary of Changes intended for the revised Resolution:

IACS prepared Revision 1’s of UI SC276 and UI SC277 to clarify that steering gear spaces may be regarded as "safe position" for the purpose of exiting the protected enclosure from machinery spaces, also if hydraulic oils for the steering gear equipment are stowed in the space.

5. Points of discussions or possible discussions

See item 3 above.

6. Attachments if any

None.

UI SC278 “Escape from accommodation spaces, service spaces and control stations on cargo ships”

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Jan 2016)	26 January 2016	1 February 2016

- **New (Jan 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To provide unified interpretation of existing vague requirements for means of escape from accommodation spaces, service spaces and control stations in SOLAS Ch. II-2 Reg.13.3.3.2 and 13.3.3.3.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised, amongst others, within the Statutory Panel, by a member in 2010. The issues were discussed within the Panel between 2010 and 2013, and after several rounds of correspondence, the Panel decided to form a project team to deal with selected issues in greater detail. The PT worked between June 2013 and November 2015 and developed a number of interpretations including the one subject of this document. The draft UI was submitted to SDC2 as paper SDC 2/21/6 and subsequently approved by MSC 95 and issued as part of IMO circular MSC.1/Circ.1511.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 24 May 2014 by PT33 to Safety Panel
Panel Approval: Dec 2015 (Ref: SP10003e)
GPG Approval: 26 January 2016 (Ref: 13078_IGg)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC278:

Annex 1. **TB for New (Jan 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI SC278 (New Jan 2016)

1. Scope and objectives

This UI provides interpretations of SOLAS II-2/13.3 with respect to the means of escape from accommodation spaces, service spaces and control stations on cargo ships.

2. Engineering background for technical basis and rationale

In the discussions concerning SOLAS II-2/13.3, PT members focused on the clarification of vague expression “the lowest open deck”, which is not defined in SOLAS.

It should be noted that the term is used in the context of SOLAS Ch. II-2 Reg. 13.3, which refers to the provision of means of escape in accommodation spaces, service spaces and control stations on cargo ships. It can also be noted that, in general, on cargo ships, accommodation and service spaces would only extend over a limited portion of the length of the ship, the rest of it being dedicated to the cargo area. The arrangement of the weather deck, or uppermost continuous deck (these terms being used here only as they are also mentioned elsewhere in SOLAS, Ch. II-1 and/or Ch. III), which would typically be regarded as open decks, may vary significantly depending on the type of ship (tanker, bulk carrier, vehicle/car carrier, supply vessel etc.) and any design specific arrangement. It was therefore considered that the level of the lowest open deck should be determined and referred to in way of such accommodation spaces, as that would be the area along the length of the ship where it would be applicable, and where it would be important to apply it appropriately ensuring that the means of escape from spaces above and below such deck are arranged so that the purpose of the regulation, as described in Reg. 13.1, can be satisfactorily met.

Based on the discussion, the unified interpretation was drafted and provided to SDC2 in paper SDC 2/21/6, followed by the approval by MSC95 and circulation as the part of MSC.1/Circ.1511.

3. Source / derivation of the proposed IACS Resolution

SOLAS II-2/13.3.3.2
SOLAS II-2/13.3.3.3

4. Summary of Changes intended for the revised Resolution:

N/A.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

UI SC279 "Annual testing of VDR, S-VDR, AIS and EPIRB
- SOLAS regulation V/18.8 – Annual performance test of Voyage Data Recorder (VDR) and Simplified Voyage Data Recorder (S-VDR);
- SOLAS regulation V/18.9 – Annual performance test of Automatic Identification System (AIS);
- SOLAS regulation IV/15.9 – Annual performance test of EPIRB."

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2016)	3 June 2016	1 July 2017

- **New (June 2016)**

.1 Origin of Change:

☑ Suggestion by an IACS member

.2 Main Reason for Change:

To interpret the provisions relevant the execution of the VDR annual performance test expected by the regulation V/18.8 of the SOLAS 74, as amended.

.3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

A Member sought the advice of the Panel regarding the execution of the annual VDR performance test as part of the Safety Equipment periodical survey and whether:

- the test needs to be carried out simultaneously or in advance (by respecting the limit of minus 3 months from the survey anniversary date) to the completion of the survey itself, or
- the test may be executed after the completion of the survey since, according the provisions of the MSC.1/Circ.1222, it would seems that previous one (executed one year before) may be considered valid till to the end of the time window allowed for the execution of the Safety Equipment periodical survey (plus three months from the anniversary date).

Panel Members provided their own understandings on the matter and the qualified majority Members concluded that a new test needs to be executed before or simultaneously the completion of the Safety Equipment periodical survey and that in

no case the previous test might be considered valid in order to credit the survey itself, also if less than one year is passed from its execution.

Panel agreed that this interpretation should be part of a new UI.

During the discussion a Member proposed to broaden the scope of the UI by adding the annual test of the Automatic Identification System (AIS), the EPIRB and the annual inspection of the inflatable liferafts, inflatable lifejackets, marine evacuation systems and hydrostatic releases.
Panel examined the proposal and concluded that the interpretation given for VDR can be extended to Simplified VDRs (S-VDR), AIS and EPIRB.

A Panel common view, on the annual services of the inflatable liferafts and hydrostatic releases has been agreed (see technical background).

All Members agreed the first draft of text of the new Unified Interpretation, which was submitted to Safety Panel for review.
Safety Panel provided three advices, which have been examined by the Members during the 23rd Survey Panel Meeting. On the basis of two of these the draft text has been modified and finalized by the Panel.

See also Technical Background.

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: 25 January 2015 Made by an IACS Member
Panel Approval: 16 March 2016 (Ref: PSU15010)
GPG Approval: 3 June 2016 (Ref: 16085_IGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC279:

Annex 1. **TB for NEW (June 2016)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI SC279 (New June 2016)

1. Scope and objectives

To produce an IACS Unified Interpretation dealing with the provisions relevant the execution of the annual performance test of:
- VDR and S-VDR expected by the regulation V/18.8 of the SOLAS 74 as amended;
- AIS expected by the regulation V/18.9 of the SOLAS 74 as amended;
- EPIRB expected by the regulation IV/15.9 of the SOLAS 74 as amended;

2. Engineering background for technical basis and rationale

To unify the interpretation of the “validity” of the annual performance test of the equipment listed under above item 1 and establish a common understanding on when these have to be carried out.

3. Source / derivation of the proposed IACS Resolution

Suggestion by an IACS member

4. Summary of Changes intended for the revised Resolution:

A Member sought the advice of the Panel regarding the execution of the annual VDR performance test as part of the Safety Equipment periodical survey and whether:

- the test needs to be carried out simultaneously or in advance (by respecting the limit of minus 3 months from the survey anniversary date) to the completion of the survey itself, or
- the test may be executed after the completion of the survey since, according the provisions of the MSC.1/Circ.1222, it would seems that previous one (executed one year before) may be considered valid till to the end of the time window allowed for the execution of the Safety Equipment periodical survey (plus three months from the anniversary date).

Panel Members provided their own understandings on the matter which were examined during the discussion. The qualified majority of Panel Members agreed that the intent of MSC.1/Circ.1222 is to align the performance check with the intervals for HSSC surveys and so to permit that the validity of the previous test is maintained also if more than one year is passed form its execution. This allows preserving the validity of the Safety Equipment Certificate until the relevant periodical survey will be executed also taking advantage of the plus 3 months window allowed by the HSSC system.
Therefore the qualified majority Members concluded that a new test needs to be executed before or simultaneously the completion of the Safety Equipment periodical survey and that in no case the previous test might be considered valid in order to credit the survey itself, also if less than one year is passed from its execution.

Panel agreed that this interpretation should be part of a new UI.

During the discussion a Member proposed to broaden the scope of the UI by adding the annual test of the Automatic Identification System (AIS), the EPIRB and the annual inspection of the inflatable liferafts, inflatable lifejackets, marine evacuation systems and hydrostatic releases.
Panel examined the proposal and concluded that the interpretation given for VDR can be extended to Simplified VDRs (S-VDR), AIS and EPIRB; for what concern the annual inspections of the above listed lifesaving appliances, it has been noted that are already addressed by:

- the regulation III/20.8 for the annual servicing of the inflatable liferafts, inflatable lifejackets, marine evacuation systems the regulation III/20.8
- the regulation III/20.9 for the annual servicing of the hydrostatic release units, therefore no interpretation would be necessary.

A Panel common view, on the annual services of the inflatable liferafts and hydrostatic releases has been agreed.

A member highlighted that the Regulation IV-15.9 for the annual testing of EPIRBs is independent of HSSC System therefore the interpretation needs to be generically referred to the prescribed survey without any reference to the HSSC System.

All Members agreed the first draft of text of the new Unified Interpretation, which was submitted to Safety Panel for review.
Safety Panel provided three advices, which have been examined by the Members during the 23rd Survey Panel Meeting. On the basis of two of these the draft text has been modified and finalized by the Panel.

5. Points of discussions or possible discussions

None

6. Attachments if any

1) Safety Panel' advices (abstract from message PS16002ePSa :Task 4- Interpretation of IMO Instruments- Crediting of Statutory Annual Survey based on an annual performance check(PSU15010_)

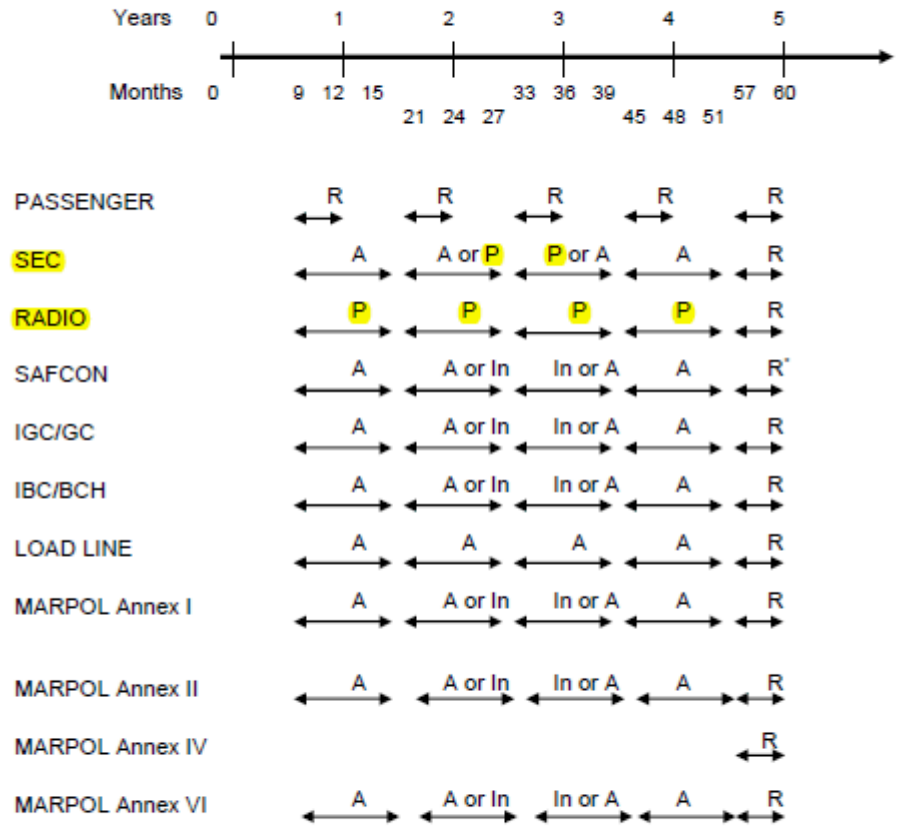
-QUOTE-

a) For the first two interpretations, the term "Periodical survey" is to be extended to "Annual / Periodical / Renewal survey" based on the fact " Periodical survey" does not take place at any annual survey (or renewal survey) in the case of the cargo ship safety equipment certificate. See below extract of Res. A.1104(29), Appendix 2.
Otherwise it may be misunderstood that annual performance check should only be held within three months before or after the second anniversary date or within three months before or after the third anniversary date in the case of the cargo ship safety equipment certificate.

APPENDIX 2

THE HARMONIZED SYSTEM OF SURVEY AND CERTIFICATION

DIAGRAMMATIC ARRANGEMENT



Code of types of survey:

R	–	Renewal
P	–	Periodical
In	–	Intermediate
A	–	Annual

-UNQUOTE-

b) The draft UI should also take into account the certificate extension cases and should include in the interpretation the following statement:

-QUOTE-
"Where the certificate has been extended as permitted by SOLAS regulation I/14 and similar extension granted by Administration for performance check of the equipment, the performance check is to be completed in the extended period of the certificate and by completion of survey for renewal of the certificate."
-UNQUOTE-

c) The words “The performance check..." in the UI to read as "The annual test... " or "The annual performance test..." in order to be in line with what is required in the relevant regulation.

2) Survey Panel determinations following the Safety Panel’s advices (abstract from message PSU15010 - Crediting of Statutory Annual Survey based on an annual performance check _PYc)

-QUOTE-

1. With reference to your reply message copied below and my previous PYb please kindly note that Members discussed the advice provide by the Safety Panel during the 23rd Survey Panel Meeting. As outcome of the discussion the following has been concluded:

- item 2.1) the suggestion to add the references to the annual and renewal survey has been unanimously supported

- item 2.2) the suggestion to add a reference to the possible extension of the validity of the certificate, according to the SOLAS Reg II-14, has been duly evaluated and discussed. The unanimous conclusion of the Members is that this seems redundant and not strictly necessary since the criteria to extend the validity are set up by the Flag Administration and so also the possibility to extend the "validity of the annual performance test" belongs under the faculties of the Flag Administration. However it should be noted that the structure of the UI does not lead to a misinterpretation since the modality of the execution of the annual test are set also for the renewal survey related to the certificate. So in the event of an extension there will be a final date within the certificate needs to be renewed through a renewal survey.

- Item 2.3) the suggestion to use the correct wording already adopted into the SOLAS Regulations (e.g. Annual Performance Test) has been unanimously supported by the Members.

-UNQUOTE-

3) Panel Common view

Survey Panel Common view on the Annual servicing of inflatable liferafts, inflatable lifejackets, marine evacuation systems, required by regulation III/20.8, and annual servicing of hydrostatic release units, required by regulation III/20.9

Under task PSU15010 the Survey Panel discussed when annual performance checks which are a basis for crediting statutory surveys have to be carried out. As a result of this discussion UI SC XXX was developed covering annual performance tests of VDR, S-VDR, AIS and EPIRB.

It was also discussed on whether or not to include other equipment subject to annual servicing and/or testing in the UI. It was decided to limit the UI to VDR, S-VDR, AIS and EPIRB and develop the following common view.

Annual servicing of inflatable liferafts, inflatable lifejackets, marine evacuation systems, required by regulation III/20.8, and annual servicing of hydrostatic release units, required by regulation III/20.9, does not have to be carried out in the time window of periodical surveys unless required otherwise by the Flag Administration. The safety equipment survey may be credited as long as the above mentioned servicing is not overdue at the time of survey completion, unless required otherwise by the Flag Administration.

UI SC280 "Angle of Down-flooding (φf)/ Angle at which an opening incapable of being closed weathertight (θv)"

Summary

UI SC280 was updated to align with MSC.1/Circ.1537/Rev.1 & MSC.1/Circ.1539/Rev.1

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Rev.1 (June 2022)	20 June 2022	1 July 2023
New (June 2016)	03 June 2016	1 January 2017

- **Rev.1 (June 2022)**

1 Origin of Change:

☑ Other *(To align with MSC.1/Circ.1537/Rev.1 and MSC.1/Circ.1539/Rev.1)*

2 Main Reason for Change:

UI SC280 was adopted by the IMO as MSC.1/Circ.1537. MSC.1/Circ.1537 was later modified to include closed ro-ro and vehicle spaces. UI SC280 needed to be aligned with the revised IMO circular.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel reviewed UI SC280 with MSC.1/Circ.1537/Rev.1 and MSC.1/Circ.1539/Rev.1 and agreed that they should be aligned. All discussion was carried out by correspondence. The words "or closed ro-ro and vehicle spaces" were added to the UI.

5 Other Resolutions Changes:

UI LL80 required similar changes.

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 11 February 2022	(Made by: Safety Panel)
Panel Approval	: 19 May 2022	(Ref: PS21015eISk)
GPG Approval	: 20 June 2022	(Ref: 21197bIGb)

- **New (June 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity *(Dutch Safety Board)*
☑ Other *(Based on Vessel Incident - Collision and capsizing of the tug Fairplay 22)*

.2 Main Reason for Change:

The Dutch Safety Board noted that one cause of the capsizing was that the weathertight closing appliances to the main engine room were left open in order to ensure an adequate air supply to achieve the required bollard pull. These openings had been considered as closed in the intact stability calculations.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The incident report was considered by the Hull Panel, under subject number PH12018_, who asked the Statutory Panel (later Safety Panel) to review the report and make any necessary changes to IACS Resolutions. Safety Panel considered the subject under SP12006r and at the 2nd Safety Panel meeting in September 2014.

Despite the recommendation in IACS Rec.24 that these already be considered as downflooding points in the intact stability, it was agreed by a majority that a new UI should be developed.

.5 Other Resolutions Changes

Similar UIs were developed for ICLL reg 27, IBC Code Ch.2 Section 2.9, IGC Code Ch.2 Section 2.9, MARPOL Reg 27 & 28.

.6 Dates:

Original Proposal	: June 2014	(Made by Safety Panel)
Panel Approval	: April 2016	(Ref: SP12006r)
GPG Approval	: 03 June 2016	(Ref: 15145bIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC280:

Annex 1. **TB for New (June 2016)**

See separate TB document in Annex 1.

Note: There is no separate Technical Background (TB) document available for Rev.1 (June 2022)

Technical Background (TB) document for UI SC280 (New June 2016)

1. Scope and objectives

The UI should clarify that some ventilators which are fitting with weathertight closing devices may need to be considered as downflooding points in the intact & damage stability calculation when they have to be left open for operational purposes. This should confirm that intact & damage stability requirements are met when the vessel is operating with the closing appliances open.

2. Engineering background for technical basis and rationale

The Panel considered The Dutch Safety Board report "Collision and capsizing of tug Fairplay 22 on the Nieuwe Waterweg near Hook of Holland 11 November 2010", dated March 2012. Pages 81 and 82 of the casualty report indicate that V9 and V10 ventilators (which supply air to the engine room) had not been closed at the time of capsize so as to allow the tug to provide the certified bollard force. This was contrary to the assumption in the stability analysis where these ventilators were considered to be closed weathertight and therefore not treated as a downflooding point.

In light of the above and in order to consider actual operating conditions (i.e., weathertight covers are secured or, in order to provide for an uninterrupted air supply, are open to allow for an adequate supply of ventilation to machinery spaces and emergency generator rooms), the Panel was of the view that IACS Rec. 24 already exists which recommends that openings required to be fitted with weathertight closing devices under the ICLL but, for operational reasons, are required to be kept open should be considered as downflooding points in stability calculation.

A majority in the panel, however, concluded that new Unified Interpretations were required to provide consistency in application.

Accordingly, the Panel developed unified interpretations of the intact & damage stability criteria contained in the SOLAS/Ch.II-1-Reg.7-2, 2008 Intact Stability Code & International Grain Code based on the understanding that ventilators for machinery spaces which cannot be closed weathertight or required to remain open due to operational reasons, are required to be considered as:

i. points of down-flooding for the purpose of determining angle of Down-flooding (ϕf or θf) as per 2008 Intact Stability Code & International Grain Code
ii. opening incapable of being closed weathertight for the purpose of determining the angle of flooding (θv) as per SOLAS/Ch.II-1-Reg.7-2

3. Source / derivation of the proposed IACS Resolution

The interpretation is based on IACS Rec.24.

4. Summary of Changes intended for the revised Resolution:

N.A

5. Points of discussions or possible discussions

It was agreed to include references to the supplies to engine rooms and emergency generator rooms. It was also agreed to make it clear that, not all ventilators which are fitted with closing devices in accordance with ILLC 19(4) which have to be considered as downflooding points, but only those which are left open during normal operation.

6. Attachments if any

None

UI SC281 "Single fall and hook system used for launching a lifeboat or rescue boat - Interpretation of LSA Code as amended by MSC.320(89) and MSC.81(70) as amended by MSC.321(89)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawn (June 2017)	16 June 2017	-
New (July 2016)	18 July 2016	1 July 2017

- **Withdrawn (June 2017)**

On 16 June 2017 GPG has agreed to withdraw UI SC281 (New July 2016) until the review of the text against the discussion of SSE 4 has been finalized. (Ref:16113bIGh).

- **New (July 2016)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The LSA Code and Res.MSC.81(70) do not clearly identify the requirements for off-load release mechanisms fitted to rescue boat single fall launching appliances.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Original question raised by IACS member. After a number of rounds of discussion, a paper/draft UI was submitted to the IMO.
[After their input the UI was further refined before being finalised]

.5 Other Resolutions Changes:

None

.6 Dates:

Original Proposal: April 2016 made by Safety Panel
Panel Approval: July 2016 (Ref: SP13007g)
GPG Approval:18 July 2016 (Ref: 16113b_IGb)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC281:

Annex 1. **TB for New (July 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI SC281 (New July 2016)

1. Scope and objectives

This UI relates to the LSA Code as amended by MSC.320(89) and MSC.81(70) as amended by MSC.321(89) on release mechanisms for rescue boats. The LSA Code and Res.MSC.81(70) do not clearly identify the requirements for off load release mechanisms fitted to rescue boat single fall launching appliances.

Paragraph 4.4.7.6 of the LSA Code provides an overarching requirement that needs to be applied to rescue boats. However, paragraph 4.4.7.6.17 of the LSA Code also allows for exemptions where a single fall and hook system is used for launching rescue boats.

In addition, Res. MSC.81(70) Part.1 section 6.9.5.2 does not include or specify any strength test for the hanging off arrangement, hook extension plates and structural connection into the boat (steel and GRP component).

UI SC 281 identifies that:

- The release mechanism tests 6.9.1, 6.9.2, 6.9.3 and 6.9.4 of MSC.81(70), Part 1, as amended, need not be applied for off-load only type release mechanisms.

- In paragraph 6.9.5.1 of MSC.81(70), Part 1, as amended, the off-load type release mechanism should be subject only to actuation force measurement. If a cable is used, it should be of the maximum length specified by the manufacturer, and secured in the same manner it would be secured in a lifeboat or a rescue boat.

- A tensile strength test is to be performed for off-load type release as per paragraph 6.9.5.2 of MSC.81(70) Part 1, as amended.

- The release mechanism may be installed either in the boat or on the davit fall.

- Notwithstanding the paragraphs above, other single fall arrangements (i.e. on-load/off-load type) need to comply with all requirements of paragraph 4.4.7.6 of the LSA Code and be tested in accordance with paragraphs 6.9.1 to 6.9.5 of MSC.81(70), Part 1, as amended.

2. Engineering background for technical basis and rationale

In developing the UI IACS members considered the provisions made for other release mechanisms and whether they would be appropriate if applied to single fall release mechanisms. IACS members noted that paragraph 6.9 of MSC.81(70), Part 1, as amended, does not address tests not applicable for hook systems that have only a single capability to release the lifeboat or rescue boat, i.e. only when it is fully waterborne (off-load).

However, MSC/Circ.980/Add.2 states the following two exemptions in the rescue boat test section where single fall systems are used:

"Single fall systems not intended for on-load operation are exempt from this test [MSC.81(70) Part 1/6.9.1-2]"

"This test [MSC.81(70) Part 1/6.9.4] is not applicable to single fall systems not intended for on-load operation."

IACS members note that paragraph 6.9 of MSC.81(70), Part 1, as amended, has been amended in the meantime by MSC.321(89), and consider that tests not applicable for release mechanism that have only a single capability to release the lifeboat or rescue boat, should be agreed on the basis of the exemptions provided in paragraph 4.4.7.6.17 of the LSA Code as amended by MSC.320(89).

The applicability of requirements from the LSA Code to single fall arrangements were considered based on their practicality if applied to single fall off-load release mechanisms.

3. Source / derivation of the proposed IACS Resolution

Requirements have been based on those required by the LSA Code for other release mechanisms. The three exemptions given in the LSA Code for rescue boat's release mechanisms using a single fall system are identified in the below table;

Paragraph	Topics Covered
4.4.7.6.7	Dual release capability: both normal (off-load) release **and** on-load release capability.
4.4.7.6.8	Fail proof reset feature
4.4.7.6.15	Hydrostatic interlock

However, in MSC.81(70), there is lack of corresponding exemption for the testing of these single fall release mechanism used on rescue boats. Therefore this UI defines the only tests that are required for single fall onload release mechanisms, thereby mirroring the exemptions from LSA Code to the test standard in MSC.81(70).

4. Summary of Changes intended for the revised Resolution:

None – this is the original document.

5. Points of discussions or possible discussions

When this matter was first raised it had been identified that:

- there were no strength test requirements for the hanging off arrangement, hook extension plates and structural connection to the boat.
- there were no production tests needed for the hook and other components.
- there were no requirements for on-load release mechanisms fitted to rescue boats.

After discussion in the panel it was agreed that a common view could be developed for the testing requirements for the mechanisms fitted to rescue boats. A proposal was made and further discussion followed. During discussions, members expressed some reluctance with regard to recording a CV on this subject, and instead that UI should be developed.

Although the draft UI which was originally circulated in July 2015 was supported by the majority, queries were raised over:

- the definitions of off load / on load type
- clarification on whether the requirements of MSC.81(70) section 6.9.3 should be applied mechanisms suspended at the end of the wire rope or not
- and the requirement in MSC/Circ.980 that "(This test is not applicable to single fall systems not intended for on-load operation.)".

Despite extensive discussion there was no clear consensus on any of the above issues. Discussion at the 4th IACS Safety Panel again could not reach consensus and resulted in the formation of a small group to address the issues and progress the UI to conclusion.

6. Attachments if any

None

UI SC282 "Application of materials other than steel on engine, turbine and gearbox installations"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2016)	07 December 2016	01 July 2017

- **New (Dec 2016)**

.1 Origin for Change:

☑ Request by non-IACS entity (CIMAC WG2)

.2 Main Reason for Change:

The fire safety requirements of SOLAS II-2, Reg. 4 require flammable liquid pipes, valves and fittings to be of steel or other approved material (Reg. 4.2.2.5.1, 4.2.3.1 and 4.2.4). Notwithstanding this requirement, it is today common practice mainly for 4-stroke medium and high speed engines to use aluminium or aluminium alloys for a number of components such as covers, housings, fuel filter components and valves. This is tolerated/accepted by most class societies in the engine approval process. On different occasions over the last ten years CIMAC requested the former WP Machinery and the Machinery Panel to develop a UI with a view to allowing the use of aluminium or aluminium alloys in category 'A' engine rooms. Modern cost effective manufacturing techniques and materials favour the use of aluminium, plastic and other low melting point materials rather than steel.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

a. Forms A and 1 were approved under 6202_IGb dated 24 Nov 2006
b. The Project Team submitted a draft UI to the Panel for further consideration in 2008. The draft UI was further developed by the Machinery Panel and submitted to GPG under 10057_PMa dated 2 April 2010.
c. GPG returned the draft to the Panel with a number of comments by 10057_IGc dated 25 May 2010.
d. Draft UI without an implementation date was forwarded to GPG by 10057_PMb dated 7 March 2014 suggesting, as a way forward, to submit it to IMO with a view to requesting IMO Member States' view on the proposed interpretations and the applicable fire test standards.
e. SSE 2/11/2 paper submitted by IACS was agreed by the Sub-Committee with addition of "and all the elements contained therein" to the draft MSC Circular which was finally approved at MSC 96 (MSC.1/Circ.1527).

.5 Other Resolutions Changes

N/A

.6 Dates:

Original proposal: 25 October 2005 made by non-IACS entity
Panel Approval: 08 November 2016 (Ref: PM5907)
GPG Approval: 07 December 2016 (Ref: 10057_IGi)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC282:

Annex 1. **TB for New (Dec 2016)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI SC282 (New Dec 2016)

1. Scope and objectives

The fire safety requirements of SOLAS II-2, Reg. 4 require flammable liquid pipes, valves and fittings to be of steel or other approved material (Reg. 4.2.2.5.1, 4.2.3.1 and 4.2.4). Notwithstanding this requirement, it is today common practice mainly for 4-stroke medium and high speed engines to use aluminium or aluminium alloys for a number of components such as covers, housings, fuel filter components and valves. This is tolerated/accepted by most class societies in the engine approval process.
On different occasions over the last ten years CIMAC requested the former WP Machinery and the Machinery Panel to develop a UI with a view to allowing the use of aluminium or aluminium alloys in category 'A' engine rooms. Modern cost effective manufacturing techniques and materials favour the use of aluminium, plastic and other low melting point materials rather than steel. The Panel agreed to examine the CIMAC request and develop a proposal for a UI for the use of materials other than steel on engine and gearbox installations.

2. Engineering background for technical basis and rationale

In its deliberations the Panel took into account information provided by CIMAC WG2, MSC.1/Circ. 1321 (GUIDELINES FOR MEASURES TO PREVENT FIRES IN ENGINE-ROOMS AND CARGO PUMP-ROOMS) and a letter from the USCG via ABS on this issue (attached). Noting that MSC.1/Circ. 1321, Part 2, Chapter 2, Paragraph 4.1.1 refers to 'Other housing and body materials' the UI is not limited to aluminium or aluminium alloys.

3. Source / derivation of the proposed IACS Resolution

The following sources were used in the development of the UI:

a. MSC.1/Circ. 1321:
   Part 2, Chapter 2, Paragraph 4.1.1 reads: 'Housings and bodies of filters and strainers used in oil fuel, lubricating oil or other flammable oil systems should be made of steel or other equivalent material with a melting point above 930°C and with an elongation above 12%. Other housing and body materials may be utilized provided their use is specially considered on a case-by-case basis in relation to the risk of fire.'
b. Statement from USCG via ABS (attached)
c. ISO 19921 – 2005: Ships and marine technology — Fire resistance of metallic pipe components with resilient and elastomeric seals — Test methods

4. Summary of Changes intended for the revised Resolution:

N/A

5. Points of discussions or possible discussions

The Panel finally agreed on a more restrictive interpretation than previously proposed by the Project Team. The Panel was mindful of the need for IACS not to go too far in interpreting SOLAS requirements while at the same time providing a technically justifiable interpretation. This UI was considered borderline with respect to the former consideration, in particular in relation to interpretation 3 which would allow materials with a melting point of 800 deg C ± 50 deg C, i.e. below the value for steel, provided they retain mechanical properties adequate for the intended installation. This was

considered consistent with requirements for other components using the same test standard (flexible pipes in oil fuel piping systems, SOLAS II-2, Reg. 4.2.2.5.1) and the USCG interpretation referring to ISO 15540 (precursor to ISO 19921).

A Member also pointed out that whilst the test standard ISO 15540 is referenced within a footnote in SOLAS and contains similar criteria to those in ISO 19921, those criteria have been defined for specific purposes i.e. in the case of ISO 19921 "to determine whether, after the period of fire testing on a test bench which fulfils the requirements of ISO 19922, pipeline components remain tight, and without any failure which could affect their function, even when subjected to proof pressure" – specifically it is applicable to metallic pipe components with resilient and elastomeric seals. As previously highlighted by a Member, testing in both ISO 15540 and ISO 19921 involves the flow of a fluid (water) through the test piece.

There was some discussion whether a fuel volume of 100 liters can be extinguished by a portable foam fire extinguisher. The FSS Code Chapter 4, Paragraph 3.1.1.1 and standard EN 3-7 provided clarification: 'Each powder or carbon dioxide extinguisher shall have a capacity of at least 5 kg and each foam extinguisher shall have a capacity of at least 9 l. The mass of all portable fire extinguishers shall not exceed 23 kg and they shall have a fire-extinguishing capability at least equivalent to that of a 9 l fluid extinguisher.'
A 9 l extinguisher, according to EN 3-7, should be able to extinguish 183B size of fire test, i.e. 183 l of fluid volume = 1/3 water and 2/3 fuel (122 l).

As a possible way forward the Panel proposed to submit the draft UI to IMO (SSE sub-committee) without an implementation date, requesting IMO's view on the proposed interpretations and the applicable fire test standards.
The following is a summary of arguments considered by the Panel in favour and against the UI:

<u>In favour:</u>

- Consideration given to the 'risk of fire' as stipulated by MSC.1/Circ. 1321, Part 2, Chapter 2, Paragraph 4.1.1 through:
    - Limited volume and pressure of oil released
    - Reference to fire test standard already accepted specifically for flexible pipes in fuel oil system
    - Local fire extinguishing arrangements in place (SOLAS II-2, Reg. 10.5.2)
- Strong desire by industry for clarity on the existing SOLAS text and a uniform approach by IACS members
- Strong commercial interest by industry
- Key arguments put forward by CIMAC:
    - No information about accidents where the application of aluminium/aluminium alloys had a negative impact
    - Favourable material properties, e.g. machining, handling, non-magnetic (considered important for solenoid valves used on DF engines)
    - Other components such as sensors, cables and electronic equipment will fail before aluminium, leading to an engine stop
    - Consistency: Flanges in steel piping systems will start leaking at elevated temperatures due to loss of pre-tensioning of bolts and failing gaskets
- USCG Interpretation (see attachment to HF&TB)

Against:

- There is room for debate about the proposed threshold values for oil pressure and oil release volume.
- It is difficult to find a basis for a volume of oil that may be released and safely handled. It is recognized that portable fire extinguishers may not be effective in unmanned machinery spaces. Although other local fire extinguishing systems are also in place, the requirements to these measures were implemented after the SOLAS requirements to steel applications in flammable fluid systems and cannot be considered as an alternative to the use of steel.
- There is no limitation on volume of released oil in case of melting or deterioration of fire tested components and for such components the pressure can be significant (4-10 bar). The total volume of fuel that can be released in the event of deterioration of e.g. a filter or pump housing may be significant considering e.g. pipe volume, size of mixing tanks and response time for activating tank quick closing valves and other isolation valves.
- The fire test temperature according to the test standard proposed in interpretation 3 is below the value for steel. However, there is a precedence in that the footnote to SOLAS II-1, Reg. 4.2.2.5.1 for flexible pipes refers to ISO 15540 which is the precursor to ISO 19921. Both stipulate 800 deg C ± 50 deg C for a duration of 30 minutes. The reference to SOLAS already accepted fire test standards in SOLAS II-2, Reg. 4.2.2.5.1 is specific for flexible hoses. The reason was one of necessity, as experience showed that fixed piping resulted in spray and associated fire. I.e. it was considered that flexible hoses presented a higher degree of safety than fixed piping. It is debatable whether the use of aluminium as opposed to steel can be considered a necessity from a fire safety or risk perspective.
- The UI goes beyond an interpretation of SOLAS requirements. The Panel believes that a clarification is needed but this could also take the form of a SOLAS amendment. Further, it will require amendment of MSC.1/Circ.1321 which specifically requires steel material in certain components. The UI may also have impact on the guidelines for the use of plastic piping onboard ships (IACS UR P4). Said standard specifically provides an equivalence to the SOLAS requirements to use of steel material in shipboard piping. Based on fire risks it prohibits the use of plastic pipes in flammable fluid systems in engine rooms and generally subject to fire endurance test requirements significantly stricter than that of ISO 15540.
- The UI promotes the use of aluminium in an area where the probability of fire is generally considered to be the highest onboard ships. I.e. it may be debated whether the fire risk (frequency x consequence) is sufficiently reduced. It may therefore be difficult to defend why IACS accepts the use of aluminium in components attached to engines only and not in other components in the engine room where the fire risk is lesser. However, this needs to be seen in the context of the volumes and pressures, impacting on the consequence assessment.

SSE 2/11/2 submitted by IACS was agreed by the Sub-Committee with the proposal of Spain that the pressure criterion (i.e. not less than 0.18 N/mm2) is to be applicable not only to the components themselves but to all the elements contained therein, the Sub-Committee subsequently agreed a draft UI for submission to MSC 96 for approval. As a result of this, “and all the elements contained therein” was added to the draft MSC Circular submitted to MSC 96, finally approved as MSC.1/Circ.1527.

6. Attachments if any

1. CIMAC proposal: ‘Use of Aluminium and alloys in engine rooms of category A’ (ST-12-049) dated 14 Nov. 2012 and Appendix I thereto (ST-12-059) dated 15 Nov. 2012
2. Statement from USCG dated 23 January 2013 (via ABS)

CONSEIL INTERNATIONAL DES MACHINES A COMBUSTION

INTERNATIONAL COUNCIL ON COMBUSTION ENGINES

CO-ORDINATING WORKING GROUP

"CLASSIFICATION SOCIETIES – DIESEL"

ST-12-049

14.11.2012
Rev.No. 1 29.11.2012

Use of Aluminium and –alloys in Engine Rooms of Category „A“

Statement of CIMAC WG2 towards IACS MP

Background

Since many years discussions are ongoing between CIMAC WG2 and the IACS MP with regard to the use of Alu and/or Alu-alloys in engine rooms of category “A”.

Today, mainly for 4-stroke medium- and high speed engines quite a number of components are made of Alu and/or such alloys.

It is of utmost importance for all engine designers and engine builders to rely on clear definitions and test requirements/procedures for future developments and applications.

Use of Alu and/or Alu-alloys on 4-stroke medium- and high speed engines

- Fuel filter components, fuel leakage housings
- Oil heat exchanger components, oil extractors, oil centrifuges
- Housings, covers, pans, flanges, elbows, plates, consoles, rail holders
- Actuating cylinders, pumps, control valves, pistons
- Connection parts, plug-in pipes
- TC components
- In general where such materials are being regarded as suitable with respect to stresses, loads wear and other parameters

Use of Alu and/or Alu-alloys on 2-stroke engines

- Hydraulic cylinders
- Shieldings

Other equipment

- Gas admission valves
- Housings for metering plates
- Control and solenoid valves etc.

Arguments for applying subject materials

- Light, easy machining/handling/maintenance

- Cost effective
- Non magnetic (especially for DF engines)
- Approx.three times higher heat conductivity than iron/steel
- Two time higher heat capacity

Possible risks in case of fire when applying subject materials

- Cabling and wiring will be destroyed before any Alu or Alu alloys will be affected by high temperatures
- Engine will be stopped automatically beforehand as installation equipment will not supply any inflammable liquids any more
- Eventually available and burnable liquids in small amounts will not feed a fire

Countermeasures already available in today's engine rooms

- Today's engine rooms are equipped with water sprinkling systems or other fire fighting systems
- Possible risky piping and components are suitably shielded
- Appropriate shut-off valves are applied (especially on DF/GF engines)

Arguments for leaving the today's regulations as they are

- In case of an engine room fire other materials will burn before Alu will be melted
- Oil/lube oil and fuel feeding will be interrupted long before melted Alu would release any burnable liquids
- Engines will be stopped anyway under such circumstances
- Automatic fire fighting systems will be activated
- To ban Alu and/or Alu alloys from engine rooms would have a tremendeous impact on the design (new solutions), weight, price, vibration behaviour, handling and acquisition time
- This would also have an impact on the test beds
- We have no information about fire accidents in engine rooms where possible application of Alu and/or Alu alloys has negatively influenced an existing engine room fire
- CIMAC WG2 is of the opinion that already today enough contributions for protection are available

Conclusion/Proposal

- No regulations regarding the prohibition of Alu and/orAlu alloys in engine rooms of category "A" shall be entered to the existing rules
- Any already stipulated regulations in above respect shall be removed from existing rules
- Clear definitions shall be made available for exactly which components an embargo has to be envisaged, if any
- The implementation of an embargo shall be related to new engines only (with a transition period of at least two years), if ever
- Furthermore, we recommend to take Appendix I into consideration

CONSEIL INTERNATIONAL DES MACHINES A COMBUSTION

CIMAC

INTERNATIONAL COUNCIL ON COMBUSTION ENGINES

CO-ORDINATING WORKING GROUP

"CLASSIFICATION SOCIETIES – DIESEL"

ST-12-059 15.11.2012

Use of Aluminium and –alloys in Engine Rooms of Category „A“

APPENDIX I

to ST-12-049 dated 14.11.2012

Actual situation

In a lot of cases, Aluminium is used on diesel engines and in equipment installed in machinery spaces of category A. Aluminium is used instead of iron and steel due to its specific material properties as e.g.

	Steel / Iron	Aluminium
Specific weight	7,8	2,7
Heat / thermal conductivity	50	170
Heat capacity	490	880
Melting point °C	1150	660
E-modul	210	70
	magnetic	unmagnetic

According to the existing SOLAS requirements, Aluminium as metal is a non combustible material, because it neither burns nor produces flammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C. This has to be determined in accordance with the Fire Test Procedure Code. According to the Fire Test Procedure Code 2010, 6 “Products which may be installed without testing and/or Approval” and in connection with Annex 2 “Products which may be installed without testing and/or approval”, 1 “Non combustible materials”, are in general, products made only of glass, concrete, ceramic products, natural stone, masonry units, common metals and metal alloys considered as being non-combustible and they may be installed without testing and approval. Therefore, aluminium is a non-combustible material.
Only due to structural reasons, to keep the stability and integrity of the ship body and hull, aluminium has to be protected against excessive heat and tested according to SOLAS and FTP-Code. But this technical requirement is not applicable to the components fitted on the diesel engines and equipment installed in the machinery spaces of category A. Therefore it is assumed, that parts made of aluminium, installed on the diesel engines, as e.g. crankcase doors, cylinder covers etc. could be made of aluminium.

The requirement of "Steel or other equivalent material" means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the fire standard test (e.g., aluminium alloy with appropriate insulation) according to SOLAS. This is required by SOLAS, consolidated edition 2009, Chapter II-2, Part B: "Prevention of fire and explosion", Regulation 4 "Probability of ignition", 2.2.5 "Oil fuel piping". For filters, regulation valves, separator for oil mist, strainer etc. installed in machinery spaces of category A, the structural integrity of the pressure loaded housing, body and piping is not the main fire protection criteria due to the very special and comprehensive fire detection and fighting system requirements to keep the function of the machinery installed in this machinery spaces. The machinery will fail at temperature below 150°C due to the installed sensors, cables, sealing, electronic etc. To maintain the propulsion energy and electrical energy, any high temperature or any fire is to be detected by the fire detection system. Additional, it has to be considered, that steel bolts and nuts used for the connection of conventional steel flanges lose their mechanical strength by heating up from 20°C to 200°C for bolts strength class 5.6 from 300N/mm² to 195 N/mm² and bolts of strength class 8.8 from 640 N/mm² to 480 N/mm². Based on this strength loss, any flange connection sealing system will be untight because of the loss of the pretension of the sealing. The leaking flammable liquids of the steel piping system will make light and spread any fire in the machinery space. A lot of sealings, especially O-ring sealing, are not heat-resistant for more than 200°C.

Conclusion

In regard to the above mentioned reasons, aluminium should be allowed to be used in and on machinery and the related equipment and piping installed in machinery spaces of category A.

References:

SOLAS consolidated edition 2009, Chapter II-2. "Construction – fire protection, detection, extinction" Part A "General", Regulation 3 "Definitions", 33; 43
2010 FTP Code, International Code for Application of fire test Procedures, 2010, 2012 edition:
Annex 1: Part 1, Appendix "Fire test procedures for non-combustibility test", "Introduction"
6 "Products which may be installed without testing and/or Approval",
Annex 2 "Products which may be installed without testing and/or approval", 1 "Non combustible materials"

Commandant
United States Coast Guard

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U.S. Department of Homeland Security
United States Coast Guard

16703/46 CFR 56
2012-1143
January 23, 2013

Mr. Roy Bleiberg
Director of Engineering
ABS Americas
16855 Northchase Drive
Houston, TX, 77060

Subj: Material Selection for Vital Piping Systems
Filters for Lubricating and Fuel Oil Systems
Aluminum Parts for Engines and Reduction Gears

Dear Mr. Bleiberg:

Thank you for your letter and supporting documentation of November 6, 2012 requesting information on the Coast Guard's position with respect to material selection of components intended for use within certain engineering system components. The following comments are forwarded for your consideration:

Lube oil and fuel oil filters.

1. With regard to your inquiry pertaining to the use of lube oil and fuel oil filters constructed of materials other than steel, we note the accommodation of SOLAS, Chapter II-2, Regulation 4.2.2.5 to conditionally allow for the installation of flexible pipes and end attachments within fuel oil piping systems provided the components are of approved fire-resisting materials of adequate strength and construction. Accordingly, we would likewise accept the use of heat sensitive materials for lube oil and fuel oil filters if the component(s) was demonstrated to provide an equivalent level of fire-resistance. As indicated by SOLAS, Chapter II-2, Regulation 4.2.2.5, equivalence could be demonstrated by successful testing to the International Organization for Standardization (ISO) publication ISO 15540:1999.

2. We would apply a similar approach toward vessels operating solely on domestic routes. 46 CFR 50.20-30 provides an avenue for acceptance of new or improved materials or methods of construction; accordingly, the successful testing of a filter to ISO 15540:1999 would demonstrate an acceptable degree of fire-resistance. Lastly, while 46 CFR Part 56 incorporates ASTM F1201 as an acceptable general design and testing standard for fluid conditioner fittings, the standard is not sufficient for vessels required to conform to SOLAS, Chapter II-2.

3. If a fire shield is required to pass the testing of ISO 15540, the shield must be installed and maintained as tested in order to achieve an equivalent level of fire-resistance to that prescribed by SOLAS, Chapter II-2, Regulation 4.2.2.5.

Components attached directly to an engine or reduction gear unit that may release fuel or lube oil during a fire:

Subj: Material Selection for Vital Piping Systems
Filters for Lubricating and Fuel Oil Systems
Aluminum Parts for Engines and Reduction Gears

16703/46 CFR 56
2012-1143
January 23, 2013

1. Aluminum cover plates on internal combustion engines and reduction gears.

The material, design, construction, workmanship, and arrangement of main propulsion machinery must be at least equivalent to the ABS Steel Vessel Rules (2003) as prescribed by 46 CFR 58.05-1. Accordingly, federal regulations do not prohibit the use of aluminum in the construction of these components.

2. Aluminum oil pans on internal combustion engines.

Similar to cover plates, our regulations (46 CFR 58.05-1) state that these components must be at least equivalent to the ABS Steel Vessel Rules (2003).

3. Aluminum in valve bodies.

Both SOLAS and our federal regulations require the use of steel in the construction of these components; however, consistent with our performance-based approach with fuel filters and flexible hoses, valves that successfully pass the testing of ISO 15540 would be acceptable as providing an equivalent level of fire resistance. Certification of successful testing to ISO 15540 would facilitate approval from the Marine Safety Center per 46 CFR 56.60-1(a)(2).

The actuators of power operated positive shutoff valves must also be taken into consideration in the context of fire resistance equivalency. Per 46 CFR 56.50-60(d)(3), the actuators must be capable of closing the valves under all conditions. Similar to the valve body, the valve actuator must also provide an equivalent level of fire resistance. One means to establish fire resistance equivalency is through successful testing of both the valve and the actuator to ISO 15540. We would consider a satisfactory test of a valve actuator to include five successful cycles (open/close) of the valve following the fire testing of the valve/actuator assembly. With the understanding that a more appropriate fire test may exist for the testing of actuators, we would consider other suggestions as a potential alternate to ISO 15540.

Sincerely,

C. K. MARCY
Commander, U.S. Coast Guard
Chief, Systems Engineering Division,
Office of Design and Engineering Standards
By direction

Copy: Commanding Officer, Coast Guard Marine Safety Center (MSC-2)

UI SC284 "Automatic shutdown of the inert gas system and its components parts"

Summary:

This UI provides a unified interpretation of the term "Automatic shutdown" in Chapter 15.2.2.2.2 of the FSS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2018)	12 June 2018	1 July 2019

- **New (June 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Need for interpretations related to inert gas systems identified as part of the revision of UR F20 under task PM9905.

UI developed by correspondence and at 23rd panel meeting (March 2016).
The UI was agreed by PM15909_IMp (November 2016) and submitted to SSE4 by paper SSE 4/12/3.

The UI, as approved by MSC98 by MSC.1/Circ.1582, was reflected into the appropriate IACS format (April 2018)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 27 November 2015
Panel Approval: 05 April 2018 (Ref: PM15909)
GPG Approval: 12 June 2018 (Ref: 16133cIGo)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC284:

Annex 1. **TB for New (June 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC284 (New June 2018)

1. Scope and objectives

A number of issues relating to inert gas system requirements in the FSS Code require clarification for a uniform application. Task PM15909 was initiated to develop interpretations for pertinent parts of FSS Code chapter 15.

2. Engineering background for technical basis and rationale

FSS Code Chapter 15.2.2.2.2:

The new FSS code has transformed the previous prescriptive shut-down requirements to a vague requirement referring to all alarm criteria in the FSS code (i.e. 15.2.2.4 (flue gas), 2.3.2 (IGG) and 2.4.2(N2)). The Panel considers it important to develop an interpretation as to what should trigger an automatic shut-down of the inert gas system and its components while not increasing the criteria beyond those that exist today.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the new FSS Code Chapter 15 (applicable from 1 January 2016).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

FSS Code Chapter 15.2.2.2.2:

The Panel agreed on the need to re-introduce prescriptive shutdown criteria. One member proposed not to include ‘High oxygen content’ and ‘failure of the burner, i.e. flame failure for IGG’. It was agreed to omit ‘flame failure’ as this specific feature is not included in the FSS code. With regards to ‘High oxygen content’ the Panel agreed to keep this criterion based on the following reasoning: the new FSS code has amended the shut-down O2 limit so that the alarm limit and shut-down limit is the same (5%). The valve in question is the gas regulating valve. Paragraph 2.2.2.4 requires that if the O2 level is above 5% it shall be automatically vented to atmosphere, i.e. it shall not be led to tanks. In order to prevent off-spec inert gas to be led to a cargo tank, the gas regulating valve must close automatically. It was agreed to add the qualifier ‘in excess of 5% by volume’.

6. Attachments if any

None

UI SC285 “Operational status of valves to cargo tanks”

Summary:

This UI provides a unified interpretation of the term “Unambiguous information regarding the operational status of such valves” (i.e. stop valves in branch piping leading from the inert gas main to cargo tanks) in Chapter 15.2.2.3.2.2 of the FSS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2018)	12 June 2018	1 July 2019

- **New (June 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Need for interpretations related to inert gas systems identified as part of the revision of UR F20 under task PM9905.

UI developed by correspondence and at 23rd panel meeting (March 2016).
The UI was agreed by PM15909_IMp (November 2016) and submitted to SSE4 by paper SSE 4/12/3.

The UI, as approved by MSC98 by MSC.1/Circ.1582, was reflected into the appropriate IACS format (April 2018)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 27 November 2015
Panel Approval: 05 April 2018 (Ref: PM15909)
GPG Approval: 12 June 2018 (Ref: 16133cIGo)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC285:

Annex 1. **TB for New (June 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC285 (New June 2018)

1. Scope and objectives

A number of issues relating to inert gas system requirements in the FSS Code require clarification for a uniform application. Task PM15909 was initiated to develop interpretations for pertinent parts of FSS Code chapter 15.

2. Engineering background for technical basis and rationale

FSS Code Chapter 15.2.2.3.2.2:

Under the previous version of the FSS Code it was common practice that the required locking arrangement for valves was an acceptable manual control system. The new FSS code specifies that the control system shall provide unambiguous information about the operational status of such valves to at least the control panel required in paragraph 2.2.4. The last part of the sentence (in italics) has been added. This must mean that such valves, even though required to be provided with a locking arrangement under the control of a responsible officer, have to be provided with position indicators with signal feed to a control panel.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the new FSS Code Chapter 15 (applicable from 1 January 2016).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

FSS Code Chapter 15.2.2.3.2.2:

There was some discussion as to whether position indicators may be manually controlled, however, the Panel majority did not support this and considered that unambiguous information about the operational status of stop valves at the control panel can only be achieved by a signal feed from the valve to the control panel.

Moreover, the term ‘unambiguous information’ is understood to mean that also intermediate positions are to be indicated, not just open and closed.

6. Attachments if any

None

UI SC286 “Operational status of the inert gas system”

Summary:

This UI provides a unified interpretation of the term “operational status” in Chapter 15.2.2.4.1 of the FSS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2018)	12 June 2018	1 July 2019

- **New (June 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Need for interpretations related to inert gas systems identified as part of the revision of UR F20 under task PM9905.

UI developed by correspondence and at 23rd panel meeting (March 2016).
The UI was agreed by PM15909_IMp (November 2016) and submitted to SSE4 by paper SSE 4/12/3.

The UI, as approved by MSC98 by MSC.1/Circ.1582, was reflected into the appropriate IACS format (April 2018) with the exception for wording “upstream of” which was modified to “downstream of” (the explanation for this modification is detailed in paragraph 5 of the TB)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 27 November 2015
Panel Approval: 05 April 2018 (Ref: PM15909)
GPG Approval: 12 June 2018 (Ref: 16133cIGo)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC286:

Annex 1. **TB for New (June 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC286 (New June 2018)

1. Scope and objectives

A number of issues relating to inert gas system requirements in the FSS Code require clarification for a uniform application. Task PM15909 was initiated to develop interpretations for pertinent parts of FSS Code chapter 15.

2. Engineering background for technical basis and rationale

FSS Code Chapter 15.2.2.4.1:

This is a new requirement where the intention is unclear and where an interpretation is needed. The operational status of the inert gas system relates to whether inert gas is delivered to deck or not. As a suitable indicator the position of the gas regulating valve and pressure/flow of the inert gas mains downstream of the non-return devices is proposed.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the new FSS Code Chapter 15 (applicable from 1 January 2016).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

FSS Code Chapter 15.2.2.4.1:

The original proposal for an interpretation read

‘The requirement in FSS code 15.2.2.4.1 for indication of the operational status of the inert gas system shall be based on whether inert gas is supplied to the cargo deck area or not. I.e. the indication shall be based on the operational status of the gas regulating valve’.

One member considered that for the specific purpose of monitoring the status of the IG system (i.e. whether gas is delivered or not) monitoring the variation of the pressure of the inert gas mains forward (intended as “downstream”) of the non-return devices is also a suitable indicator. The interpretation was therefore amended accordingly.

In the IACS paper to IMO (SSE 4/12/3 Rev.1) the term “forward” was replaced by “upstream”, which was adopted in IMO MSC.1/Circ.1582, however the new term may lead to misinterpretation although the closing paragraph of the IMO Interpretation clarifies that no additional indicators and alarms are required.

In order to solve this discrepancy IACS decided to submit to SSE5 a paper (SSE 5/12/2) proposing the Sub-Committee to approve a new UI interpreting the term “forward of” used in the 15 Chapter of the Code and, after approval, to draft the amendments to the Code in order to replace wording “forward of” with the unambiguous ones “downstream of” and “upstream of” as appropriate. In this regard the SSE5 Sub-Committee decided as follow (Ref. SSE 5/17 para. from 12.18 to 12.21):

1) agreed to draft amendments to paragraphs 2.2.3.2.1, 2.2.3.2.6 and 2.2.4.2.1 of chapter 15 of the FSS Code, in order to replace the term “forward of” with “downstream of”, for submission to MSC 100 for approval and subsequent adoption;

2) approved, as an interim solution prior to the entry into force of the aforementioned amendments, a revision of the Unified interpretations of chapter 15 of the FSS Code (MSC.1/Circ.1582), in order to clarify that the term “forward of” should be interpreted to mean "downstream of" and to replace wording “upstream” to “downstream” in the UI for para 15.2.2.4.1, for submission to MSC 100 for approval

6. Attachments if any

None

UI SC287 “Low pressure audible alarm system”

Summary:

This UI provides a unified interpretation of the term “independent alarm system” in Chapter 15.2.2.4.5 of the FSS Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (June 2018)	12 June 2018	1 July 2019

- **New (June 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

Need for interpretations related to inert gas systems identified as part of the revision of UR F20 under task PM9905.

UI developed by correspondence and at 23rd panel meeting (March 2016).
The UI was agreed by PM15909_IMp (November 2016) and submitted to SSE4 by paper SSE 4/12/3.

The UI, as approved by MSC98 by MSC.1/Circ.1582, was reflected into the appropriate IACS format (April 2018)

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 27 November 2015
Panel Approval: 05 April 2018 (Ref: PM15909)
GPG Approval: 12 June 2018 (Ref: 16133cIGo)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC287:

Annex 1. **TB for New (June 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC287 (New June 2018)

1. Scope and objectives

A number of issues relating to inert gas system requirements in the FSS Code require clarification for a uniform application. Task PM15909 was initiated to develop interpretations for pertinent parts of FSS Code chapter 15.

2. Engineering background for technical basis and rationale

FSS Code Chapter 15.2.2.4.5:

As per FSS Code Ch. 15.2.2.4.5, the term independent alarm system implies that the low-low pressure alarm is required to be a pressure transmitter which is independent of the pressure transmitter that is required for the low and high pressure alarms and the pressure recording device, except when the shut-down option is selected. In the event automatic shut-down is provided, the reason for shutdown should be alarmed. Also, the shut-down cannot prevent the operation of ballast pumps and bilge drainage of cargo pump rooms.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of the new FSS Code Chapter 15 (applicable from 1 January 2016).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

FSS Code Chapter 15.2.2.4.5:

This interpretation was agreed at the 23rd Panel meeting (March 2016) without dissenting views.

6. Attachments if any

None

UI SC288 "Carriage of Dangerous Goods – Required Air Changes"

Summary:

IACS UI SC288 provides an interpretation of SOLAS Reg. II-2/19.3.4.1 and Reg. II-2/19.3.5.4 in order to clarify the required air change when transporting dangerous goods of classes 2, 3, 6.1 and 8 in closed freight containers and when the bilge pump is located directly inside a container cargo space.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2018)	12 December 2018	1 January 2020

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

To clarify the minimum required air change when transporting dangerous goods of classes 2, 3, 6.1 and 8 in closed freight containers and when the bilge pump is located directly inside a container cargo space.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

The issue was raised within the Safety Panel by a member. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: by Safety Panel
Panel Approval: 14 November 2018 (Ref: PS18010e)
GPG Approval: 12 December 2018 (Ref: 18183bIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC288:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC288 (New Dec 2018)

1. Scope and objectives

To develop an interpretation in order to clarify the required air change when transporting dangerous goods of classes 2, 3, 4 liquids, 5.1 liquids, 6.1 and 8 in closed freight containers and when the bilge pump is located directly inside a container cargo space.

2. Engineering background for technical basis and rationale

In the case of dangerous goods carried in closed freight containers:

- It is quite common that the bilge pump for the bilge system dedicated to the dangerous good cargo spaces (as per SOLAS II-2/19.3.5) be located inside the cargo spaces themselves.

- SOLAS II-2/19.3.4.1 requires 6 air changes per hour in enclosed cargo spaces. However, as per Note 1 in table 19.1, this ventilation rate may be reduced to 2 air changes per hour when carrying dangerous goods of classes 2, 3, 4 liquids, 5.1 liquids, 6.1 and 8 in closed freight containers.

- On the other hand, SOLAS II-2/19.3.5.4 requires 6 air changes per hour in the space containing the bilge pump serving the dangerous good cargo spaces.

<u>Bilge pump serving one cargo space</u>

Members' understanding is that, in case the bilge pump is located in a container cargo space and Note 1 of table 19.1 is applicable (i.e. only dangerous goods of classes 2, 3, 4 liquids, 5.1 liquids, 6.1 and 8 in closed freight containers are carried in the concerned cargo spaces), taking into account that the pump is adequate for use in such space (e.g. diaphragm-type pump), only 2 air changes per hour are needed in the container cargo space, notwithstanding SOLAS II-2/19.3.5.4. Indeed, it is believed that the bilge pump will not introduce any additional leakage hazards in the container cargo space; since the cargo carried in the space is the actual source of a potential leakage.

<u>Bilge pump serving several cargo spaces</u>

Same principle is applied: Hazardous cargo leakage in any one cargo space may lead to hazardous cargo in the bilge system, possibly leaking from the pump itself. Therefore, the ventilation rate in the cargo space containing the pump is to be at least the ventilation rate required in any one of the cargo spaces served by the bilge system.

3. Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-2/19.3.4.1
SOLAS Regulation II-2/19.3.5.4
SOLAS Regulation II-2/19 Table 19.1 Note 1

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The overall impetus for this UI is to clarify the application of “2 air changes per hour are needed in the container cargo hold, notwithstanding the provisions of SOLAS II-2/19.3.5.4” (Note 1 of table 19.1), therefore to have a better chance of acceptance of the UI, the 1st sentence has been drafted in such way that Note 1 of table 19.1 apply equally to the ventilation air change requirements in SOLAS II-2/19.3.4.1 and in SOLAS II-2/19.3.5.4 in case the bilge pump is installed directly in the container cargo space.

6. Attachments if any

None

UI SC289 "Separation arrangements between inert gas piping and cargo tanks"

Summary

UI SC289 was withdrawn on 08 July 2019

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawn (July 2019)	08 July 2019	-
New (Dec 2018)	20 December 2018	1 January 2020

- **Withdrawn (July 2019)**

UI SC289 (New Dec 2018) was withdrawn on 08 July 2019 prior to coming into force on 1 Jan 2020 (Ref: 18183kIGi)

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

None

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

- PM9905_IMn, item 5.
- Initial draft UI agreed with PM15909_IMo.
- Return to Machinery Panel by GPG under 16133cIGd.
- Reworked UI agreed at the 28th Panel meeting.

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: 30 November 2015 Made by: Machinery Panel
Panel Approval: 03 December 2018 (Ref: PM15909)
GPG Approval: 20 December 2018 (Ref: 16133cIGq)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC289:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC289 (New Dec 2018)

1. Scope and objectives

A number of issues relating to inert gas system requirements in SOLAS and the FSS Code require clarification for a uniform application. Task PM15909 was initiated to develop interpretations for pertinent parts of SOLAS II-2 and FSS Code chapter 15. IACS UIs SC284, SC285, SC286 and SC287 and this UI have been part of this Task.

2. Engineering background for technical basis and rationale

The FSS Code specifies that each cargo tank not being inerted shall be capable of being separated from the inert gas main by:

.1 removing spool-pieces, valves or other pipe sections, and blanking the pipe ends ; or

.2 arrangement of two spectacle flanges in series with provisions for detecting leakage into the pipe between the two spectacle flanges; or

.3 equivalent arrangements to the satisfaction of the Administration, providing at least the same level of protection.

The above requirement is considerably stricter than before and is even stricter than the ones for a connection between a liquid cargo pipe and the inert gas system (FSS Code 15.2.2.3.2.7). It is noted that the risk of leaks (high pressure cargo) and consequence (liquid cargo ingress into the inert gas/vapour/venting system) is more severe for the connections of inert gas to liquid cargo piping. It is thus proposed that the same arrangements as for connections between liquid cargo and inert gas systems are accepted also for tank connections to the inert gas main. As a spectacle flange is considered to provide an equivalent level of isolation as a valve, the different options in the interpretation have been developed. Fitting of a removable metallic flexible hose combined with a stop valve and spectacle flanges has been also considered.

3. Source / derivation of the proposed IACS Resolution

Members experience gained in the application of SOLAS Reg. II-2/15.2.2.3.2.3.3 with regard to the superseded FSS Code Chapter 15 (applicable from 1 January 2016).

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

a. Equivalent arrangement with metallic flexible hose (last diagram in the UI): There was some discussion about suitable fire test standards for flexible hoses. One member considered that fire testing for flexible hoses and their couplings when used in connections to cargo tanks is necessary to satisfy statutory requirements:

— SOLAS Ch.II-2 Reg.9.6.3 specifies that in order to prevent the spread of fire to the cargo, materials rendered ineffective by heat shall not be used.

— MSC/Circ.353 as amended and as referred to in the FSS code, specifies in 3.9.10 that deck lines should be made of steel.

— It should also be noted that IMO Res.A753(18) requires plastic piping with fire endurance class L1 for branch IG lines unless remote closing valves are provided at the cargo tanks.

It was felt that UR P2.12.5 provides a suitable reference standard. Noting that P2.12.5 also states: '*Other standards may be accepted where agreed by the classification society'* one member drew attention to OCIMF Specification Guide for Dock Hoses (the standards referred in the Specification Guide are contained also in the 2013 CDI-ICS-OCIMF-SIGTTO STS Transfer Guide, section 9.2.1).

At the 28th Panel Meeting, it was decided that only a reference to "metallic flexible hoses" is retained in the Footnote under the specific arrangement.

b. FSS Code 15.2.2.3.2.3 vs 15.2.2.3.2.2: During discussions of the initial draft at GPG level in 2017, a comment was raised by a member society clarifying that 15.2.2.3.2.3 talks of "separation" while 15.2.2.3.2.2 of "isolation". According to same member an arrangement of a spool piece and two spectacle flanges sets the minimum standard while the arrangement of two valves or a valve plus a spectacle flange constitutes an interpretation. However the Machinery Panel agreed on interpretations 1 and 2 and decided to retain the corresponding diagrams. With regard to a comment whether in the case of separation by spectacle flanges with venting means a valve per 15.2.2.3.2.2 is still required, the Panel decided to limit the interpretation to 15.2.2.3.2.3.3 only and leave the society to decide whether fitting of a valve (or equivalent) per 15.2.2.3.2.2 is additionally required or, if not required, whether an arrangement without a valve is impractical for leakage preventing purposes.

c. One Member proposed to modify the preliminary agreed interpretation n. 1 as follow for the reason that a double shut off valve is not considered equivalent to and does not provide the same degree of protection as a removable spool piece as required by the FSS code:

"1 <u>Two shut off valves</u> ~~A double shutoff valve~~ with an arrangement to vent the space between the valves in a safe manner; or"

Another Member proposed to add the wording "..valves in series" to the above sentence to improve clarity.

The qualified majority finally agreed to the following wording for Interpretation n.1:

"1 Two shut off valves in series with an arrangement to vent the space between the valves in a safe manner; or"

d. Following a proposal by one Member the provisionally agreed first sentence of the Note was modified and agreed by the qualified majority as follow:

“Note: When one or more valves are fitted to comply with this interpretation to FSS Code 15.2.2.3.2.3.3, they may…”

6. Attachments if any

None

UI SC290 “Emergency source of electrical power on Gas Carriers and Chemical Tankers”

Summary:

This UI provides an interpretation of SOLAS Chapter II-1, Regulation 43.6 (as amended) so as to highlight the need to also apply the revised IGC Code (MSC.370 (93)) section 2.7.2.2.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2018)	21 December 2018	1 January 2020

- **New (Dec 2018)**

.1 Origin of Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

The New SC290 (Dec 2018) (corresponding to the Old UI SC6) is applicable to ships for which the new IGC Code (Res. MSC.370(93)) is applicable.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

This task was triggered by the Machinery Panel during 22nd meeting under PM5901-Maintenance of IACS resolutions.

The Machinery Panel have been requested by GPG to review applicable URs, UIs and RECs under their responsibility as the text in the original IGC code has been revised and the new IGC code has been adopted (Resolution MSC. 370(93) and where necessary propose revision, deletion or amendment of the application statements.

.5 Other Resolutions Changes

UI GC2, UI GC9, Rec.85 & Rec.114

.6 Dates:

Original Proposal: September 2015 during 22nd Machinery Panel Meeting
Panel Approval: 05 December 2018 (Ref: PM5901f)
GPG Approval: 21 December 2018 (Ref: 15042_IGze)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC290:

Annex 1. **TB for New (Dec 2018)**

See separate TB document in Annex 1

◄▼►

Technical Background (TB) document for UI SC290 (New Dec 2018)

1. Scope and objectives

The UI provides clarification of Interpretation of Chapter II-1, Regulation 43.6 of the International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974) as amended by Resolution MSC.1(XLV) with reference to the revised IGC Code (MSC 370(93)) paragraph 2.7.2.2.

2. Engineering background for technical basis and rationale

SOLAS Chapter II-1, Regulation 43.6 reads:

"The emergency generator and its prime mover and any emergency accumulator battery shall be so designed and arranged as to ensure that they will function at full rated power when the ship is upright and when inclined at any angle of list up to 22.5˚ or when inclined up to 10˚ either in the fore or aft direction, or is in any combination of angles within those limits."

Additionally to the SOLAS requirements, the IGC Code (MSC 370(93)) paragraph 2.7.2.2. is to be taken into account when assessing the operating capability & design requirements of the emergency source of power, i.e. that the emergency generator & its prime mover & any accumulator battery function at full rated power at prescribed angle of list & inclination at final equilibrium reached after flooding.

3. Source / derivation of the proposed IACS Resolution

UI SC6 (1977) "Emergency source of electrical power in cargo ships"

4. Summary of Changes intended for the revised Resolution

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC 291 “Safe Type requirements for two-way portable radiotelephone apparatus for fire-fighter's communication”

Summary

This unified interpretation provides clarity on the requirements of SOLAS Regulation II-2/10.10.4 regarding mitigation of the explosion hazard with respect to two-way portable radiotelephone apparatus for fire-fighter’s communication during emergencies.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Jan 2020)	30 January 2020	1 July 2020

- **New (Jan 2020)**

1 Origin of Change:

Select a relevant option and delete the rest.

☑ Other *(Specify: IACS Member’s suggestion)*
☑ Based on IMO Regulation *(MSC.1/Circ.1616, 26 June 2019)*
☑ Based on Other Standard *(IEC 60079)*

2 Main Reason for Change:

The expression in SOLAS Regulation II-2/10.10.4 with regards to the “intrinsically safe” or “explosion proof” type of two-way portable radiotelephone apparatus for fire-fighter’s communication appeared to be vaguely worded. To make the intent of the requirements, which is to effectively mitigate the explosion hazard due to the use of two-way radiotelephones during fire-fighting on board ships, clear and precise the UI was developed after concerns raised by an IACS Safety panel member.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None.

4 History of Decisions Made:

The issue of vague requirements with respect to the safe type of two-way portable radiotelephone apparatuses required to be carried on board as per SOLAS Regulation II-2/10.10.4 (amendments adopted by Resolution MSC. 338(91)) was initially raised

by an IACS Member in December 2017. After a long discussion within the Safety Panel the draft UI and respective submission paper to SSE 6 were agreed by the Panel on 3 December 2018.

Document SSE 6/12/1 was discussed at respective session of the Sub-Committee and finally draft MSC Circular as contained in Annex 3 of WP.4 was agreed by Sub-Committee for submission to MSC 101 with a view of seeking approval. Finally, the Committee approved MSC.1/Circ.1616 on, inter alia, Unified interpretation of SOLAS regulation II-2/10.10.4 (Fire fighting, fire-fighter's outfits, fire-fighter's communication.

In October 2019 Safety Panel decided to develop a separate IACS UI with retroactive application statement, taking into account the PA 11.1 from SSE 6 Observer's report reworded upon receiving the CIRM's inquiry on the IMO UI's entry into force as follows: "PA 11.1 Safety Panel should consider if IACS should adopt the draft UI in document SSE 6/12/1 (See SSE 6/WP.4/Annex 3);".

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

SOLAS Regulation II-2/10.10.4 implies the presence of the fire party consisting of some fire-fighters on board the ship.

7 Dates:

Original Proposal:	15 December 2017 Made by: Safety Panel
Panel Approval:	05 December 2019 (Ref: 18183dPSb)
GPG Approval:	30 January 2020 (Ref: 18183dIGe)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Jan 2020)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI SC 291 New (Jan 2020)

1. Scope and objectives

This Unified interpretation addresses the practical difficulties in defining the requirements for the safe type of two-way portable radiotelephone apparatuses for fire-fighter's communication, required to be carried on board ships by SOLAS Regulation II-2/10.10.4, and assists the global and consistent implementation of said SOLAS Regulation to mitigate the explosion hazard.

2. Engineering background for technical basis and rationale

IACS has identified an issue regarding the safe type requirements to two-way portable radiotelephone apparatuses imposed by amendments to SOLAS regulation II-2/10 adopted by resolution MSC.338(91). Namely, IACS considers the requirement of SOLAS Regulation II-2/10.10.4 aimed for mitigating the explosion hazard as rather vague, and open for interpretation. Moreover, IACS witnessed some inconsistency in the application of these requirements, particularly with respect to the term “explosion-proof type or intrinsically safe”. IACS understands that specifying ‘intrinsically safe’ type equipment is in some ways meaningless without also specifying the need for the certified safe type, and further the essential particulars defined in IEC Standards 60079 and 60092-502, e.g. required category of the intrinsically safe apparatus (“ia”, “ib”, etc.), temperature class or the apparatus group, as ‘intrinsic safety’ is only a method of protection and not a level of protection. Specifying the “explosion-proof type” is considered even more complicated[vague]. It is further noted that similar lack of clarity in requirements relating to two-way portable radiotelephone apparatus for fire patrol on passenger ships can be identified in SOLAS regulation II-2/7.8.3 and is interpreted by MSC/Circ.1120.

3. Source / derivation of the proposed IACS Resolution

Resolution is developed by IACS Safety Panel and derivated from the Unified Interpretations of SOLAS Chapter II-2 adopted by MSC.1/Circ.1616. The latter is based on IACS submission to SSE 6, document SSE 6/12/1.

4. Summary of Changes intended for the revised Resolution:

Not applicable – Original Resolution.

5. Points of discussions or possible discussions

At SSE 6 in discussing paper SSE 6/12/1 on the term “explosion-proof type or intrinsically safe” in the context of SOLAS regulation II-2/10.10.4 (requirements for two-way portable radiotelephone apparatus for fire-fighter's communication) in Fire Protection (FP) Working Group one Member State requested clarification regarding the reference to “apparatus group”; and another one was of the view that paragraph 2 of the interpretation was vague and difficult to implement. However, the majority of those who spoke supported the UI as written. Noting the discussion in the Working Group, the Sub-Committee subsequently agreed to the draft MSC Circular that was consequently approved at MSC 101.

In October 2019 CIRM conveyed its concern that taking into account the nature of IMO UI's and their application, IACS UI that applies to newbuilding ships only would not apply in cases when the new fire-fighter radios are introduced to existing ships (replacement of equipment, ships being slow to meet the carriage requirement, etc.) and non-compliant radios might still be carried on board said ships with the attendant risk to the crew. The revised application statement addresses the matter.

6. Attachments if any

None.

SC 292 “Ships intended to operate in low air temperature in Polar waters - Survival craft and rescue boat communications capabilities”

Summary

This UI provides interpretation of requirements to survival craft and rescue boat communications capabilities for ships intended to operate in low air temperature in Polar waters stipulated in Polar Code (Res. MSC.385(94)), including those regarding the provision of mandatory communication equipment, the ability of the latter to perform its functions and in particular of vague expressions in paragraphs 10.2.2.1 and 10.2.2.2, 10.2.2.3, 10.3.2.3 of part I-A of the Code.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2020)	18 February	1 July 2020

- **New (Feb 2020)**

1 Origin of Change:

Select a relevant option and delete the rest.

☑ Suggestion by IACS member

2 Main Reason for Change:

Vague expressions in 10.2.2.1 and 10.2.2.2, 10.2.2.3, 10.3.2.3 of part I-A Polar Code with regard to mandatory communication equipment of survival craft and rescue boat on ships intended to operate in low air temperature in Polar waters. Absence of respective performance standards.

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issue of vague carriage requirements and performance standards for LSA communication equipment was raised by an IACS Member in December 2017 in connection with the report of the IMO Correspondence Group on consequential work related to the Polar Code, (NCSR 5/10).

Following the Panel's internal discussion, the development of the draft IACS UI was proposed by a Member in February 2018. It was developed and agreed by the IACS Safety Panel in October 2018 and sent to GPG (18153bIGb) in November 2018.

Amendments proposed by GPG were discussed and included as considered necessary. The IMO sub-committee on Navigation, Communication, Search and Rescue (NCSR 6) agreed to include the UI in the Appendix to the draft GUIDANCE FOR NAVIGATION AND COMMUNICATION EQUIPMENT INTENDED FOR USE ON SHIPS OPERATING IN POLAR WATERS which was approved at MSC 101 as MSC.1/Circ.1612. The appendix of the Guidance contained the interpretation submitted by IACS.

The Safety Panel at its 11th Meeting in March 2019 agreed to the need for a separate IACS UI on the matter in order to ensure consistency in application across IACS Members given the different approaches taken by Members to IMO Circulars.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable. UI does not change the respective Polar Code requirements, the latter imply the presence of crew on board.

7 Dates:

Original Proposal:	17 April 2019 (Made by: Safety Panel)
Panel Approval:	20 September 2019
GPG Approval:	18 February 2020 (Ref: 18153bIGf)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Feb 2020)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for SC292 (New Feb 2020)

1. Scope and objectives

This Unified interpretation addressing the practical difficulties in decision making while assessing the ship's capabilities and limitations as required by the Polar Code and assisting the global and consistent implementation of Polar Code survival craft and rescue boat communication equipment capability requirements.

2. Engineering background for technical basis and rationale

IACS has identified two issues where global and consistent implementation of Polar Code requirements to survival craft and rescue boat communications capabilities can benefit from further clarification.

First issue is the number of communication devices for survival craft to be provided on board ship intended to operate in low air temperature in accordance with Chapter 10 of Part I-A of the Polar Code. It is noted that SOLAS regulations III/21 and III/31, in particular, provides for some redundancy in aggregate capacity of the survival craft. In this regard IACS encounters two different approaches in assigning the required number of communication devices.

First approach is based on the assumption that all survival craft under certain scenario can be released for evacution simultaniously. The second one utilises concept that the number of the survival craft released for evacuation should be calculated on the aggregate capacity basis to accommodate the total number persons on board, i.e. for the cargo ship to which SOLAS regulation III/31 applies only lifeboats on one side of the ship are considered.

Second issue is non-consistent interpretation of the expressions "shall maintain capability for", "shall be capable of operation during the maximum expected time of rescue" and "are available for operation during the maximum expected time of rescue" used in Chapter 10 of Part I-A of Polar Code in respect to whether the communication devices can be turned on at specific, pre-agreed in PWOM intervals during rescue to preserve battery life or those shall be technically in continuous operation for maximum expected time of rescue, i.e. minimum 5 days.

3. Source / derivation of the proposed IACS Resolution

Resolution is developed by IACS Safety Panel.

4. Summary of Changes intended for the revised Resolution:

Not applicable – Original Resolution.

5. Points of discussions or possible discussions

During discussion at NCSR 6 draft UI was supported by some which were of the view that the UI didn't undermine the Polar Code requirements and in fact the UI was helping to clarify how the equipment could remain operational during the maximum expected time of rescue (5 days). It was pointed out by one delegation that a

combination of design and operational measures was acceptable under the Polar Code as a means to manage operational risk.

On the other hand one delegation expressed support for the first part of the UI but not for the second part related to the alternative to interrupt the use of radio communications to conserve battery life. That delegation was of the view that a UI was not appropriate and that there were means to achieve continuous operation of the equipment for the expected time of rescue.

The possibility of retroactive application was discussed but not agreed as it would be introducing additional carriage requirements.

6. Attachments if any

None

UI SC293 "Lifebuoy Arrangements for Means of Embarkation / Disembarkation"

Summary

This UI provides a unified interpretation (UI) on Lifebuoy Arrangements for Means of Embarkation/Disembarkation (SOLAS Regulations III/7/1/3 and II-1/3-9 and MSC.1/Circ. 1331)

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2020)	24 February 2020	1 July 2020

- **New (Feb 2020)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

None

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

There is a contradiction between the requirement of SOLAS reg. 7.1.3 and MSC.1/Circ.1331 with regard to lifebuoys with lifelines and lights and the number of lifebuoys fitted with a buoyant lifeline that may be carried on board ship.

UI clarifies that a lifebuoy, fitted with both a light and a lifeline as per MSC.1/Circular.1331 for compliance with Regulation II-1/3-9, is not to be credited for complying with the minimum number and distribution of lifebuoys as required by SOLAS Reg. III/22.1.1 or III/32.1.1, as applicable.

UI agreed in the IACS Safety Panel (PS17019a) and was submitted to IMO SSE 6. SSE 6 approved a MSC circular based on IACS SSE 6/12/3 as contained in SSE 6/18, annex 7, for submission to MSC 101. MSC 101 adopted the draft MSC circular as MSC.1/Circ.1618.
IACS revised the original draft UI SC293 to reflect MSC.1/Circ.1618 and included an

application date which applies the UI to “ships contracted for construction on or after 1 July 2020”.

IACS informed SSE 7 on agreed by IACS application date of this UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

Not applicable.

7 Dates:

Original Proposal: 14 November 2017 (Made by: An IACS member)
Panel Approval: 15 January 2020 (Ref: 17175cIGi)
GPG Approval: 24 February 2020 (Ref: 17175cPSd)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Feb 2020)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI SC293 (New Feb 2020)

1. Scope and objectives

Some confusion exists between the requirements of SOLAS and MSC.1/Circ.1331 regarding the number of lifebuoys fitted with a buoyant lifeline that may be carried on board ship.

UI SC293 clarifies that a lifebuoy, fitted with both a light and a lifeline as per MSC.1/Circular.1331 for compliance with Regulation II-1/3-9, is not to be credited for complying with the minimum number and distribution of lifebuoys as required by SOLAS Reg. III/22.1.1 or III/32.1.1, as applicable.

2. Engineering background for technical basis and rationale

1 SOLAS Regulation III/7.1.2 and 1.3 state:

> "1.2 At least one lifebuoy on each side of the ship shall be fitted with a buoyant lifeline complying with the requirements of paragraph 2.1.4 of the Code ……
>
> 1.3….lifebuoys with lights and those with lights and smoke signals shall be equally distributed on both sides of the ship and shall not be the lifebuoys provided with lifelines in compliance with the requirements of paragraph 1.2."

2 SOLAS Regulation II-1/3-9.2: 'Means of embarkation on and disembarkation from ships' states:

> "9.2 The means of embarkation and disembarkation required in paragraph 1 shall be constructed and installed based on the guidelines developed by the Organization.*
>
> ** Refer to MSC.1/Circular.1331, Guidelines for construction, installation, maintenance and inspection/survey of means of embarkation and disembarkation."*

3. MSC.1/Circ.1331 paragraph 3.3

> "A lifebuoy equipped with a self-igniting light and a buoyant lifeline should be available for immediate use in the vicinity of the embarkation and disembarkation arrangement when in use."

3. Source / derivation of the proposed IACS Resolution

- SOLAS Regulation III/7.1.2
- SOLAS Regulation II-1/3-9.2:
- MSC.1/Circ.1331 paragraph 3.3

4. Summary of Changes intended for the revised Resolution

None

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC294 “Fire integrity of the division between engine room and urea or sodium hydroxide solution tank installation spaces”

Summary

This UI provides an interpretation of SOLAS Reg. II-2/3.30, 9.2.2.3.2.2, 9.2.2.4.2.2, 9.2.3.3.2.2 and 9.2.4.2.2.2 in order to clarify required fire integrity of bulkheads and decks between engine room and urea or sodium hydroxide solution tank installation spaces for the application of SOLAS II-2 Reg.9.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Feb 2020)	24 February 2020	1 July 2020

- **New (Feb 2020)**

1 Origin for Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

To clarify required fire integrity of bulkheads and decks between engine room and urea or sodium hydroxide solution tank installation spaces for the application of SOLAS II-2 Reg.9.

3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

The issue was raised within the Safety Panel by a member. After some discussion it was agreed to draft an IACS UI and associated HF and TB.

After consideration by the IMO the UI was finalised to align with MSC.1/Circ.1616.

5 Other Resolutions Changes

None

6 Any hinderance to MASS, including any other new technologies:

The basic principles relating to MASS as agreed by GPG have been taken into account during the development of this UI. No hinderances have been identified.

7 Dates:

Original Proposal:	February 2018 (Made by Safety Panel)
Panel Approval:	23 January 2020 (Ref: 18183gPSb)
GPG Approval:	24 February 2020 (Ref: 18183gIGe)

Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (Feb 2020)**

See separate TB document in Annex 1.

Technical Background (TB) document of UI SC294 (New, Feb 2020)

1. Scope and objectives

To develop an interpretation in order to clarify required fire integrity of bulkheads and decks between engine room and urea or sodium hydroxide solution tank installation spaces for the application of SOLAS II-2 Reg.9.

2. Engineering background for technical basis and rationale

None

3. Source / derivation of the proposed IACS Resolution

SOLAS Regulation II-2/9

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

Urea or sodium hydroxide solution is used as a reducing agent for SCR systems, EGR systems or EGCS and the storage tanks are often installed in the space within the main engine room or an independent compartment adjacent to main engine room.
In case that storage tanks are located within the engine room, such space is considered same as several other spaces like storage spaces, workshops, converter rooms, etc., that is, a part of main engine room.
On the other hand, if the storage tanks are installed in a space separated from the engine room, for the application of SOLAS II-2 Reg.9, the category of such compartment shall be determined in accordance with SOLAS II-2 Reg9.2.2.3.2.2, 9.2.2.4.2.2, 9.2.3.3.2.2 or 9.2.4.2.2.2. However, such compartment is not defined in these regulations. Hence the most appropriate category should be assigned to the compartment considering their fire properties and others.
Considering the chemical properties of these products, those are regarded as “non-flammable liquid” or “flashing point exceeding 60 degree”, and don’t have explosion property. From these points of view, Safety Panel reached the conclusion that “Other machinery room” for passenger ships carrying not more than 36 person and cargo ships, and “Tanks, voids and auxiliary machinery spaces having little or no fire risk” for ships carrying more than 36 passengers seems the most appropriate category under the regulation by elimination method.

6. Attachments if any

None

UI SC295 "Interpretation of Performance Standards for Float-free Emergency Position-indicating radio beacons (EPIRBs) Operating on 406 MHz (resolution MSC.471(101))"

Summary

Resolution MSC.471(101) includes the vague phrase "installed on or after". This UI clarifies the application requirements.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2021)	23 July 2021	1 July 2022

- **New (July 2021)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

Resolution MSC.471(101) includes the vague phrase "installed on or after 1 July 2022". This requires further clarification in a similar way to UI SC261.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The subject was discussed by the Safety Panel under subject PS21003g between April and June 2021. It was unanimously agreed that a UI was needed.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

The basic principles relating to MASS as agreed by GPG (Refer to C5.2.1 of IACS Procedures Volume 1) have been taken into account while developing this UI, and no impact was identified.

7 Dates:

Original Proposal:	6 April 2021 (*Specify:* Safety Panel member)
Panel Approval:	23 June 2021 (Ref: 21103_PSa)
GPG Approval:	23 July 2021 (Ref: 21103_IGc)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (July 2021)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for SC295 (New July 2021)

1. Scope and objectives

The UI is to clarify the dates for which resolution MSC.471(101) “Performance Standards for Float-free Emergency Position-indicating radio beacons (EPIRBs) Operating on 406 MHz” should be applied.

2. Engineering background for technical basis and rationale

The UI is based on UI SC261 which provides a similar clarification for a similar phrase used in the Performance Standards for voyage data recorders.

3. Source / derivation of the proposed IACS Resolution

UI SC261 was used as the basis for this new UI.

4. Summary of Changes intended for the revised Resolution:

Original document, no changes are applicable.

5. Points of discussions or possible discussions

The Panel discussed whether a more general UI could be developed and decided that it could not be for the following reasons:

- An IACS UI should be for a specific IMO instrument.
- There is a danger that a general UI could be applicable when not intended.
- IACS should be advising the IMO during the development stages so that such issues do not arise.
- The IMO should be following MSC.1/Circ.1500/Rev.1 which requires clear application criteria are stated.

Other members preferred a more general UI to avoid the continual need for IACS UIs when application criteria are not clear.

6. Attachments if any

None

UI SC296 "Noise level limit in workshops onboard ships"

Summary

UI SC296 provides clarity on the noise level limit which is to be applied in workshops not forming part of the engine room.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2022)	03 May 2022	1 January 2023

- **New (May 2022)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

Lack of clarity on the regulation relating to what boundaries a workshop not forming part of the engine room has to have.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group: None

4 History of Decisions Made:

- Proposed by an IACS member in the Safety panel.
- Developed by the Safety panel.
- Submitted to IMO for SDC 8.
- Agreed with minor amendment by SDC 8.
- IACS UI amended to align with the IMO circular MSC.1/Circ.1654.

5 Other Resolutions Changes: None

6 Any hinderance to MASS, including any other new technologies: None

7 Dates:

Original Proposal	: 18 June 2021	(Made by IACS Safety Panel)
Panel Approval	: 13 April 2022	(Ref: PS17010gISr)
GPG Approval	: 03 May 2022	(Ref: 20140gIGd)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New (May 2022)**

See separate TB document in Annex 1.

Technical Background (TB) document for SC296 (New May 2022)

1. Scope and objectives

The aim was to establish a unified interpretation of the term "workshops other than those forming part of the machinery spaces" used in the noise code.

2. Engineering background for technical basis and rationale

IMO Resolution MSC.337(91) Adoption of the code on noise levels on board ships was adopted on 30th November 2012. Regarding the noise level limits for work spaces onboard ships, there is one change highlighted in bold text below which seem to be subjected for different interpretations:

Res. A.468	
Work Spaces:	dB(A)
- Machinery spaces (continuously manned)	90
- Machinery spaces (not continuously manned)	110
- Machinery control rooms	75
- **Workshops**	**85**
- Non-specified workspaces	90
Res. MSC.337(91)	
Work Spaces:	dB(A)
- Machinery spaces	110
- Machinery control rooms	75
- **Workshops other than those forming part of machinery spaces**	**85**
- Non-specified work spaces (other work spaces)	85

The main issue is the definition of workshops, as the text has been changed by including "…other than those forming part of machinery spaces". There seem to be different interpretations on the new text with respect to normal E/R workshops enclosed by bulkheads.

3. Source/derivation of the proposed IACS Resolution

The main intention with the noise code is to ensure a sustainable comfort level onboard for the vessel crew during their rest, to avoid hearing damage during their work, and by this reduce the risk of human fatigue. This has been the basis for the code from the beginning.

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

The distinction between workshop forming part of the machinery spaces and separate workshops was discussed. The material (steel or other) was discussed, but it was concluded that the material of the divisions was not relevant, since the Noise code is not regulation of fire division or strength.

The IMO noted that not all self-contained workshops would have bulkheads which extend from deck to deck and preferred just to ensure that they were "enclosed". The IACS UI was amended to align with the IMO circular MSC.1/Circ.1654.

6. Attachments if any

None

UI SC297 "Amendment to stability/loading information in conjunction with the alterations of lightweight"

Summary

A new UI was determined to be needed to clarify which documents needed to be updated following a change in the lightweight particulars.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Aug 2022)	08 August 2022	1 January 2023

- **New (Aug 2022)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

An IACS member had identified inconsistencies in when the stability information was updated following a change in the lightship particulars, e.g., when weights were added, removed or relocated and between the requirements in SOLAS and the IACS CSR. There was also a lack of clarity on what "stability information" consisted of, for example did it include the loading manual as well.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

The Safety Panel considered the issue raised by the IACS member by correspondence. After some initial discussion a draft UI was prepared.

The subject was briefly discussed at the 13th Safety Panel meeting and further progressed by correspondence.

A draft UI was submitted to the IMO (SDC 8) for agreement. Following the SDC 8 meeting there was further discussion on new text introduced by the Member States (see TB). Amended text was included in the UI. This means that the text of the UI differs slightly from MSC.1/Circ.1362/Rev.1 but the technical intent is the same.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 10 April 2018	(Made by IACS member)
Panel Approval	: 22 July 2022	(Ref: PS18010ISw)
GPG Approval	: 08 August 2022	(Ref: 20203_IGg)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC297:

Annex 1. **TB for New (Aug 2022)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI SC297 New (Aug 2022)

1. Scope and objectives

A uniform approach is needed to clarify when and which documents are updated following changes to the lightship particulars, noting in particular that the IACS CSR BC & OT contain different requirements to those in SOLAS II-1/5 as clarified by the explanatory notes (resolution MSC.429(98)/Rev.1 and Rev.2. This difference can lead to different lightship particulars being shown in the loading manual and the stability book.

2. Engineering background for technical basis and rationale

The Safety Panel considered the requirements contained in SOLAS (and the related explanatory notes) and those in the CSR. The need to have a distribution for the lightweight when calculating the shear forces and bending moments was noted.

3. Source/derivation of the proposed IACS Resolution

SOLAS explanatory notes to chapter II-1, resolution MSC.429(98)/Rev.1 and Rev.2.

4. Summary of Changes intended for the revised Resolution:

Original document so there are no changes from previous version.

5. Points of discussions or possible discussions

The Panel agreed that the lightship particulars in the loading manual and the stability booklet and any computer software needed to be consistent.

The explanatory notes for regulation II-1/5.4 include two sets of limits:

1 When alterations are made to a ship in service that result in calculable differences in the lightship properties, a detailed weights and centres of gravity calculation to adjust the lightship properties should be carried out. If the adjusted lightship displacement or longitudinal centre of gravity, when compared to the approved values, exceeds one of the deviation limits specified in regulation 5.5, the ship should be re-inclined. In addition, if the adjusted lightship vertical centre of gravity, when compared to the approved value, exceeds 1%, the ship should be re-inclined. The lightship transverse centre of gravity is not subject to a deviation limit.

2 When a ship does not exceed the deviation limits specified in explanatory note 1 above, amended stability information should be provided to the master using the new calculated lightship properties if any of the following deviations from the approved values are exceeded:

.1 1% of the lightship displacement; or

.2 0.5% of L for the longitudinal centre of gravity; or

.3 0.5% of the vertical centre of gravity.

It would be possible to exceed the limits in one or both of these paragraphs. The UI clarifies what should happen in different combinations of these two paragraphs. The Panel also considered the cumulative effects of changes; added, relocated and/or removed.

There was some discussion on the need to explicitly state that a change in lightship particulars which did not exceed any of the limits, still required the master to use the updated information when carrying out calculations. Although the Safety Panel agreed that the requirement was implicit in the text, when the draft UI was discussed at the IMO a request was made to make this explicit. Additional text was added to the IMO circular to make the point clear.

Regarding strength matters the Safety Panel noted that the CSR BC & OT have been reviewed and endorsed by the IMO under the goal based standards requirements. Changes to them would require reapproval by the IMO. The Safety Panel also noted that for a strength calculation it was necessary to know the lightweight distribution and not just the mass and location of the centre of gravity. The UI makes it clear that all documents which use lightship particulars should be consistent, so if a change is made to the lightweight in the loading manual then the new particulars should also be used in the stability information.

As a change in lightweight will result in a change in the deadweight of a ship, this may have an impact on compliance with other regulations which are limited by deadweight. A clause to this effect was included in the draft UI. It was modified slightly following the discussion at the IMO to encompass the fact that a change in freeboard could be made to maintain the deadweight (providing the requirements of the Load Line Convention were met).

The Panel considered the effects of a change in VCG and if a change in VCG needed to be considered for upward changes only or if changes downwards should also be considered. It was pointed out that MSC/Circ.1158, annex paragraph 3, required only the higher of a lead ship or sister ship's VCG to be used. However, other members noted that SOLAS (the mandatory instrument) only referred to "deviation" which encompasses both upwards and downwards changes. In addition, there could be circumstances (e.g., removal of a crane located at the side of the ship or rearrangement of internal below decks boundaries) where there would be adverse effects on stability. Equally there would be some uncertainty from the calculation as to whether the VCG was correct. If the ship was then loaded to the limit and the calculation was not accurate, there would be the possibility that the ship would be unsafe.

The additional text agreed by the IMO for inclusion at paragraph 1 c) was extensively discussed by the Panel. There was concern that the newly included text contradicted the explanatory note in resolution MSC.429(98)/Rev.1 and Rev.2.

For reference the IMO text (as shown in MSC.1/Circ.1362/Rev.1) reads:

> *"However, even if addition, removal or relocation of any weight results in lightship particulars being within tolerable limits, that weight should still be noted and the "constant" adjusted for lightweight calculation in the stability information for all future references and calculations."*

The member state which proposed this change to the IACS draft provided the following clarification to IACS.

> "The intent was to keep record of the added mass due to addition of BWTS, Scrubber etc. Even if within tolerable limits, these will still change the "lightweight" of the ship. Your proposed amendment as agreed by SDC 8, requires "a copy of the endorsed lightweight calculation report should be provided on board for future reference with no further amendments required to the stability information".
>
> However, it is not clear how that copy of the endorsed lightweight calculation should be recorded on board for future reference. While the master can file it, there is no guarantee it will be referred to as and when required. We suggest that if the additional weight is noted and the new "constant" is recorded in the stability information it will better serve the purpose. The new definition of "stability information" proposed as agreed by SDC 8 has significantly broadened the remit of stability information and how information can be recorded. This is not "to amend the stability information supplied to the master" or to affect future stability calculations, but to record an important piece of information for future reference. This is also necessary to comply with regulation 5.4.3.
>
> The team think it is important that additional weight and the new "constant" for lightweight calculations be included in the stability information. We don't think the last sentence of the new paragraph 1.3 is going beyond regulation 5.4, especially considering the definition of "stability information" as agreed by SDC 8."

After discussion the Panel agreed to include different text in the UI which makes it clear that the stability information does not need to be revised, only that the new lightship particulars should be recorded in the onboard stability information and used when calculating the stability of loading conditions.

6. Attachments if any

None.

UI SC298 "Interpretations of various Performance Standards related to GMDSS radio installations"

Summary

This unified interpretation intends to clarify the phrase "installed on or after 1 January 2024" used in various IMO Performance standards, related to GMDSS radio installation, adopted at MSC 105 to supplement the amendments to SOLAS IV, as adopted by resolution MSC.496(105).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Corr.1 (Nov 2023)	23 November 2023	-
New (Dec 2022)	02 December 2022	1 January 2024

- **Rev.1 (Nov 2023)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

MSC 107 approved MSC.1/Circ.1676; "Delays affecting the availability of new GMDSS equipment compliant with the revised performance standards set out in resolutions MSC.511(105), MSC.512(105) and MSC.513(105)".

IACS has previously published UI SC298; "Interpretations of various Performance Standards related to GMDSS radio installations which refers to the application statements in resolutions MSC.511(105), MSC.512(105) and MSC.513(105)".

As the circular now opens up for the continued installation equipment compliant with the previous performance standards until 1 January 2028, in our view the UI will need to be amended to reflect this.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Safety Panel considering decision at MSC 107 regarding continued installation of equipment compliant with the previous performance standards until January 2028 agreed to develop this corrigendum for achieving sufficient clarity. Changes relate to updated implementation dates of IMO instruments and therefore these are regarded as *corrigendum*.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 18 July 2023	Made by: Safety Panel member
Panel Approval	: 07 November 2023	(Ref: PS22005qISl)
GPG Approval	: 23 November 2023	(Ref: 22174_IGe)

- **New (Dec 2022)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

The phrase "installed on or after 1 January 2024" used in various IMO Performance standards related to GMDSS radio installation adopted at MSC 105 may lead to non-uniform implementation by IACS member Societies unless a clear guidance is provided.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

MSC 105 adopted various Performance standards pertaining to GMDSS radio installations, as shown below, which were footnoted to the amendments to SOLAS regulation IV/14, as adopted by resolution MSC 496 (105).

- Resolution MSC.508(105) on Performance standards for the reception of MSI and Search and Rescue related information by MF (NAVTEX) and HF (Annex 15 of MSC 105/20)

- Resolution MSC.510(105) on Performance standards for Search and Rescue Radar Transponders (Radar SART) (Annex 17 of MSC 105/20)

- Resolution MSC.511(105) on Performance standards for shipborne VHF radio installations capable of voice communication and DSC (Annex 18 of MSC 105/20)

- Resolution MSC.512(105) on Performance standards for shipborne MF and MF/HF radio installations capable of voice communication, DSC and reception of MSI and Search and Rescue related information (Annex 19 of MSC 105/20)

- Resolution MSC.513(105) on Performance standards for INMARSAT-C Ship Earth Stations capable of transmitting and receiving direct-printing communications (Annex 20 of MSC 105/20)

- Resolution MSC.515(105) on Performance standards for survival craft portable two-way VHF radio-telephone apparatus (Annex 22 of MSC 105/20)

- Resolution MSC.516(105) on Amendments to the performance standards for radio-communication equipment (MSC Res.80(70)) (Annex 23 of MSC 105/20)

- Resolution MSC.517(105) on Performance standards for a shipborne Integrated Communication System (ICS) when used in the GMDSS (Annex 24 of MSC 105/20)

However, the application statements used in the operative paragraphs of those Performance standards uses the phrases "installed on or after 1 January 2024" or "as from 1 January 2024", which may not ensure the uniform application point.

Taking into consideration IACS UI SC 261, UI SC 295, the outcome of discussion on document MSC 105/3/4, etc., a Safety Panel member proposed to develop a related IACS UI to provide a clear guidance on the application point of those Performance standards.

In particular, it was noted that, for resolution MSC.510(105), the application statement is dissimilar to other Performance standards, but was not intended for retroactive application to the radar SART already installed on existing ships, based on the discussion at Draft Group established by MSC 105. It was recalled that IACS raised this issue to DG Chair and the IMO Secretariat before MSC 105; and that DG Chair, in consultation with the IMO Secretariat, gave a clarification mentioning the term "supersedes" used in paragraph 3 of the cover paper of resolution MSC.510(105).

Given that such a UI interprets non-mandatory IMO instruments, Safety Panel decided that the UI, if agreed by IACS, should not be submitted to the IMO, but individual IACS member Societies apply it on a case-by-case basis in cooperation with specific flag States when the need arises.

During the discussion within the panel, it was clarified that some documents adopted at MSC 105 in line with the amendments to SOLAS IV (resolution MSC.496(105)), i.e. resolutions MSC.507(105), MSC.509(105) and MSC.514(105), should not be included in the proposed UI, as those documents are generally not for GMDSS radio installation onboard, but related to the obligation of the contracting governments.

After discussion, Safety Panel finally agreed to develop a related IACS UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 11 July 2022	Made by: Safety Panel member
Panel Approval	: 26 October 2022	(Ref: PS22005q)
GPG Approval	: 02 December 2022	(Ref: 22174_IGc)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC298:

***Note**:*
There is no separate Technical Background (TB) documents available for New (Dec 2022), Corr.1(Nov 2023).

UI SC299 "Watertight testing after fire testing of penetrations in watertight divisions in passenger ships"

Summary

UI SC299 has been developed with a view to provide clarity on the provisions of SOLAS II-1 Regulation 13 when considering the requirements for testing of penetrations in watertight divisions after fire.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2023)	17 July 2023	1 July 2024

- **New (July 2023)**

1 Origin of Change:

Select a relevant option and delete the rest.

☑ Suggestion by IACS member

2 Main Reason for Change:

None.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

4 History of Decisions Made:

A safety panel discussion was initiated with the aim to seek members perspective on the application of SOLAS II-1 regulation 13. The question raised considered whether the term "heat sensitive material" referred to piping systems or to penetration sealing systems.

The safety panel could not reach a strong agreement on this subject and so it was agreed to submit a paper to IMO Sub-Committee SDC8, which agreed the proposal submitted by IACS and a subsequent draft UI was submitted to SDC9 which was again agree by the sub-committee. MSC 107 approved MSC.1/Circ.1362/Rev.2 on Unified interpretation of SOLAS chapter II-1, reflecting the interpretation of SOLAS regulation II-1/13.2.3.

5 Other Resolutions Changes:

None.

6 Any hinderance to MASS, including any other new technologies:

None.

7 Dates:

Original Proposal	: 1 October 2020	Made by: Safety Panel Member
Panel Approval	: 30 June 2023	(Ref: PS20009gISx)
GPG Approval	: 17 July 2023	(Ref: 22076cIGd)

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for Original Resolution (New July 2023)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI SC299

1. Scope and objectives

A safety panel member noted that the application of SOLAS II-1 Regulation 13 was inconsistent leading to variable application in industry. It was unclear as to what the word "system" as used in SOLAS regulation II-1/13.2.3 was, i.e. whether this applies to the penetration system or to the piping system.

Piping systems are either constructed of steel or equivalent materials, where the pipe's integrity is unlikely to be compromised by a fire, or constructed of other materials, such as thermoplastics, which are considered as heat sensitive and where the pipe's integrity is likely to be compromised by a fire.

2. Engineering background for technical basis and rationale

Some members considered that any penetration used for the passage of heat sensitive piping systems through a watertight bulkhead on a passenger ship must be tested with the heat sensitive piping and approved for watertight integrity post fire.

Specifically, for cable penetrations, IACS understands that due to the considered flooding risk, SOLAS regulation II-1/13 is only considered for heat sensitive piping systems and not intended to be applied to pipes which are not heat sensitive or to cable penetrations.

3. Source/derivation of the proposed IACS Resolution

The safety panel could not reach a significant majority and so paper SDC/8/10/7 was submitted to the SDC Sub-Committee to request clarification on the intent of the regulation.

In particular, clarification was sought on the application of regulation 13 to heat sensitive penetration systems or heat sensitive piping systems only. Further to discussions at SDC8, IACS were invited to prepare a UI based on the conclusion presented in that paper. The UI was presented to SDC 9 in paper SDC 9/10/1.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

The paper SDC 8/10/7 submitted by IACS, based on a narrow majority in the safety panel, proposed that the intent of regulation 13 is to prevent flooding between watertight compartments from the major risk of heat sensitive piping, characterised by potentially large diameter piping comprising of polymeric materials which could be compromised quickly by exposure to heat/fire. The secondary risk of flooding caused due to the penetration system itself was considered to be the lesser risk due to the proven fire-resistant nature of the penetration systems.

The sub-committee confirmed the understanding of IACS in paper SDC 9/10/1 and confirmed the draft text as presented in the paper.

MSC 107 approved MSC.1/Circ.1362/Rev.2 on Unified interpretation of SOLAS chapter II-1, reflecting the interpretation of SOLAS regulation II-1/13.2.3.

6. Attachments if any

Refer to SDC 8/10/7 & SDC 9/10/1.

UI SC300 "Containment of fire: details of fire insulation of duct penetrations"

Summary

This UI provides a unified interpretation of requirements in SOLAS regulations II-2/9.7.3.1.2 and II-2/9.7.3.2, with a view to facilitating their consistent and global implementation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Aug. 2023)	28 August 2023	1 July 2024

- **New (Aug 2023)**

1 Origin of Change:

☐ Suggestion by IACS member

2 Main Reason for Change:

IACS noticed that the clarity of requirements on the penetration of divisions by ducts in SOLAS regulation II-2/9, as amended by resolution MSC.365(93), can be improved. In order to provide this clarity, IACS has developed this unified interpretation.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Issue raised by IACS member. Discussion demonstrated need for an adequate interpretation for consistent implementation of the requirements. The draft UI was submitted to IMO (SSE 7/16/7), agreed by SSE 8 and approved by MSC 106 as MSC.1/Circ.1655.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: Made by Panel Member	
Panel Approval	: 17 July 2023	(Ref: PS18010vISi)
GPG Approval	: 28 August 2023	(Ref: 19191iIGe)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC300:

Annex 1. **TB for Original Resolution (New August 2023)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI SC300 (New Aug 2023)

1. Scope and objectives

The interpretation has as its objective to clarify

- the extent of insulation of ducts and sleeves lining such ducts.
- the clearance around ducts and the division.

2. Engineering background for technical basis and rationale

SOLAS regulation II-2/9.7.3.1.2 requires ducts or sleeves lining such ducts, to have at least the same fire integrity as the division through which the duct passes. However, no specific details of the fire insulation arrangements are provided in the regulation.

In order to comply with the functional requirements of SOLAS Chapter II-2 the insulation of a duct or a sleeve shall be extended for a minimum of 450 mm on the same side of the division that is fitted with the "A" class fire insulation.

SOLAS regulation II-2/9.3.2 prescribes the requirements for the penetration of the "B" class divisions. For penetrations by a pipe, a clearance around the pipe of up to 2.5 mm is acceptable (based on SOLAS regulation II-2/9.3.2.2). For penetrations by a duct, detailed requirements are provided in SOLAS regulation II-2/9.7.3.2. However, SOLAS regulation II-2/9.7.3.2 includes no requirements regarding the clearance around the duct.

In order to comply with the functional requirements of SOLAS Chapter II-2 no clearance should be allowed between the duct and the division.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

N.A.

5. Points of discussions or possible discussions

None

6. Attachments if any

None

UI SC301 "SOLAS Regulations II-2/9.7.2 and 9.7.5.1 – Separation of ducts from spaces"

Summary

UI SC301 has been developed with a view to provide clarity on the application of the SOLAS Ch II-2 regulations 9.7.2 and 9.7.5.1 regarding separation of ducts from spaces, after it was raised in the industry for causing concerns with ambiguous applicability.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2024)	1 May 2024	1 July 2025

- **New (May 2024)**

1 Origin of Change:

☑ Other *(Specify: IACS Member Raised Query)*

2 Main Reason for Change:

None

3 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

4 History of Decisions Made:

A safety panel discussion was initiated after identifying issues that were arising due to ambiguity when considering the separation of ducts (including galley ducts) with the aim to seek members' perspective on the application of the interpretation contained in MSC.1/Circ.1276 (which is based on the now deleted IACS UI SC221) limited to galley ducts only, and extend its applicability to ducts in general based on the SOLAS Chapter II-2 regulations 9.7.2 and 9.7.5.1. UI SC221 was deleted after the SOLAS amendments (Res. MSC.365(93)) incorporated the intent of the interpretation into SOLAS, however, a reference to MSC.1/Circ.1276 was still made in the amended regulations.

The panel members discussed the identified concerns, and a draft unified interpretation was developed for submission to SSE Sub-Committee (SSE 9/14). The Sub-Committee considered the proposed revision of MSC.1/Circ.1276 as well as the need to update the reference to the ISO Standard. SSE 9 agreed to the draft MSC circular with the expansion of the reference to SOLAS regulation II-2/9.7.5. Subsequently MSC 107

approved draft amendments to the unified interpretation (issued as MSC.1/Circ.1276/Rev.1).

Further, SSE 10 agreed to the minor correction to MSC.1/Circ.1276/Rev.1, i.e. to replace the incorrect references to "SOLAS regulation II-2/9.7.5" with reference to "SOLAS regulation II-2/9.7.5.1". This is expected to be issued as MSC.1/Circ.1276/Rev.2 in December 2024 (MSC 109).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: 21 Jan 2022	Made by: Safety panel member
Panel Approval	: 23 April 2024	PS22005_ISl
GPG Approval	: 01 May 2024	22079bIGh

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Part B. Technical Background

List of Technical Background (TB) documents:

Annex 1. **TB for New May 2024**

See separate TB document in Annex 1.

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Technical Background (TB) document for UI SC301 (New, May 2024)

1. Scope and objectives

The scope of this interpretation is to provide clarity on the requirements for separation of ducts when passing through spaces, as per the regulations SOLAS Chapter II-2 regulations 9.7.2 and 9.7.5.1.

2. Engineering background for technical basis and rationale

There were concerns identified in the industry which led to this discussion for extending the applicability of the interpretation of the deleted UI SC221 and MSC.1/Circ.1276 regarding galley ducts to other ducts passing through spaces, in line with SOLAS Chapter II-2 regulations 9.7.2 and 9.7.5.1.

3. Source/derivation of the proposed IACS Resolution

IACS UI SC221 (deleted September 2017) and MSC.1/Circ.1276/Rev.1.

4. Summary of Changes intended for the revised Resolution:

Not applicable

5. Points of discussions or possible discussions

A safety panel discussion was initiated after identifying issues that were arising due to ambiguity when considering the separation of ducts (including galley ducts) with the aim to seek members' perspective on the application of the interpretation contained in MSC.1/Circ.1276 (which is based on the now deleted IACS UI SC221) limited to galley ducts only, and extend its applicability to ducts in general based on the SOLAS Chapter II-2 regulations 9.7.2 and 9.7.5.1. The panel members discussed the identified concerns, and a draft unified interpretation was developed for submission to IMO. In the discussion it was noted that the essence of paragraph 1 of the interpretation is considered by SOLAS Chapter II-2 regulations 9.7.2 and 9.7.5.1.

6. Attachments if any

MSC.1/Circ.1276
MSC.1/Circ.1276/Rev.1
MSC.1/Circ.1276/Rev.2 (as proposed by SSE 10 for approval by MSC 109)

UI SC302 "Interpretation of SOLAS Regulation II-2/11.4.1 Pertaining to Crowns of Machinery Spaces of Category A"

Summary

This UI provides an interpretation for the term crowns as used in SOLAS regulation II-2/11.4.1.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2024)	22 May 2024	1 July 2025

- **New (May 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

One Member noted that the term "crowns" causes frequently discussion with stakeholders and added clarity would assist in uniform understanding. The qualified majority of safety panel members supported this proposal.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

Proposal was made by a panel member in context of preparing an IMO paper to MSC 106 proposing a new output for amending SOLAS Chapter II-2 regulation 11.4.1 with missing reference to tables 9.1 to 9.4. Finally, IACS agreed to submit a paper to IMO SSE Sub-Committee proposing minor correction to the SOLAS regulations II-2/11.2 and II-2/11.4.1 with a view to ensuring consistent implementation of this provision for passenger ships and cargo ships (SSE 10/19), and another, unanimously agreed paper proposing a draft interpretation of SOLAS regulation II-2/11.4.1 with a view to ensuring consistent implementation of this provision for passenger ships and cargo ships (SSE 10/12). During consideration, the Sub-Committee noted the need for clarification of the proposed draft UI and agreed to a modified interpretation. Further SSE agreed to the draft MSC circular on UI of SOLAS regulation II-2/11.4.1, on the crowns of a machinery space of category A, as modified with a view to approval by MSC 109.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal:	05 October 2021	(Made by: Safety Panel Member)
Panel Approval:	07 May 2024	(Ref: PS21003u)
GPG Approval:	22 May 2024	(Ref: 22007cIGi)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC302:

None

Note: *There are no separate Technical Background (TB) documents for UI SC302 New (May 2024).*

UI SC303 "Harmonization of Industrial Personnel Safety Certificate with SOLAS Safety Certificates"

Summary

This UI clarifies how the IP Safety Certificate should be harmonized with SOLAS Safety Certificates.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2024)	22 July 2024	1 July 2025

- **New (June 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

N/A, New proposal.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

An IACS member raised questions on how IP Safety Certificate should be harmonized with SOLAS Safety Certificates, in terms of validity, survey dates and endorsements. Safety Panel decided to develop a unified interpretation, taking into account MSC.1/Circ.1562, which addressed a similar issue relating to Polar Ship Certificate. The draft UI, prepared by Safety Panel, was later submitted to SDC 10 as SDC 10/10/3.

SDC 10 endorsed the proposed UI in SDC 10/10 without comments. Subsequently, MSC 108 approved the interpretation as MSC.1/Circ.1680.

Safety Panel decided to adopt the interpretation as an IACS UI.

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: Date: 6 May 2023	(Made by: Safety Panel Member)
Panel Approval	: Date: 24 June 2024	(Ref: PS23013_ISq)
GPG Approval	: Date: 22 July 2024	(Ref: 23041eIGd)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC303:

None

Note: *There are no separate Technical Background (TB) documents for UI SC303 New (July 2024).*

UI SC304 MSC.337(91) Code on noise levels onboard ships - calibration of sound instruments

Summary

Calibration of sound level meter and accompanying field calibrator shall be made in a uniform way by laboratories worldwide, documenting that the same instruments continue to satisfy the accuracy requirements of MSC.337(91).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Oct 2024)	01 October 2024	01 July 2026

- **New (Oct 2024)**

1 Origin of Change:

☒ Suggestion by IACS member

2 Main Reason for Change:

N/A, New proposal.

3 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

4 History of Decisions Made:

A new proposal to the Safety panel by an IACS member in May 2022 regarding the calibration of sound instruments. The Safety panel members discussed the identified concerns and finally agreed on draft Unified interpretation for submission to the IMO Sub-Committee on Ship Design and Construction. At its 10th session, the SDC Sub-Committee agreed to the draft amendments to MSC.1/Circ.1509 and subsequently MSC 108 approved MSC.1/Circ.1509/Rev.1 on Unified interpretations of the Code on Noise Levels on Board Ships (resolution MSC.337(91)).

5 Other Resolutions Changes:

None

6 Any hinderance to MASS, including any other new technologies:

None

7 Dates:

Original Proposal	: Date: 23 May 2022	(Made by: Safety panel member)
Panel Approval	: Date: 27 Aug 2024	(Ref: PS22005iISy)
GPG Approval	: Date: 01 Oct 2024	(Ref: 24130_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC304:

Annex 1. **TB for Original Resolution**

See separate TB document in Annex 1.

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Technical Background (TB) document for UI SC304 (New Oct 2024)

1. Scope and objectives

To ensure uniform implementation of the biennial periodic calibration test requirements of noise measurement instruments and to make sure this is documented to the Societies. With this equally implemented, it will also contribute to levelling the playing field in the industry since the cost for calibration of instruments is depending very much on the standard applied and scope of testing carried out.

2. Engineering background for technical basis and rationale

The MSC.337(91) has clear and unambiguous requirements to the quality of the instruments to be used during the required noise measurements. For the quality of the instruments, it is referred to the well-established international standards IEC 61672-1 for sound level meter and IEC 60942 for the field calibrator. The instruments shall be of high precision fulfilling the class I requirements of these standards. Further, it is clearly stated that the same instruments shall be calibrated at least every two years (biennially) by a national laboratory or an accredited laboratory according to ISO 17025. However, it is not explicitly stated to which requirements or standards the instruments shall be calibrated against. If it is not clearly ordered by the submitter of the instruments, the laboratories receiving these instruments for calibration may perform some in-house comparison tests without any decision rules (acceptance criteria) nor provide any conclusion on the accuracy grade of the instruments (statement of conformity).

If the instruments are submitted to the accredited laboratories of the instrument manufacturers, even without the calibration standard included in the order specification they assume that the calibration standards are IEC 61672-3 for the sound level meter and IEC 60942 Appendix B for the field calibrator. They normally would also include a statement of conformity on the calibration certificate that the instruments still satisfy the class I requirements according to the respective IEC standards.

Like the instrument manufacturers, IACS find it logical that the required biennial periodical testing must conclude that the instrument is still in compliance with the required Class I requirements of IEC 61672-1 and that the only possible way to confirm this is by calibrating according to the full content of IEC 61672-3.

3. Source/derivation of the proposed IACS Resolution

Resolution MSC.337(91) (adopted on 30 November 2012) Code on noise levels on board ships,
IEC 61672-1, Revision 2.0, September 2013 - Electroacoustics - Sound level meters - Part 1: Specifications,
IEC 61672-3, Revision 2.0, September 2013 - Electroacoustics – Sound level meters – Part 3: Periodic tests,
IEC 60942, Revision 4.0, November 2017 - Electroacoustics – Sound calibrators,
ISO/IEC 17025:2017 - General requirements for the competence of testing and calibration laboratories

4. Summary of Changes intended for the revised Resolution:

NA

5. Points of discussions or possible discussions

The requirements in MSC.337(91) to the measurement instruments unambiguously state that the sound level meter shall be manufactured as a high precision instrument of type/class I according to IEC 61672-1(2002-05), ref. paragraph 2.1.1 in the resolution. The same applies to the field calibrator, which shall comply with IEC 60942 (2003-01) and in addition be approved by the manufacturer of the sound level meter, which in practice also means type/class I for field calibrator as well, ref. paragraph 2.2.1 in the resolution. This is a common observed practice that the sound level meter and the field calibrator are purchased together from the manufacturer as a set, without being a mandatory procedure. In service, they are normally submitted together for calibration, and the accompanying field calibrator is also used by the laboratory to establish the acoustical sensitivity of the sound level meter during the calibration.

Further, the MSC.337(91) requires that the same instruments shall be verified at least every two years (biennially) by a national standard laboratory, or a competent laboratory accredited according to ISO 17025 (2005) as corrected by (Cor.2006), ref. 2.2.2. It should be noted that the ISO/IEC 17025:2005, which specifies the general requirements for the competence, impartiality and consistent operation of laboratories, is withdrawn and replaced by ISO/IEC 17025:2017. Statement of conformity and decision rules are topics that are addressed in the latest revision of the ISO/IEC 17025 standard.

There are two things about the 2.2.2 requirement of MSC.337(91) that has been found problematic:

1. it does not specify to which standard the instruments shall be calibrated, i.e. what tests shall be performed and what decision rules shall be applied for the tests) and,
2. if documentation of the results of the calibration shall be presented on the calibration certificate (statement of conformity)

As classification societies that are set to verify and assess the results of the noise measurements on board ships, which are carried out by many different companies worldwide, we sometimes see calibration certificates from various national laboratories and accredited laboratories with only a few of the tests described in IEC 61672-3 and IEC 60942. In addition, we often find these calibration certificates non-conclusive about the results of the calibration tests carried out. A typical example is that on the front page of the calibration certificate there are no reference to any test standard, and we often find the statement: "Result: Refer to calibration results on page 2". Then, in the calibration results on page 2, there are no acceptance criteria presented or any decision rules or conclusion on the results of the individual tests, only the measured values are presented. We have even been presented to calibration certificates for sound level meters where some of the individual test results were outside the tolerances for a type/class I instrument according to IEC 61672-1.

The relevant group of IEC standards for the measurement equipment also include standards for calibration, IEC 61672-3:2013 for the sound level meter and IEC 60942:2003 Appendix B. These standards are dedicated to instruments manufactured to the specifications of the IEC 61672-1 and IEC 60942 standard. Intuitively, one should think that it went without saying that these calibration standards are to be used

for instruments that already are manufactured to IEC 61672-1 and IEC 60942. The aim of these calibration standards is to ensure that periodic testing is performed in a consistent manner by all laboratories.

One member initially proposed the following interpretation:

> *"The calibration shall be carried out in accordance with IEC 61672-3 for sound level meter and IEC 60942 Appendix B for field calibrator.*
> *The calibration certificates shall include a statement of conformity that states that the instruments are in compliance with the class 1 requirements of the relevant IEC standard (IEC 61672-1 for sound level meters and IEC 60942 for field calibrators)."*

All members agreed upon the first sentence about which calibration standards that shall be used by the laboratories. However, there was a discussion about to which degree the result of the calibration should be documented. A clear majority were in favour of the UI as proposed by the member, however one member was not sure that there was a need for a statement to be added to the certificate, one member was unsure that the laboratories would be bound by an IACS UI and one member was not sure that the laboratories could confirm that the instrument is in compliance with the standard due to the limitations of the standard. Based on the discussions and comments received, the chair proposed a combined new text, which a clear majority would prefer:

> *"The calibration shall be carried out in accordance with IEC 61672-3:2013 for sound level meters and IEC 60942:2017 Appendix B for field calibrators. The measurement company shall provide documentation about the standard which has been met if not clearly marked on the sound level meter or field calibrator. The documentation, or marking, is to include a clear statement about the results of the periodic tests and which performance class the instrument meets after calibration."*

IACS agreed that sound level meters must be verified to same quality as required by a new instrument, i.e. class I according to IEC 61672-1, and IACS find it logical that the required periodic tests every second year must conclude that the instrument is still in compliance with the required Class I requirements of IEC 61672-1 and that the only possible way to confirm this is by calibration according to the full content of IEC 61672-3. The same argument is valid for the field calibrator that shall be calibrated according to Appendix B of IEC 60942.

It should not be up to each individual laboratory to calibrate the instrument without any acceptance standard given or applied for the results. In measurement technology and metrology, calibration is the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. It would be difficult and impracticable for the owner of these instruments to check that all the necessary tests have been carried out and to evaluate each of these tests against the tolerances of the standard. This is best done by competent people at the calibration institute with detailed knowledge about the tests and their decision rules, which also must consider the expanded uncertainties of the calibration measurements. The expanded uncertainties are calculated by each laboratory based on the specific equipment used during the calibration.

A proper calibration process of these instruments does not only include a comparison of a single measured sound level with a known source level, but consists of several

tests checking the levels, frequencies, linearity, weighting functions, integration, averaging etc. As the calibration to the full extent of IEC 61672-3:2013 is rather expensive, it is competition-distorting if some measurement companies calibrate their instruments in a much simpler way without all the required tests for type/class I instruments and without any decisive conclusion.

6. Attachments if any

None

UI SC305 "Single essential propulsion components and their reliability"

Summary

This UI provides a unified interpretation of requirements in SOLAS regulation II-1/26.2, with a view to facilitating its consistent and global implementation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Dec 2024)	14 December 2024	01 January 2026

- **New (Dec 2024)**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

None – This is a new resolution.

3 Surveyability review of UR and Auditability review of PR

None

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

Issue raised by IACS member in January 2019 (PM19101). One member expressed the position that single propulsion motors with double winding stators may be acceptable, considering that they have accepted such designs several times without negative feedback. After further discussions in the Panel, it was agreed that a winding failure of electrical machines shall be considered as a failure mode, which entails that an alternative propulsion unit should be required for propulsion arrangements with dual winding single propulsion motors.

Draft interpretation was approved by GPG (19107_IGb) and submitted to IMO with paper SSE 8/15/3. The draft was considered at SSE 9. The sub-committee agreed to the draft interpretation for approval by MSC 107. The UI was challenged by a flag

State at MSC 107, and the draft interpretation was referred to SSE for further consideration.

IACS submitted a commenting paper SSE 10/12/9 (23098qIGg) providing further background information and considerations to the draft interpretation in paper SSE 8/15/3.

The draft interpretation in paper SSE 8/15/3 was agreed at SSE 10 for approval by MSC 109. The interpretation was limited in its application to passenger ships.

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	: 8 January 2019	(Made by: Machinery Panel Member)
Panel Approval	: 19 September 2024	(Ref: PM23934aIMm)
GPG Approval	: 14 December 2024	(Ref: 24139aIGg)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC305:

Annex 1. **TB for New (Dec 2024)**

See separate TB document in Annex 1.

Technical Background (TB) document UI SC305 (New Dec 2024)

1. Scope and objectives

This UI provides interpretation of SOLAS Ch.II-1/26.2 with respect to unconventional arrangements and the reliability of single essential propulsion components for single shaft-line electric propulsion systems.

2. Engineering background for technical basis and rationale

SOLAS Ch.II-1/26.2 states that: "*The Administration shall give special consideration to the reliability of single essential propulsion components and may require a separate source of propulsion power sufficient to give the ship a navigable speed, especially in the case of unconventional arrangements.*"

SOLAS Ch.II-1/26.3 states that: "*Means shall be provided whereby normal operation of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration shall be given to the malfunctioning of:*
.1 a generating set which serves as a main source of electrical power;"
…… (with additional 9 items of machinery in the list, and ending the clause with:)"

Even though electrical machines are built according to state-of-the-art standards, catastrophic failures do occur.

It was not possible to obtain failure statistics for shipboard electrical machines. However, there have been conducted several studies on the reliability of large electrical machines used in the general industry, one of which is a study by the Electric Power Research Institute (EPRI), made available through the Institute of Electrical and Electronics Engineers.

Quote from the paper:
"If we further break down the information from the survey, motors from 500 to 5000 horsepower had a median failure rate of 0.0730 FPU and from 5001 to 10,000 horsepower a median failure rate of 0.2169 FPU. In relation to motor speed and failure rate: 0-720 RPM is 0.1004 FPU; from 721-1800 RPM is 0.0721 FPU; 1801-3600 RPM is 0.0519 FPU. In effect, larger, slower speed motors have a higher failure rate, with most machines being induction and synchronous motors in the survey. The wound rotor machines covered tended to be a smaller horsepower."

From this study, it may be assumed a failure rate of at least 0.1 FPU (Failures per Unit per Year) for electrical propulsion machines (>5000 horsepower, 0-720 RPM).

Available failure statistics cover conventional electrical machines. It was not possible to find any statistics for double wound electrical machines. Such machines are not conventional, and it is assumed that related failure statistics does not exist.

From a technical perspective, it is IACS understanding that upon a winding failure in a double wound electrical machine, this will result in total loss of the propulsion machine due to induced circulating currents from the rotor in the faulty winding. Consequently, the failure statistics for conventional machines may be used.

It is in general IACS opinion that unconventional designs should be considered unreliable until proven reliable, rather than considered reliable until proven unreliable.

Acknowledging that a failure in the electrical system may have an impact which is impossible to rectify on board, the SOLAS requirement to main power generation and distribution is to design with redundancy (n+1). This is also clear by the requirement given in SOLAS Ch.II-1/26.3 (quoted above), indicating that electric machines cannot be relied on as single essential components.

When electric machines are used for propulsion, this redundancy philosophy shall also be applied. When electric machines are used to provide propulsion power on a shaft line, there shall be two electrically independent machines. In case of an electric machine equipped with two stator winding systems, a winding damage may lead to total loss of both windings as mentioned in IEC 60092-501:2013. Two electrically independent machines shall therefore be provided for electric propulsion.

- Two sets of windings within the same stator (or rotor) iron core are not seen as being independent since they both will be affected by the same magnetic flux.
- It must be possible to electrically disconnect a winding with an insulation failure. For a synchronous machine or a permanent magnet machine this also implies that it must be possible to switch off the EMF generated by the flux from the rotor, either by de-exciting the machine, or mechanically stopping the rotation (in order to prevent the voltage generated by water milling). Acceptable arrangements are illustrated by figures 1, 2 and 3:

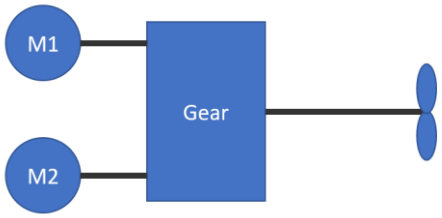

Fig. 1 - Asynchronous machines or machines that can be de-excited

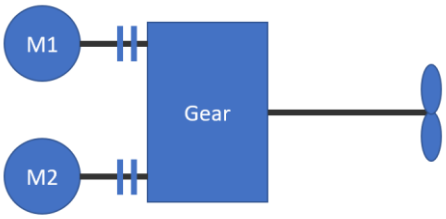

Fig.2 – Permanent magnet machines with clutches

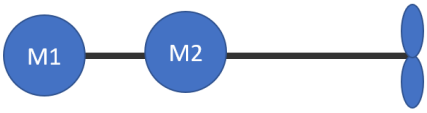

Fig.3 - Asynchronous machines or machines that can be de-excited

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

- SOLAS Ch.II-1/26.2

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

a) Dual winding single propulsion motors:

Although the draft UI originally circulated in January 2020 was supported by the majority, one member expressed the position that single propulsion motors with double winding stators should be acceptable, considering that they have accepted such designs several times without negative feedback.

After further discussions in the Panel, it was agreed that a winding failure of electrical machines shall be considered as a failure mode. This was in consideration of failure statistics of electrical machines, the SOLAS principles requiring redundancy for other electrical components with windings such as generators and transformers, the fact that winding failures are non-repairable onboard and the consequences of complete loss of propulsion.

b) Navigable speed:

The initial draft UI also included an interpretation of the term "navigable speed" in Regulation 26.2.

Two different interpretations were proposed; to require remaining propulsion capacity to be declared by the builder and informed to the navigator for safe voyage planning, or to specify a remaining minimum speed of not less than 7 knots or 1/2 of the design speed whichever is the lesser. The Panel did not reach a clear majority preference for either of the proposals.

Recalling that the Panel had also previously discussed "navigable speed" without reaching an agreed interpretation, it was concluded not to include an interpretation of this term in the UI.

c) Reliability of electrical motors:

After agreement to the draft UI at SSE 9, the draft UI was challenged by a flag State during approval at MSC 107, questioning the failure statistics referred to in the paper.

IACS engaged in bilateral discussions with the flag State to seek an agreement on an interpretation. The flag State presented failure statistics for electric

propulsion motors provided by a manufacturer. IACS questioned the reliability of the data and the relevance of data from a single manufacturer forming the basis for statutory regulations. The manufacturer also provided information on possible measures to improve the reliability of electrical propulsion motors. IACS did not question that such measures could improve the reliability. However, there exist no standard for an electric motor serving as a single essential propulsion component, as it does for single mechanical propulsion components in the class rules. IACS was of the understanding that such additional measures will add additional costs to the product and will not be implemented as long as these are not prescribed by any standards.

The Machinery Panel has reached a majority agreement that flag administrations may consider alternative designs for single electric motors used for propulsion systems. These considerations, if instructed by them, would hinge on evaluating the reliability of specific motors under the framework provided by MSC.1/Circ.1455.

IACS and the flag State did not reach an agreement on an updated interpretation, and the interpretation as provided in SSE 8/15/3 was maintained for reconsideration at SSE 10. One Panel member proposed to include the new fourth paragraph in the preparation for the IACS adopted UI. This was agreed by the qualified majority in the Panel.

d) Application:

Views were expressed at SSE 10 that that the interpretation should be restricted in its application only to passenger ships because of the specificities of that ship type and, in particular, the requirements for safe return to port under SOLAS regulation II-2/21. SSE 10 agreed to the draft MSC circular on Unified interpretation of SOLAS regulation II-1/26.2 applicable to passenger ships only and submitted this for approval at MSC 109.

IACS noted the recommendations made to limit the interpretation to passenger ships, however expressed the need for IACS to carefully look at the comments made and the reasons for that proposal going forward to the MSC.

SOLAS regulation II-2/21 for safe return to port provides a safety level beyond considering single failure of components. Passenger ships are required to maintain sufficient propulsion in case of fire or flooding in any one compartment. The design addressed in the interpretation is accordingly not allowed for a passenger ship based on the present regulations, not because of the risk of a single failure in a winding but because of the risk of fire or flooding in the one compartment the component is located. Limiting the application of the interpretation only to passenger ships means that the interpretation has no application. While that is the case, the approval of the interpretation, albeit limiting it to passenger ships, is a declaration of IMO's acceptance that the safety of such design cannot be left unvalidated.

The safety level based on the single failure criterion for components, and in particular for electric components whose failure is non-reparable onboard by the crew, applies to all ships. IACS is of the opinion that maintaining or restoring propulsion is essential also for cargo ships in order to ensure not only the safety of the ship and its crew, but also to avoid potential casualties affecting the public or the environment resulting from an allision, collision or grounding of a

drifting cargo ship. As expressed in document SSE 8/15/3, IACS is of the opinion that, for safety reasons, unconventional designs should first be considered unreliable until enough evidence regarding their reliability becomes available, rather than being considered reliable until proven unreliable.

IACS concluded that the new IACS UI SC305 is applicable to all ships unless a different written instruction is provided by the Administration for ships flying its flag.

e) Points of possible discussions:

In the discussions with the flag State in the interim period between SSE 9 and SSE 10, it was expressed a need for further studies on the reliability of electric motors intended as a single essential component for propulsion in order to ensure a reliability comparable to the single essential components in a conventional mechanical propulsion line.

For a conventional mechanical propulsion line, the reliability of the individual components in the propulsion line are given special attention. Class societies have detailed rules for these components in view of application as single essential propulsion line components. These are designed with high degrees of safety factors and the components are subject to extensive testing and verification to ensure an acceptable availability of propulsion. The reliabilities of the components have been proven through decades of in-service experience providing a well-documented level of reliability. There are certain components, such as e.g. clutches, elastic couplings and pitch control mechanisms that may have somewhat increased failure rates, however, arrangements are then required to enable restoration of propulsion within an acceptable time by the crew.

Electric motors are designed to industry standards and the class societies' rules are in general referring to these standards. Current industry standards for electric motors are for general application and not specific for application as a single essential component for propulsion. It is noted that IEC 60092-501:2013 in clause 12 provides a standard for electric propulsion motors. This standard is not addressing the risk of winding failure and is not considered to provide the required reliability as a single component for propulsion. The standard is thus considered in view of an electric propulsion arrangement with two independent electric propulsion motors.

It is acknowledged that development of novel technologies, such as condition monitoring, may contribute to increased reliability. The effectiveness of these with respect to winding insulation failures remains to be documented, however, preventive and mitigating measures as a possible contributing factor to increased reliability should not be ruled out.

IEC 60092-501:2013, clause 4.1.4, is providing a standard for a single electric propulsion line with a dual winding electric motor, however, acknowledges that "a winding damage will lead to the total loss of the propulsion motor, and in this case the single failure design criteria cannot be fulfilled". The same IEC standard in clause 12 provides a standard for electric propulsion motors, however, does not address the failure mode in clause 4.1.4.

If the industry intention is to provide for a design concept with a dual winding motor as a single essential propulsion component, having a reliability comparable with mechanical components in a conventional propulsion line, it may be a way forward that the industry looks further into clause 12 of the standard to provide for this. This should also include standards for documenting the effectiveness of the protective and mitigating measures to achieve the required reliability. This topic can be considered by IACS if such an incentive should come from the industry.

6. Attachments if any

None.

UI SC306 "Valve piercing ship's collision bulkhead"

Summary

This UI clarifies the allowable arrangements of valves piercing ship's collision bulkhead with regard to SOLAS regulation II-1/12.6.2.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Nov 2024)	01 November 2024	01 January 2026

- **New (Nov 2024)**

1 Origin of Change:

☑ Suggestion by IACS member, Safety Panel

2 Main Reason for Change:

N/A, New proposal.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

5 History of Decisions Made:

Due to the numerous inquiries raised by shipyards before the implementation of SOLAS regulation II-1/12.6.2, as amended by resolution MSC.474(102), an IACS member raised questions as to whether a deck standing manual valve may be accepted.

Safety Panel initially discussed the matter through PS23044_, but after extensive discussion, transferred it to Machinery Panel.

6 Other Resolutions Changes:

None

7 Any hinderance to MASS, including any other new technologies:

None

8 Dates:

Original Proposal	: 04 July 2024	Made by: Safety Panel PS23044
Panel Approval	: 14 October 2024	(Ref:PM24006_IMd)
GPG Approval	: 01 November 2024	(Ref:24134f_IGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC306:

Annex 1. **TB for New (Nov 2024)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI SC306 (New Nov 2024)

1. Scope and objectives

To clarify the term "remote controlled valve" in SOLAS regulation II-1/12.6.2.

2. Engineering background for technical basis and rationale

While resolution MSC.429(98)/Rev.2 is silent on SOLAS regulation II-1/12.6.2, the control of
the valve piercing ship's collision bulkhead as required in SOLAS II-1/12.6.2 should have the following characteristics:

- remotely controlled;
- capable of being operated from above the bulkhead deck or the freeboard deck; and
- capable of automatic close or manual close from above the bulkhead deck or the freeboard deck, where valve's remote-control system fails during operation

In SOLAS regulation II-1/12.6.2, the term "remotely controlled" is used in conjunction with the expression "capable of being operated from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships". However, it may not be sufficiently clear if the two expressions merely supplement each other or if they should be distinguished in terms of required functionalities. If the formal interpretation is supported, the remote control may be done either manually or mechanically. If the latter case is agreed, the term "remotely controlled valve" may be perceived as a mechanical one using hydraulic, pneumatic and/or electric sources of power.

This ambiguity may be escalated by the expression "remote control system" in SOLAS regulation II-1/12.6.2, which refers to the remotely controlled valve and which imply that the remote-controlled valve may not be a simple unit or equipment but composed of a system.

IACS member societies have been frequently asked from shipyards to provide clear understanding of SOLAS II-1/12.6.2.

The amendments to SOLAS regulation II-1/12.6.1, as amended by resolution MSC.421(98), was initially proposed by SDC 5/5 (Norway). In the paper, the valve was simply mentioned as a remote-controlled valve.

In this regard, during the subsequent discussions, two options were proposed, namely "remotely controlled valve" or "valve with a positive means of closing it from a position above the bulkhead deck of passenger ships and the freeboard deck of cargo ships", as found in paragraph 8 of SDC 6/4, i.e. SDS Correspondence Group's report.

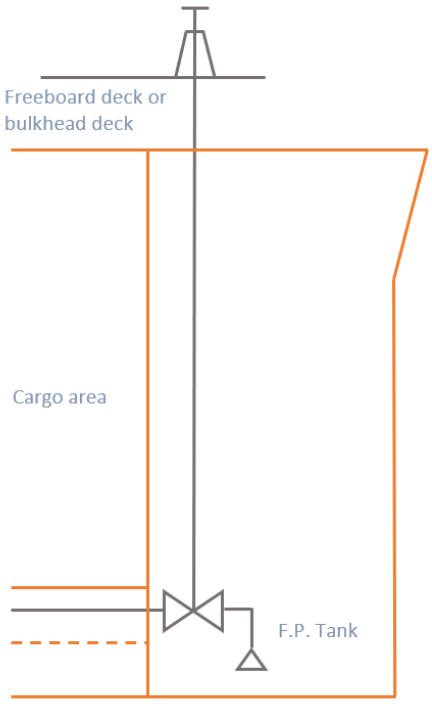
The related working group established during SDC 6 was instructed to consider the proposed amendments to SOLAS regulations II-1/12.6.1 in relation to the location and operation of the collision bulkhead valve, as found in paragraph 3.2 of SDC 6/WP.5. After extensive discussion within the working group, it was agreed to retain both the expressions "remotely controlled valve" or "valve with a positive means of closing it from a position above the bulkhead deck of passenger ships and the freeboard deck of cargo

ships", as currently found in SOLAS regulation II-1/12.6.2. It is noted that the latter expression was to clarify the control location of the remotely controlled valve. Please see paragraph 12 of SDC 6/4.

In table 22.1 of ICLL 1988 protocol, two different types of valves are identified in terms of valve's control location, i.e. "remote controlled" and "controlled locally". In the table 22.1, remote controlled valves are illustrated as the valves located beneath sea water level and controlled from above ship's freeboard deck. Therefore, under the ICLL, the expression "remote controlled" may not be related to the method of actuating valves, i.e. manual or mechanical operations.

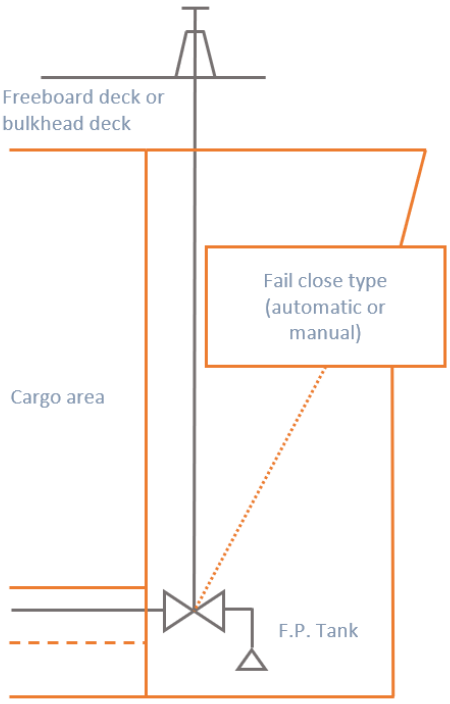
Based on paragraphs 8 to 11 above, IACS is of the view that the expressions used in SOLAS regulation II-1/12.6.2, i.e. "remotely controlled valve" and "capable of being operated from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships", merely supplement each other and does not restrict the use of a manual deck standing valve, provided that other requirements in SOLAS regulation II-1/12.6.2 is complied with.

In this regard, the illustrations below exemplify allowable and not allowable arrangements.



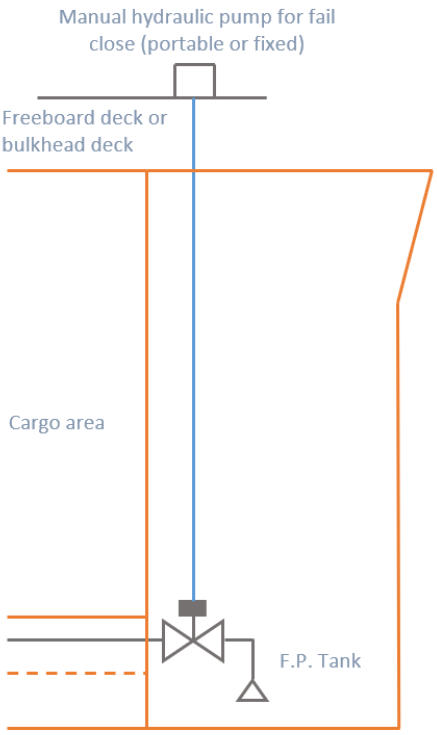
Case 1 (Not allowable)

- Manual deck stand controlled from the freeboard deck or bulkhead deck
- When fail, the valve remains at its current position



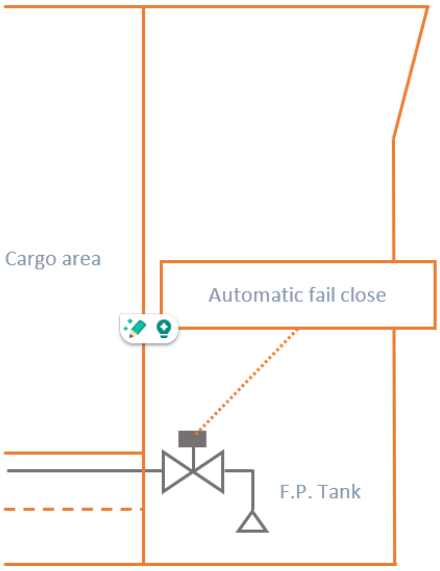
Case 2 (Allowable)

- Manual deck stand controlled from the freeboard deck or bulkhead deck
- Fail-close type valve (automatic close, or manual close from the freeboard deck or bulkhead deck)



Case 3 (Allowable)

- Actuated mechanically and controlled remotely from cargo control room, etc.
- Manual fail-close from above the freeboard deck or bulkhead deck



Case 4 (Allowable)

- Actuated mechanically and controlled remotely from cargo control room, etc.
- Automatic fail-close

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution:

N.A.

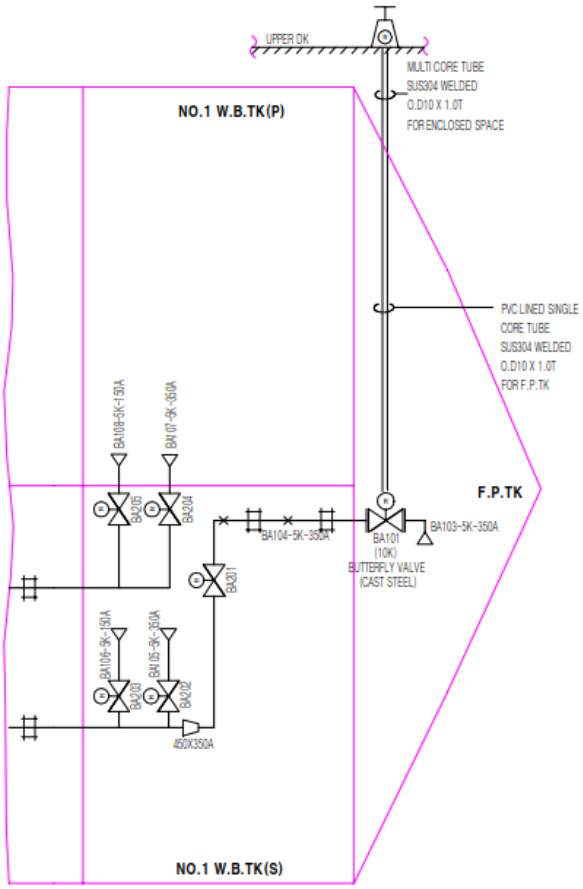
5. Points of discussions or possible discussions

For the first time, the following six arrangements have been considered whether those arrangements comply with the SOLAS convention.

Then, WG drew to generalize those arrangements as three allowable and one not allowable arrangement in above part 2.

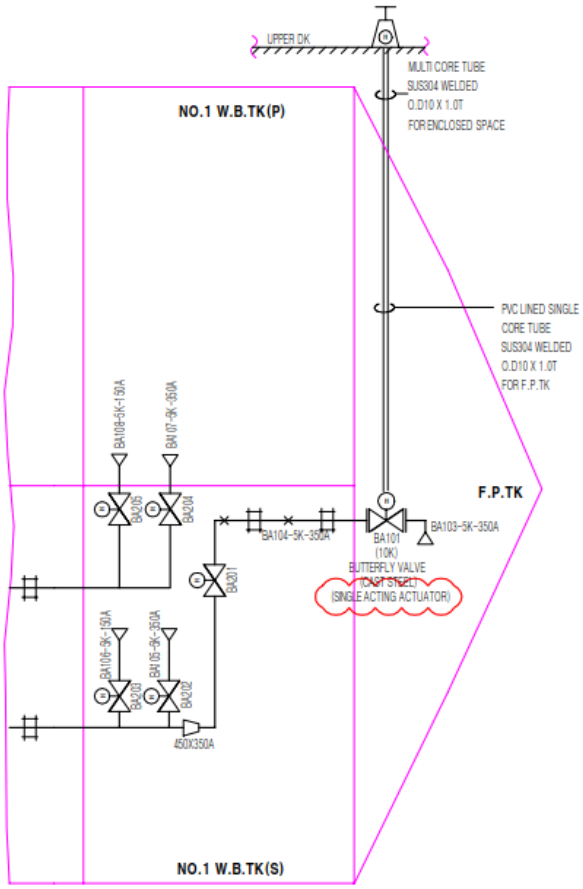
CASE 1.

- Local hydraulic deck stand & double acting actuator
- Remotely controlled above freeboard deck by manually at local
- When fail, valve disc is kept as last positioned



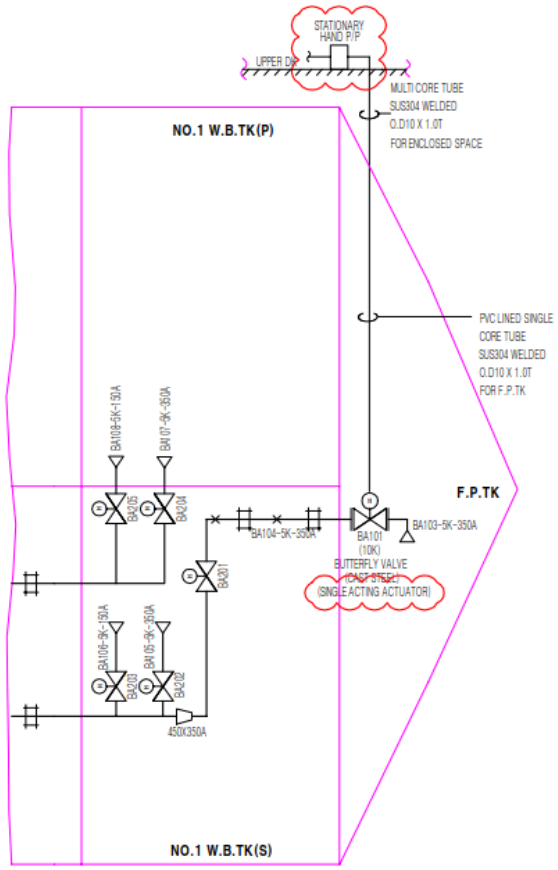
CASE 2.

- Local hydraulic deck stand & single acting actuator
- Remotely controlled above freeboard deck by manually at local
- When fail, valve disc is closed (fail close type)



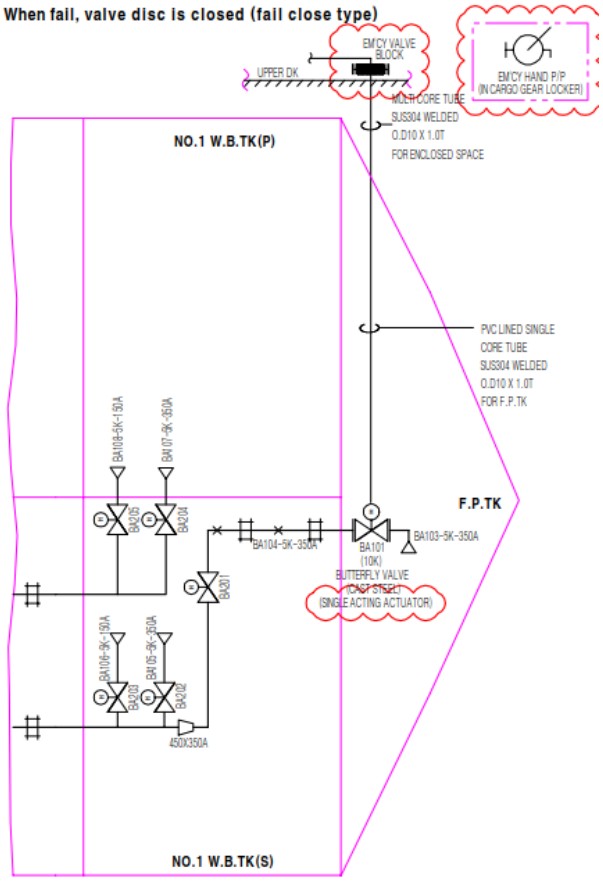
CASE 3.

- VRCS, stationary hand pump & single acting actuator
- Remotely controlled above freeboard deck by manually at local
- Remotely controlled from CCR by mimic on console
- When fail, valve disc is closed (fail close type)



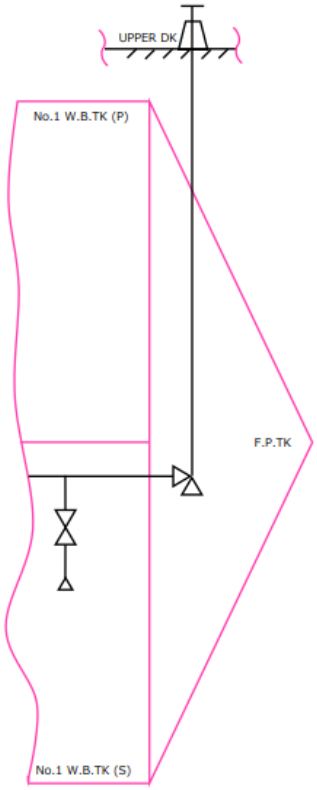
CASE 4.

- VRCS, em'cy valve block & single acting actuator
- Remotely controlled above freeboard deck by manually at local by bringing portable hand pump and connect to block
- Remotely controlled from CCR by mimic on console
- When fail, valve disc is closed (fail close type)



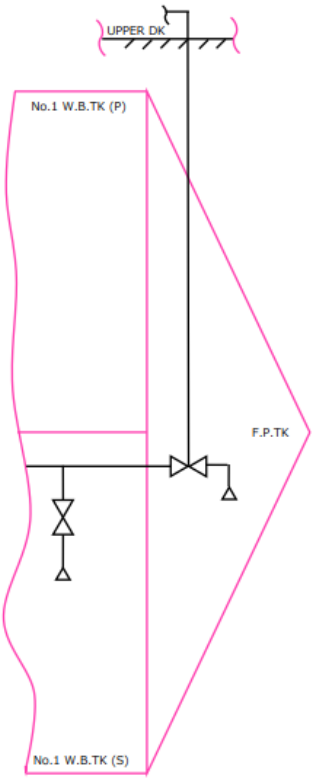
CASE 5.

-Local manual deck stand
-Remotely controlled above freeboard deck by manually at local
-When fail, valve disc is kept as last positioned



CASE 6.

-Remotely controlled from CCR (above freeboard deck) by mimic on console
-When fail, valve disc is kept as last positioned



6. Attachments if any

None

UI SC307 "Hydrocarbon Gas Detection and Bilge High Level Alarms in Cargo Pump-Rooms"

Summary

This UI clarifies the safety measures of continuous monitoring for hydrocarbon gases with detectors and bilge level monitoring devices for tanker cargo-pump rooms with regard to SOLAS regulation II-2/4.5.10.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Nov 2024)	06 November 2024	01 January 2026

- **New (Nov 2024)**

1 Origin for Change:

☑ Suggestion by IACS members

2 Main Reason for Change:

In 2015, there was an explosion in the cargo pump-room of FPSO **Cidade de São Mateus**. In February 2020, on board the ship **Valtamed**, a casualty happened in its pump-room because its fixed gas detection system was not effectively activated. After studying their investigation reports of **Valtamed**, and FPSO **Cidade de São Mateus**, IACS believes that it's necessary to develop a unified interpretation of SOLAS regulation II-2/4.5.10 concerning the arrangement of detectors of fixed hydrocarbon gas detection systems as well as bilge high-level alarm in the cargo pump rooms of oil tankers so as to eliminate confusion and disagreement on implementation and ensure a safe condition for personnel accessing or working in the cargo pump rooms.

3 Surveyability review of UR and Auditability review of PR

None

4 List of non-IACS Member classification societies contributing through the TC Forum and/or participating in IACS Working Group:

None

5 History of Decisions Made:

Machinery panel members carried out technical discussions on the interrelationship between cargo leakage and possible casualties and suggested possible arrangements

of hydrocarbon gas detectors and bilge high level alarms to be clarified so that any leakage and explosive atmosphere will be promptly and effectively detected.

6 Other Resolutions Changes

UI SC172/Rev.1 (November 2025)

Interpretation no. 2 of UI SC172/Rev.1 reads:

"2 Detection positions are the zones where air circulation is reduced (e.g. recessed corners)".

Interpretation no. 2 of UI SC172/Rev.1, reflecting interpretation no. 2 to SOLAS regulation II-2/4.5.10.1.3 in MSC/Circ.1120, is considered to address the same issue as the new UI SC307, however the new UI contains more in-depth design criteria for the sampling detection points.

The sentence "areas where the air circulation is reduced (e.g. recessed corners)" has been added to the new UI to reflect the interpretation in MSC/Circ.1120 and to ensure that no information is lost.

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original proposal:	March 2024	Made by Machinery panel
Panel Approval:	24 Sep 2024	(Ref:PM23938_IMn)
GPG Approval:	06 Nov 2024	(Ref: 24139bIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI SC307:

Annex 1. **TB for New (Nov 2024)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI SC307 (New Nov 2024)

1. Scope and objectives

To develop a unified interpretation on SOLAS II-2 Reg.4.5.10 concerning the arrangement of detectors of fixed hydrocarbon gas detection systems as well as bilge high-level alarm in the cargo pump rooms of oil tanker and chemical tankers.

2. Engineering background for technical basis and rationale

SOLAS II-2 Reg.4.5.10.1.3 requires that "Sampling points or detector heads shall be located in suitable positions in order that potentially dangerous leakages are readily detected." and Reg.4.5.10.1.4 requires that "all pump-rooms shall be provided with bilge level monitoring devices together with appropriately located alarms", but the expression "suitable positions" and "appropriately located" may cause confusion and disagreement on implementation.
With different cargoes on board, cargo vapors of different densities, lighter or heavier than air, may accumulate in different (upper or lower) positions in the cargo pump room. Also long time existence of bilge in the cargo pump room will contribute to the development of an explosive atmosphere.

Considering the characteristics of different cargoes on board, and in order to ensure the effectiveness of the fixed hydrocarbon gas detection systems and promptly acknowledgement of existence of bilge, it's proposed to make clarification on the hydrocarbon gas detector types and arrangement and bilge high-level alarm positions with reference to MSC.1/Circ.1321.

3. Source/derivation of the proposed IACS Resolution

MSC.1/Circ. 1321
IMO Resolution MSC. 292(87)
MSC/Circ.1120
UI SC172

4. Summary of Changes intended for the revised Resolution:

None

5. Points of discussions or possible discussions

Members discussed on the suitable positions of hydrocarbon gas detectors and bilge high level alarms.

It's believed that the hydrocarbon gas detectors should be positioned at lower and upper places with suitable coverage of each detector, and the bilge high level alarms should be activated in places where personnel are normally working in.

The members decide not to include toxic vapor detection in this UI.

Regarding interpretation 2.4, members agreed the "10 m" will be considered in a horizontal plane where the detectors are installed according to on-board arrangement, not vertical direction.

Draft paper reviewed by Safety Panel as there is may overlapping with UI SC172, Safety Panel confirm acceptance and asking to add 5. <u>areas where the air circulation is reduced (e.g. recessed corners)</u>

The Panel considered that UI comply with following three safeguards.
1. This UI is not meant to amend mandatory requirements in SOLAS;

2. This UI does not go beyond as an interpretation of these requirements in SOLAS;
3. This UI does not contradict the text of mandatory requirements in SOLAS.

6. Attachments if any

UI SC308 "Ventilation Systems of Cargo Spaces"

Summary

This UI serves to interpret the requirements of SOLAS Reg. II-2/5.2.1.1 and IMSBC Code requirements with regard to the permanent availability of mechanical surface ventilation.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2025)	09 May 2025	1 January 2027

- **New**

1 Origin of Change:

☑ Suggestion by IACS member

2 Main Reason for Change:

IMO Resolution MSC.539(107) added DIRECT REDUCED IRON (D) (By-product fines with moisture content of at least 2%) (DRI (D)) in the IMSBC Code Appendix 1 Individual schedules of solid bulk cargoes. Resolution MSC.539(107) will be applicable from 1 January 2025.

For the cargo Direct Reduced Iron (D), the IMSBC Code (Appendix 1) requires that mechanical surface ventilation shall be provided in each cargo hold, to prevent the accumulation of explosive gases, i.e. to keep the hydrogen concentration below the lower explosive limit.

As with the cargoes considered in UI SC 89 Revision 4, further clarification is required regarding the application of SOLAS II-2/5.2.1.1 and the IMSBC Code.

3 Surveyability review of UR and Auditability review of PR

NA

4 Human Element issues assessment

NA

5 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None

6 History of Decisions Made:

The safety panel agreed the Revision 5 of UI SC 89, which considered an interpretation for DRI (D) in relation to SOLAS II-2/5.2.1.1. UI SC 89 Revision 5 was submitted to CCC 10 (CCC 10/INF.3).

CCC 10 agreed to refer the document to E&T 41 to advice to CCC 11. In the discussion at E&T 41, it was mentioned that the document contains some cargoes that are not classified as dangerous goods and that the IMSBC for DRI (D) only requires the availability of mechanical surface ventilation, not continuous ventilation, but the UI could be understood in this way. E&T 41 agreed to advice CCC 11 not to include DRI (D) to the list of cargoes.

The safety panel noted the outcome of E&T 41 and discussed the following options for the way ahead: a) amend UI SC 89 in line with the comments, b) withdraw Revision 5 and keep the interpretation for DRI (D) as an internal note, and agreed to propose option b) to GPG.

GPG agreed to option b) in general but suggested to prepare a new IACS Resolution for DRI (D) which was prepared by the safety panel accordingly.

IMO was informed about the withdrawal of UI SC 89 Revision 5 and the new UI SC 308 (CCC 12).

7 Other Resolutions Changes:

None

8 Any hinderance to MASS, including any other new technologies:

None

9 Dates:

Original Proposal	: 16 November 2023	(Made by SP Member)
Panel Approval	: 11 March 2025	(Ref: PS23059_ISt)
GPG Approval	: 09 May 2025	(Ref: 24215bIGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC308:

Annex 1. **TB for New (May 2025)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI SC308 (New May 2025)

1. Scope and objectives

Provide necessary clarity with regard to the application of SOLAS II-2/5.2.1.1 and the requirements for the provision of mechanical surface ventilation in each cargo hold for DRI (D). The UI explains that a ship needs to comply with both when transporting this cargo.

2. Engineering background for technical basis and rationale

SOLAS II-2/5.2.1.1 aims on limiting the fire growth potential by requiring closing devices for ventilation inlets and outlets. In contrast to this the IMSBC Code (Appendix 1) requires that mechanical surface ventilation is available at all times and shall be provided in each cargo hold, avoid accumulation of explosive gases, i.e. keep the hydrogen concentration below the lower explosive limit which may be understood as prohibiting the installation of closing devices.

The closing devices required by SOLAS II-2/5.2.1.1 are means of emergency response to reduce the possibility that a fire can propagate from the space of origin into adjacent spaces. The temporary closure of the ventilation openings is regarded essential for meeting the functional requirements of SOLAS II-2.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None

3. Source/derivation of the proposed IACS Resolution

None

4. Summary of Changes intended for the revised Resolution

NA

5. Points of discussions or possible discussions

The wording may be further improved to emphasise that the means of closure required by SOLAS II-2/5.2.1.1 are mandatory for all ventilation openings. Regulation 19(3) in ILLC Annex 1 only concerns the requirement or exemption for weathertight closing arrangements.

6. Attachments if any

None

UI SC309 "Fire-Extinguishing Media Restrictions"

Summary

This UI provides implementation requirements for SOLAS regulation II-2/10.11, prohibiting the use or storage of fire-extinguishing media containing perfluorooctane sulfonic acid (PFOS).

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (May 2025)	29 May 2025	1 January 2026

- **New (May 2025)**

1 Origin of Change:

☑ Suggestion by IACS Member

2 Main Reason for Change:

None – this is a new UI.

3 Surveyability review of UR and Auditability review of PR

None.

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group:

None.

5 History of Decisions Made:

A query was raised by one Member on how compliance with the new SOLAS regulation II-2/1.2.10 and II-2/10.11, prohibiting the use of PFOS in fire-fighting foams, will be demonstrated for both new and existing ships. All Members were generally in agreement on how compliance should be demonstrated and five Members explicitly agreed that a unified interpretation should be developed to address the issue. The remaining Members either had no view or no objections to a new UI. An assessment was done against the "safeguards" established at MSC 108 and it was concluded by all Members that the UI would be within the scope of the "safeguards". Noting that, in addition to the amendments to SOLAS proposed by Resolution MSC.532(107), MSC 107 also adopted corresponding amendments prohibiting the use of PFOS for the 1994 and 2000 HSC Codes. Considering this, the panel agreed to develop a new UI for the HSC Codes, similar to this UI. Finally, IACS agreed to submit a paper to IMO SSE 11

Sub-Committee with the draft UIs, including consideration of the MSC 108 "safeguards".

6 Other Resolutions Changes:

A similar new unified interpretation was developed for the 1994 and 2000 HSC Codes to account for amendments made under Resolution MSC.536(107) and MSC.537(107) respectively.

7 Any hinderance to MASS, including any other new technologies:

None.

8 Dates:

Original Proposal	: 03 April 2024	(Made by: Safety Panel Member)
Panel Approval	: 05 May 2025	(Ref: PS24026_)
GPG Approval	: 29 May 2025	(Ref: 24139eIGe)

****

Part B. Technical Background

List of Technical Background (TB) documents for UI SC309:

Annex 1. **TB for New (May 2025)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI SC309 (May 2025)

1. Scope and objectives

1 The 107th session of the Maritime Safety Committee adopted resolutions MSC.532(107), MSC.536(107) and MSC.537(107) which included amendments to SOLAS and the HSC Codes regarding prohibiting the use and storage of fire-extinguishing media containing (PFOS). The purpose of the amendments is to protect persons on board against exposure to dangerous substances used in firefighting, as well as to minimise the impact of fire-extinguishing media that are deemed detrimental to the environment.

2 IACS notes that both the SOLAS and HSC Code amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships.

3 To provide the necessary clarity, IACS has adopted new IACS UI SC309 and new IACS UI HSC11.

2. Engineering background for technical basis and rationale

1 SOLAS regulation II-2/10.11 addresses fire-extinguishing media restrictions.

2 SOLAS regulation II-2/10.11.2.2 addresses the use and storage of PFOS as follows:

"11.2.2 Use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) shall be prohibited."

3 IACS notes that the SOLAS amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships. To address this issue and ensure all IACS Members are applying the same criteria to demonstrate compliance, IACS developed a new UI clarifying specific terminology and detailing the minimum requirements to achieve compliance.

4 Regulation 7.9.4 of the 1994 and 2000 HSC Codes address fire-extinguishing media restrictions.

5 Regulation 7.9.4.1 of the 1994 HSC Code addresses the use and storage of PFOS as follows:

"7.9.4.1 The following restrictions should apply for the use, storage or disposal of perfluorooctane sulfonic acid (PFOS):

> *.1 on all craft, use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) should be prohibited no later than the date of the first survey* on or after 1 January 2026; and*
>
> *.2 the substances prohibited by the requirements of 7.9.4.1.1 should be delivered to appropriate shore-based reception facilities when removed from the craft.*

** Refer to the Unified interpretation of the term "first survey" referred to in SOLAS regulations (MSC.1/Circ.1290).”*

6 Regulation 7.9.4.1 of the 2000 HSC Code addresses the use and storage of PFOS as follows:

“7.9.4.1 The following restrictions shall apply for the use, storage or disposal of perfluorooctane sulfonic acid (PFOS):

.1 on craft constructed on or after 1 January 2026, use or storage of extinguishing media containing perfluorooctane sulfonic acid (PFOS) shall be prohibited;

.2 craft constructed before 1 January 2026 shall comply with the requirements of 7.9.4.1.1 no later than the date of the first survey on or after 1 January 2026; and*

.3 the substances prohibited by the requirements of 7.9.4.1.1 or 7.9.4.1.2 shall be delivered to appropriate shore-based reception facilities when removed from the craft.

_____

** Refer to the Unified interpretation of the term "first survey" referred to in SOLAS regulations (MSC.1/Circ.1290).”*

7 IACS notes that the HSC Code amendments do not specifically state how compliance with the requirements to prohibit PFOS will be demonstrated for both new and existing ships. To address this issue and ensure all IACS Members are applying the same criteria to demonstrate compliance, IACS developed a new UI clarifying specific terminology and detailing the minimum requirements to achieve compliance.

2a. Specification of the data utilised in the development/revision of the proposed IACS Resolution, if any

None.

3. Source/derivation of the proposed IACS Resolution

SOLAS Reg.II-2/10.11.

4. Summary of Changes intended for the revised Resolution:

None.

5. Points of discussions or possible discussions

None.

6. Attachments if any

None.

UI SC310 "Unified Interpretations of SOLAS Regulation II-1/3-13.2.4 With Respect to a Factual Statement for Test and Thorough Examination of Non-Certified Lifting Appliances"

Summary

New requirements on lifting appliances and anchor handling winches (OLAW) also consider existing lifting appliances that were installed before the effective date of 1 January 2026 and do not have valid certificates of test and thorough examination. This UI provides a factual statement that can be used as a proof of compliance with the requirements for the register of lifting appliances.

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (July 2025)	24 July 2025	1 January 2026

New (July 2025)

1 Origin of Change

☒ Based on IMO Regulation SOLAS regulation II-1/3-13.2.4

2 Main Reason for Change

New SOLAS regulation II-1/3-13 and associated Guidelines MSC.1/Circ.1663.

3 Surveyability review of UR and Auditability review of PR

N/A

4 List of non-IACS Member classification societies contributing or participating in IACS Working Group

N/A

5 History of Decisions Made

MSC 107 adopted SOLAS regulation II-1/3-13 on shipboard lifting appliances and anchor handling winches (resolution MSC.532(107)). The Guidelines for lifting appliances (MSC.1/Circ.1663) were approved in conjunction with the adoption of the SOLAS amendments.

As already noted by MSC 106/11/4 SOLAS II-1/3-13 does not contain clear compliance requirements for existing lifting appliances that are not currently covered

under "another international instrument acceptable to the Administration". Subsequently, MSC 106 endorsed the mutual understanding that

> *In accordance with paragraph 3.2.3.2 of the Guidelines, demonstration of compliance following testing and thorough examination may be documented in any convenient form, provided each entry contains the necessary information stipulated in the Guidelines, is clearly legible and is authenticated by a competent person. A factual statement issued by the Administration or a classification society recognized by the Administration could serve as a demonstration of compliance for existing lifting appliances without valid certificates of test and thorough examination under another international instrument.*

In order to provide sufficient clarity, IACS prepared a draft Unified Interpretation for the demonstration of compliance of existing lifting appliances without valid certificates of the load test and thorough examination, which was submitted to IMO (SSE 10/12/6). This draft received the following comments and was not supported by the Sub-Committee (SSE 10/20 para. 12.54):

- Clarify that the test to be undertaken in accordance with Table 1 of MSC.1/Circ.1663;
- The factual statement can be issued by other entities than RO;
- The source of the SWL used for specifying the test loads;
- Clarify that the factual statement is only for lifting appliances installed before 1 January 2026;
- Clarify that SWL is nominated by the company to the satisfaction of the Administration.

IACS prepared a revised UI (SSE 11/10/5) based on these comments, for which the Sub-Committee confirmed that the safeguards have been satisfied and that the technical content is agreeable. SSE agreed to the draft MSC Circular on the unified interpretation of SOLAS regulation II-1/3-13.2.4 (MSC.1/Circ. 1696).

6 Other Resolutions Changes

None

7 Any hinderance to MASS, including any other new technologies

None

8 Dates

Original Proposal	: 26 January 2023	(Made by: Safety panel)
Panel Approval	: 20 January 2025	(Ref. PS23009aISy)
GPG Approval	: 24 July 2025	(Ref. 23098mIGb)

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Part B. Technical Background

List of Technical Background (TB) documents for UI SC310:

Annex 1. **TB for New (Jul 2025)**

See separate TB document in Annex 1.

◄▲►

Technical Background (TB) document for UI SC310 (New July 2025)

1. Scope and objectives

To ensure an agreed understanding regarding the necessary elements of a factual statement for testing and inspection of for existing non-certified lifting appliances.

2. Engineering background for technical basis and rationale

MSC 106 approved in principle the draft MSC circular on Guidelines for lifting appliances, with a view to final approval by MSC 107, in conjunction with the adoption of the associated draft SOLAS amendments which had been approved by MSC 102 on lifting appliances and anchor handling winches (OLAW) (MSC 106/WP.11, annex 3).

In IMO's WG discussion a mutual understanding with respect to a statement of fact confirming only the scope of draft SOLAS regulation II-1/3-13.2.4 was reached regarding:

- existing lifting appliances with valid certificates of test and thorough examination under another international instrument, e.g. ILO Convention No.152, acceptable to the Administration and issued prior to the entry into force of SOLAS regulation II-1/3-13, should be considered compliant with SOLAS regulation II-1/3-13.2.4, so as to avoid duplicative testing and thorough examination.
- lifting appliances installed before the entry into force date having no valid certificates of test and thorough examination under another international instrument that should be documented as compliant with SOLAS regulation II-1/3-13.2.4 no later than the date of the first renewal* survey on or after that date.
- demonstration of compliance in accordance with paragraph 3.2.3.2 of the Guidelines following testing and thorough examination that may be documented in any convenient form, provided each entry contains the necessary information stipulated in the Guidelines, is clearly legible and is authenticated by a competent person. A factual statement issued by the Administration or a classification society recognized by the Administration could serve as a demonstration of compliance for existing lifting appliances without valid certificates of test and thorough examination under another international instrument.

Based on the discussion at MSC 106 IACS identified the need for developing a UI for consistent application of SOLAS regulation II-1/3-13.2.4 with respect to a factual statement for testing and inspection of non-certified lifting appliances.

3. Source/derivation of the proposed IACS Resolution

SOLAS regulation II-1/3-13 on shipboard lifting appliances and anchor handling winches (resolution MSC.532(107)) and associate Guidelines for lifting appliances (MSC.1/Circ.1663).

4. Summary of Changes intended for the revised Resolution:

NA

5. Points of discussions or possible discussions

IMO provisions are lacking to specify the details of the factual statement for testing and inspection of existing non-certified lifting appliances.

In the development of the draft UI it was mentioned by an IACS Member that items of loose gear (only those utilized with the lifting appliance, see guidelines for lifting appliances, 4.3.1) may require also some detailed specification for a factual statement (similar way for the lifting appliance itself). However, as this may be regarded as an amendment of SOLAS requirements this aspect was not considered.

6. Attachments if any

None

IACS

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Apr 2016

History Files (HF) and Technical Background (TB) documents for UIs concerning Tonnage Measurement (UI TM)

Res. No.	Title	Current Rev.	HF/TB?
UI TM1	Determination of Moulded Depth (D) for Ships with an Open Mooring Deck Aft or Stepped Upper Deck	1993	No
UI TM2	International Tonnage Convention 1969 – Heat Exchangers (Coolers) Treatment	Oct 2015	HF
UI TM3	Interpretation of International Tonnage Calculation: Open Deck Spaces Bounded by Partitions or Bulkheads (ITC69 regulation 2(4), 2(5) and 6)	Withdrawn Apr 2016	HF

UI TM2 "International Tonnage Convention 1969 – Heat Exchangers (Coolers) Treatment"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
New (Oct 2015)	29 October 2015	01 July 2016

- **New (Oct 2015)**

.1 Origin for Change:

☑ Suggestion by IACS Member

.2 Main Reason for Change:

Classification societies have considered arrangements (mainly on pleasure vessels or small ships) where heat exchangers (coolers) are fitted in hull recesses or outside of the hull. The International Convention on Tonnage Measurement of Ships and later IMO Unified interpretations (TM5/Circ.6) does not provide information relevant the treatment of such elements.

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

February 2013 Initial suggestion made
February 2013 to November 2014 Discussion in Safety Panel
November 2014 approved submission to SDC2
April 2015 to August 2015 Further discussion in Safety Panel
August 2015 Draft UI circulated

One member raised an issue relevant to the treatment of the hull recess in which heat exchanger (cooler) was installed.

After several round of discussion, all members of the Safety Panel agreed with the understanding that the hull recess should be treated as a space open to the sea (even if protected by mesh).

Members were divided about the treatment of the heat exchanger itself. One approach was to consider heat exchanger as pipework and not include it in the total volume for the Gross Tonnage calculation.

A second approach was to consider the heat exchanger as an appendage and, in accordance with Reg. 6(2) of 1969 TM Convention, include their volume in the total volume for the Gross Tonnage calculation.

In this respect a specific submission (SDC2/11) was made to SDC2. Different views were expressed by delegations during the discussion and no action was taken in relation to the submission.

On June 2015 the issue was the object of a meeting between a member and the US Coast Guard. As result of this meeting it was proposed to treat the heat exchangers as machinery and not as appendages.

After further discussion all members agreed with the proposal.

.5 Other Resolutions Changes

None.

.6 Dates:

Original Proposal: February 2013 made by a member
Panel Approval: 6 October 2015 (Ref: SP13005g)
GPG Approval: 29 October 2015 (Ref: 14157cIGd)

Part B. Technical Background

List of Technical Background (TB) documents for UI TM2:

Annex 1. **TB for New (Oct 2015)**

See separate TB document in Annex 1.

◄▼►

Technical Background (TB) document for UI TM2 (New Oct 2015)

1. Scope and objectives

Scope of this Unified interpretation is to clarify the treatment of the Heat Exchangers (coolers) in the International Tonnage (1969) measurement.

2. Engineering background for technical basis and rationale

Tonnage is widely used to determine and quantify the size of any kind of ship and is usually expressed in terms of Gross Tons (GT) and Net Tons (NT). These measurements are used to determine the design and operational requirements of International Conventions and Codes (e.g. SOLAS, MARPOL, STCW International Labour Conference, etc.) and also to determine fees, taxes and other economic issues.

3. Source / derivation of the proposed IACS Resolution

This Unified Interpretation is based in the technical interpretations on the International Convention on Tonnage Measurement of Ships (1969) – Regulation 6(2) and on IMO TM.5/Circ.6 (19 May 2014), interpretations R.2(4)-9 and R.6(2)-1.

4. Summary of Changes intended for the Resolution

None

5. Points of discussions or possible discussions

How to treat the heat exchanger, either as pipework or as an appendage to the hull.

6. Attachments if any

Figures of example of heat exchangers fitted in recess in the hull (Fig. 1) and outside the hull (Fig.2).

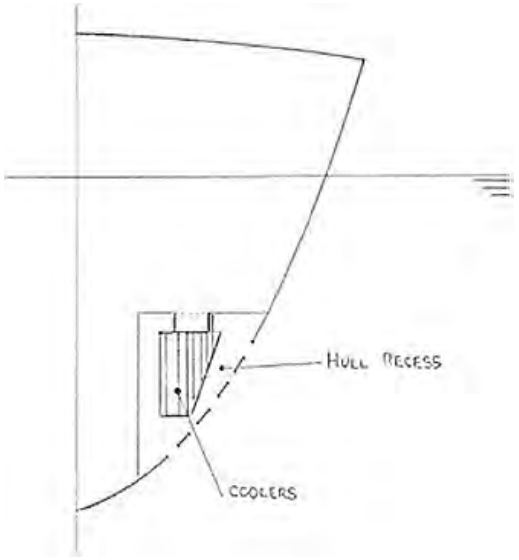


Fig.1

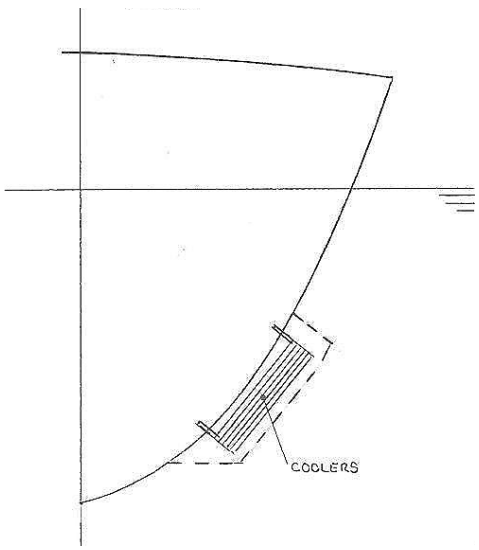


Fig.2

UI TM3 "Interpretation of International Tonnage Calculation: Open Deck Spaces Bounded by Partitions or Bulkheads (ITC69 regulation 2(4), 2(5) and 6)"

Part A. Revision History

Version no.	Approval date	Implementation date when applicable
Withdrawal of New (Nov 2015)	19 April 2016	-
New (Nov 2015)	10 November 2015	1 January 2017

- **Withdrawal of New (Nov 2015)**

On 19 April 2016 GPG agreed to withdraw UI TM3 (Nov 2015) with immediate effect pending further review by the Safety Panel addressing the concerns raised by IMO SDC3 (Ref: 15145e).

- **New (Nov 2015)**

.1 Origin for Change:

☑ Suggestion by IACS member

.2 Main Reason for Change:

Different classification societies and flag administrations have different approaches when considering Open Deck Spaces Bounded by Partitions or Bulkheads according to International Convention on Tonnage Measurement of Ships (1969), and later IMO Unified interpretations (TM5/Circ.6, 19 May 2014).

.3 List of non-IACS Member Classification Societies contributing through the TC Forum and/or participating in IACS Working Group:

None

.4 History of Decisions Made:

July 2014 Initial suggestion made
July to December Discussion in Safety Panel
December 2014 Draft UI circulated
March 2015 Discussion at 3rd Safety Panel meeting
June 2015 Revised UI and HF+TB circulated
September 2015 Discussion at 4th Safety Panel meeting

.5 Other Resolutions Changes

None

.6 Dates:

Original Proposal: July 2014 made by a member
Panel Approval: 12 October 2015 (Ref: SP14004w)
GPG Approval: 10 November 2015 (Ref: 15145eIGc)

Part B. Technical Background

List of Technical Background (TB) documents for UI TM3:

Annex 1. **TB for New (Nov 2015)**

See separate TB document in Annex 1.

Technical Background (TB) document for UI TM3 (New Nov 2015)

1. Scope and objectives

The objective of this Unified interpretation is clarify the definition of an Open Deck Spaces Bounded by Partitions or Bulkheads in the scope of the International Convention on Tonnage Measurement of Ships (1969). It will be applicable to all ship types with clarification on the application to Offshore Support Vessels.

2. Engineering background for technical basis and rationale

Tonnage is widely used to determine and quantify the size of any kind of ship and is usually expressed in terms of Gross Tons (GT) and Net Tons (NT). These measurements are used to determine the design and operational requirements of International Conventions and Codes (e.g. SOLAS, MARPOL, STCW International Labour Conference, etc.) and also to determine fees, taxes and other economic issues.

Some discrepancies have been found when applying the provisions of the 1969 Tonnage Convention, in particular for Open Deck Spaces Bounded Partitions or Bulkheads.

Sometimes these discrepancies can have a significant impact on the safety and pollution prevention requirements and they could lead some ships to change flag or classification society based on tonnage figures. This is clearly an undesirable situation.

3. Source / derivation of the proposed IACS Resolution

This Unified Interpretation is based in the technical interpretations on the International Convention on Tonnage Measurement of Ships (1969) made by:

- United States Coast Guard in the MTN 01-99 CH-7 Tonnage Technical Policy (29 March 2005) paragraphs 69.59, 69.81,
- IMO TM.5/Circ.6 (19 May 2014), and
- the Code on Intact Stability (2008 IS, Introduction, 2.7)

4. Summary of Changes intended for the revised Resolution:

This is a new Unified Interpretation on Open Deck Spaces. It is required as it transpired that different IACS members and flag administrations have different approaches when measuring these spaces for tonnage purposes.

5. Points of discussions or possible discussions

Some IACS members and flag administrations would accept the interpretation of Enclosed Spaces provided an exemption for Offshore Supply Vessels (OSV's) and similar constructions is provided.

Although the definition of Offshore Supply Vessel is clear in the Code on Intact Stability (2008 IS, Introduction, 2.7), the mention of 'similar constructions' could be a subject of further discussion during the implementation stage. In order to avoid this a clear definition for the type of vessel to which the UI is applicable has been provided.

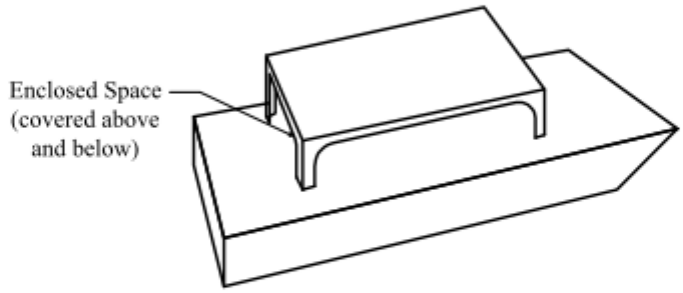
6. Attachments if any

Definition of Enclosed Space from USCG MTN 01-99 CH-7 §69.59

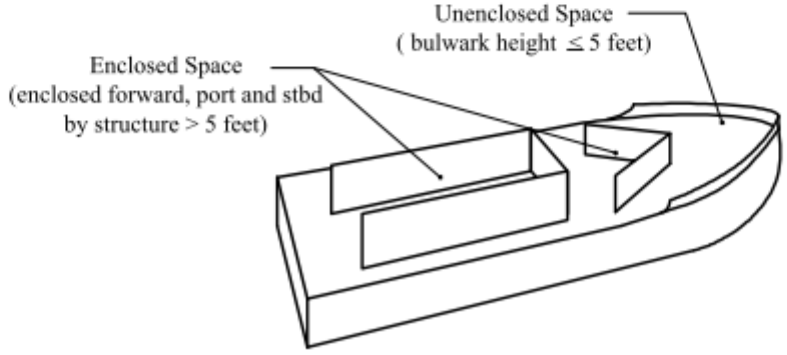
69.59 ENCLOSED SPACES

Enclosed space means a space which is bounded by the vessel's hull, by fixed or portable partitions or bulkheads, or by decks or coverings other than permanent or movable awnings. *In general, a space is considered an enclosed space if it is:*

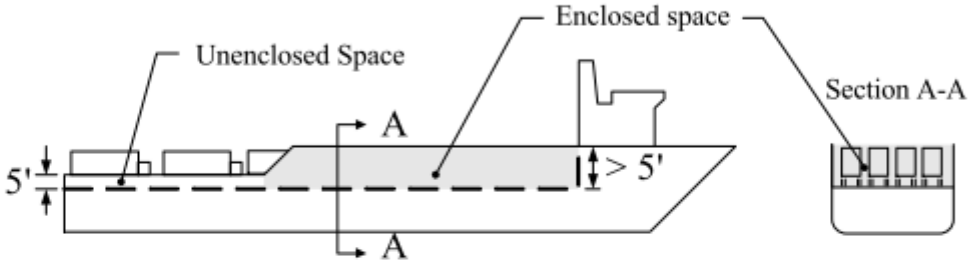
(a) covered from above (excepting awnings) and below; ***or***



(b) covered from above or below and enclosed on three or more sides by partitions or bulkheads that exceed 5 feet (1.5 meters) in height as measured from the lowest point of the enclosed space (refer to § 69.81 for exception for offshore supply vessels (OSVs).



In the situation where only a portion of a bulkhead or partition exceeds 5 feet (1.5 meters) in height, the entire inboard space in way of that portion of the structure from the deck to the top of the structure must be included in the total volume of all enclosed spaces (V).



No break *(e.g., step)* in a deck, nor any opening in the vessel's hull, in a deck or in a covering of a space, or in the partitions or bulkheads of a space, nor the absence of a partition or bulkhead precludes the space from being included in the *total volume of all* enclosed spaces *(V)*. *The following miscellaneous spaces are considered enclosed spaces:*

(a) Temporary deck equipment which has enclosed volume (e.g., processing tanks, seismic trailers, housed portable machinery, etc.)

(b) Spaces below cargo hatches of multipurpose vessels which have the facility to trade with cargo hatches open or closed, regardless of the hatch position when the vessel is measured.

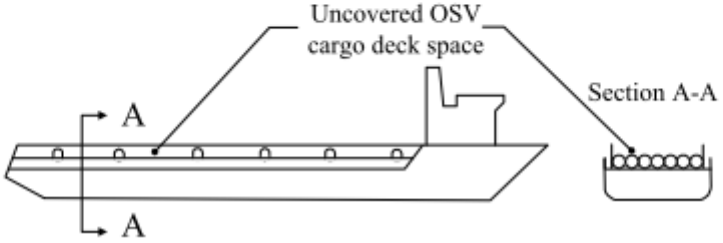
(c) Appendages which have enclosed volume (except for movable items such are rudders which can be considered as unenclosed machinery and thereby ignored from measurement).

(d) Uncovered spaces bounded on three sides by bulwarks - or portions of bulwarks - that exceed 5 feet (1.5 meters) in height.

Exception for Offshore Supply Vessels (OSV's) from USCG MTN 01-99 CH-7 §69.81

69.81 OFFSHORE SUPPLY VESSELS (OSV'S)

The uncovered cargo deck space on an OSV is not considered an enclosed space under the provisions of §69.73(a), notwithstanding the presence of bulwarks or other enclosing structures that exceed the 5 foot height criteria of §69.59. In this context, the cargo deck space is defined as the open space on the main deck aft of the forecastle that is exposed to weather and used for stowage of deck cargo loads and/or processing equipment. This determination applies to all self-propelled vessels that regularly carry goods, supplies, individuals in addition to the crew, or equipment in support or exploration, exploitation, or production of offshore mineral or energy resources.



Offshore Supply Vessel (OSV) definition from Code on Intact Stability (2008 IS, Introduction, 2.7)

2.7 *Offshore supply vessel* means a vessel which is engaged primarily in the transport of stores, materials and equipment to offshore installations and designed with accommodation and bridge erections in the forward part of the vessel and an exposed cargo deck in the after part for the handling of cargo at sea.