IACS

International Association
of Classification Societies

2016 Annual Review

Contents

01 Preface

A year marked by milestones

Signing of an historic agreement with IMO brought a landmark year to a close for IACS
By Dr Licheng Sun, Council Chair

Dr Licheng Sun, Council Chair

It is a great pleasure and honour in my capacity as IACS Council chairman to address the readers of this brand new IACS Annual Review 2016.

2016 was a monumental year for IACS as we witnessed the IMO's recognition of IACS Members' Rules - which include the IACS-developed Common Structural Rules conforming to the Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers (GBS), which marks a new era for ship construction rules. This has placed IACS in a unique relationship with IMO, reinforcing its trusted technical advisory role.

This relationship was cemented in 2016 when IACS signed an historic Memorandum of Agreement with IMO in December - the first of its kind in its history - representing the strengthened relationship between the two organisations, and demonstrating our shared goals and objectives on maritime safety, environmental protection and sustainability.

The year was also significant for IACS as it celebrated the 25th anniversary of its Quality System Certification Scheme (QSCS). We were pleased to see that in a climate of increased ship inspections, the global Port State Control performance of IACS Members steadily improved in 2016, ensuring that QSCS remains the gold standard for classification society performance that the industry can rely on.

But 2016 was also a year of challenges with the world's shipping industry stuck in the doldrums, yet still facing the entry into force of new conventions and regulations, requiring an assessment of the validity of emerging new technologies.

Facing these increasing challenges, IACS has set itself a work plan that revolves around its core values of leadership, technical knowledge, quality performance and transparency, and is focusing on GBS, the application of new technology, cyber systems and external relations.

Responding to the findings of the initial GBS compliance audits, IACS has made it a top priority to improve the related rules and technical documents, via Urgent Rule Change Proposals (URCP) and updated Technical Background documents (TB) in line with the Corrective Action Plans, with the aim of achieving full GBS compliance at IMO's MSC 98 in 2017.

Cyber systems is another topic that has been a key focus area over the past years. IACS has formed a new Panel on Cyber Systems with an intention to develop requirements covering design, manufacture, installations and commission, monitoring and maintenance processes, software reliability, and security of cyber systems and equipment. A Joint Working Group with industry has been set up and active involvement and contribution have been ongoing as well.

The use of new technology in ship survey is another prioritised area. IACS has come to appreciate the strategic significance of innovative technology and the role it will play in promoting safety, efficiency, energy conservation and environmental protection. Actions have been taken by IACS to review and update the current technical documents and recommendations in relation to application of new testing technology, such as non-destructive testing (NDT) and Remote Inspection Techniques (RIT), for example, drones, Remote Operated Vehicles and climbers.

All the above achievements and progress would not be possible without the collective hard work of IACS Members and the IACS secretariat as well as the great support and combined efforts of all stakeholders.

Looking ahead, IACS, in pursuit of its core values and fully committed to the highest quality performance, will continue to work closely with regulators and industry partners to echo technological developments, and make a common contribution towards ever-safer, cleaner and more efficient shipping.

IACS: more important than ever

Afforded a unique status as a not-for-profit association focused wholly on shipping standards
By Robert Ashdown, IACS Secretary General

Robert Ashdown, Secretary General

Welcome to the IACS Annual Review 2016, a portal into the many and varied activities that IACS has undertaken over the past year, which serves to illustrate the scope of the organisation and the wide range of issues that it deals with.

IACS has grown strongly over the years: from the first meeting of major societies in 1939 and its formal establishment in 1968, to the 25th anniversary of its Quality System Certification Scheme in 2016, IACS has had a crucial role to play in the smooth and efficient functioning of the global maritime industry.

The role of IACS has never been more important. As the shipping's regulatory regime continues to evolve and expand, IACS works with all sectors of the industry and maritime regulators to ensure that the legislative framework necessary for safe, efficient and environmentally friendly ships is underpinned and enhanced by class Rules that allow for its practical implementation. Working closely with Member States in the IMO, IACS also strives to ensure that the legislation developed by that Organisation can be consistently and globally applied.

The association also delivers further consistency through the adoption of IACS Resolutions (unified interpretations, unified requirements and procedural requirements). Given that IACS' members class, collectively, over 90% of the world's merchant fleet by tonnage, the adoption by IACS of any given resolution has a significant impact on the global shipping community.

ESTABLISHING STANDARDS

The International Association of Classification Societies is, therefore, not a traditional non-governmental organisation (NGO). Rather it is a not-for-profit membership organisation of classification societies that establishes minimum technical standards and requirements. This limited scope of IACS' work is often misunderstood. IACS does not seek commercial opportunities or to improve the operating climate for its members. Many of the IACS Members undertake a wide range of activities, such as consultancy, that are never discussed within IACS as they are ancillary to classification services. Although all the IACS Members act as Recognised Organisations for many of the flag State Administrations worldwide, IACS does not discuss this aspect of its members' work either. Neither does IACS have any responsibility for enforcement which is, rightly, left to flag and port States.

IACS therefore occupies an almost unique position as a technical, standards setting body, and, as such, it is crucial that IACS maintains an independent, apolitical position when developing those standards. Nevertheless, IACS also seeks to work closely with the other maritime bodies to understand their current needs and priorities so that, through its technical leadership, the maritime industry is also well prepared for the challenges of tomorrow.

IACS' engagement with industry is described in depth later in this review (see pages 38-43) but this is an area which IACS heavily focused on in 2016, consulting widely on matters such as the Common Structural Rules, establishing new forums for IACS/industry to meet and share views and ideas, and actively encouraging the review of existing bodies such as Tripartite to maximise their effectiveness.

In similar fashion, IACS has also sought to strengthen further its relationship with the IMO. In December 2016, and in recognition

of the need for enhanced co-operation following the introduction of GBS and noting the increasing volume of statutory work being undertaken by IACS members, IACS signed a Memorandum of Agreement (MoA) with the IMO which looks to build on the extensive practical contribution IACS already makes to that organisation (more on this on pages 36-37). This MoA marks a significant development in the relationship between the two organisations and, by facilitating an early exchange of views and information along with technical support, will be of benefit to the entire maritime industry.

GLOBAL SCOPE

IACS also works with many flag States and regional regulatory bodies across a range of issues and, in 2016, complemented its traditional Christmas reception in Brussels with an event in Washington in June.

IACS firmly believes that the global maritime industry should be subject to global regulation as developed by the IMO. When working with other stakeholders, IACS encourages the development of proposals that are global in scope and capable of uniform application.

Of the specific tasks undertaken by IACS in 2016, having all twelve Members achieve compliance with the IMO's goals and functional requirements of the International Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers, in part by using IACS Common Structural Rules, was a significant milestone in the Association's evolution. This fresh regulatory approach represents a new era in maritime safety and collaboration, reinforcing IACS trusted, technical advisory role to the IMO.

IMO's recognition that the IACS Common Structural Rules conform to GBS is a powerful endorsement that class Rules for the design and construction of ships ensure that, in combination with proper operation and maintenance, those ships will meet the mission of safety of life, property and protection of the environment throughout their service life. IACS is committed to continuing to meet the demands asked of it under GBS and to working with the IMO Member States and the Secretariat to improve the verification guidelines and to establish an appropriate maintenance schedule.

CYBER RISKS

Cyber safety has also been high on IACS' agenda in 2016. In June, a new panel started work which reflects a desire by IACS Members to significantly increase the resources devoted to this issue for the foreseeable future. In recognition of the high levels of automation on board almost every vessel, IACS is focused on delivering results that look to ensure the cyber integrity of the ship at the build stage and then maintain that cyber resilience throughout the ship's life. For IACS, cyber safety is now just as much a part of the fundamentals of maritime safety as the hull or machinery systems.

IACS 2016

This is just a brief overview of the work of IACS in 2016. Many additional activities and specific tasks have been undertaken or completed which are captured later in this review. Underpinning all this activity is IACS' unswerving commitment to quality across every aspect of its work. IACS is proud to be the only industry maritime organisation that has its own quality management system, QSCS. Compliance with the provisions of QSCS, which is mandatory for IACS Members, provides an assurance of professional integrity and maintenance of high professional standards.

It is hoped that you find this annual review useful, informative and interesting. IACS' goal is safer and cleaner shipping and we are committed to transparency in the work that we do to achieve these aims. This review provides only a summary of our activities but, should you require further detail, there is much additional information to be found on our new website: www.iacs.org.uk.

IACS maintains an independent, apolitical position when developing standards

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About IACS

IACS' contribution to safer and cleaner shipping

A thorough understanding of internationally applicable technical requirements for ships and other floating structures will maintain standards

The objective of ship classification is to verify the structural strength and integrity of essential parts of the ship's hull and its appendages, and the reliability and function of the propulsion and steering systems, power generation and other features and auxiliary systems which have been built into the ship in order to maintain essential services on board for the purpose of safe operation of a ship.

Classification societies aim to achieve this objective through the development and application of their own Rules, and by verifying compliance with international and/or national statutory regulations on behalf of Administrations. The vast majority of commercial ships are built to and surveyed for compliance with these Rules.

Classification and statutory certification are, except in rare cases, inextricably linked since classification by a society recognised by the Administration is usually a prerequisite both for registration of a ship with the flag and for certification of the ship's compliance with the International Convention on Load Lines and the International Convention for the Safety of Life at Sea (SOLAS).

However, a classification certificate should not be construed as a warrant of safety, fitness for purpose or seaworthiness of the ship. It is an attestation only that the vessel is in compliance with the Rules that have been developed and published by the society issuing it.

Further, classification societies are not guarantors of safety of life or property at sea or the seaworthiness of a vessel because, although the classification of a vessel is based on the understanding that the vessel is loaded, operated and maintained in a proper manner by competent and qualified personnel, the society has no control over how a vessel is operated and maintained between the periodical surveys it conducts to check that a vessel is upheld in compliance with the relevant requirements.

Proper maintenance and operation by ship owners or operators and the seafarers on board between surveys are, therefore, equally key and form part of the overall safety net for protection of life and property at sea and the marine environment, which involves various stakeholders.

Should any defects that may affect class become apparent, or damages be sustained between the relevant surveys, the owner is required to inform the society concerned without delay.

Where the conditions for the maintenance of class are not complied with, class may be suspended, withdrawn or revised to a different notation, as deemed appropriate by the society when it becomes aware of the condition.

RULES AND REQUIREMENTS

It is fundamental for classification societies to have a thorough understanding of internationally applicable technical requirements for ships and other floating structures. IACS has therefore established a robust process for contributing to and collecting such information, primarily through its role as a non-governmental organisation of the International Maritime Organization (IMO).

Classification societies' participation in IACS in its role as a technical advisor to the IMO gives them first-hand access to development of international regulatory instruments. It provides IACS' 12 member societies with a means to share such information with the industry, and to secure consistent implementation of the international mandatory conventions and codes as part of statutory services the societies perform under authorisation from flag States.

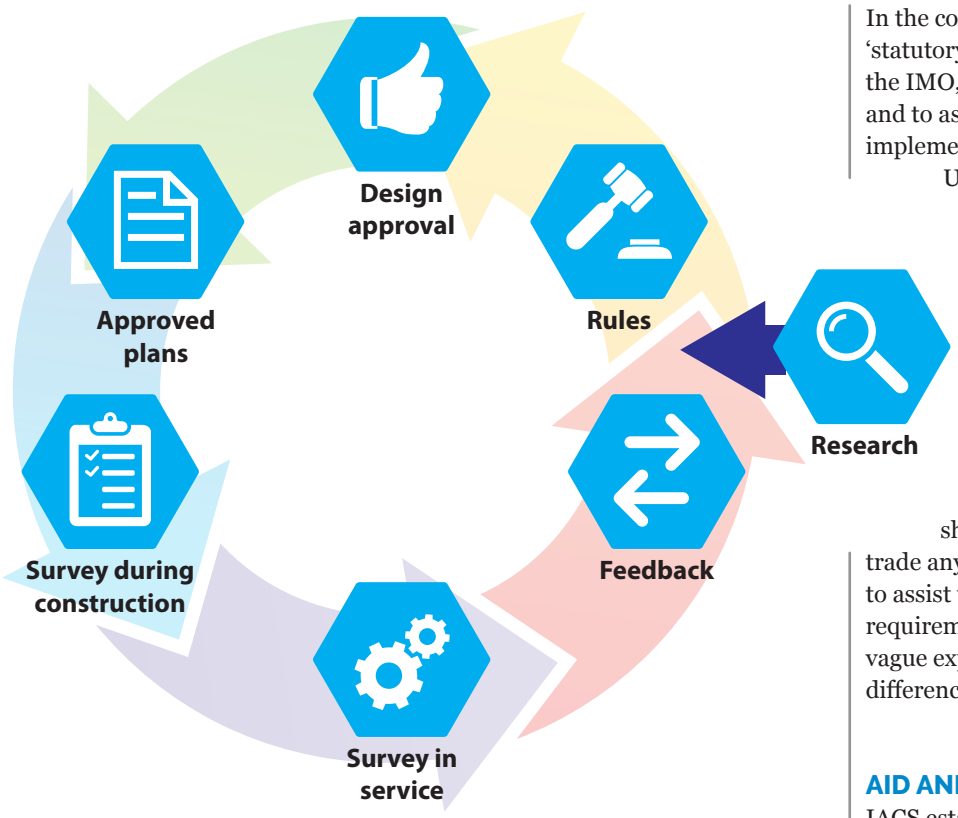


Figure 1
The Class cycle

Classification Rules have been developed over many years by each society through extensive research and development and service experience and are subject to constant refinement. In addition, Unified Requirements (URs) have been agreed by IACS Members and transposed into the individual Members' Rules.

Classification Societies involvement with ships through their life cycle affords them the unique opportunity to utilize feedback obtained throughout the design approval process, new construction (including the certification of materials, equipment and components), and from surveys of ships in-service to drive research and development and the improvement of classification Rules. Utilizing the opportunities afforded by this "class cycle", see *Figure 1*, in support of the purposes and objectives of classification is a key element in IACS work.

"IACS establishes, reviews, promotes and develops minimum technical requirements in relation to the design, construction, maintenance and survey of ships"

In the context of the global shipping industry, 'statutory' requirements are developed at the IMO, and also at the ILO. As necessary, and to assist in the global and consistent implementation of IMO statutory requirements, Unified Interpretations (UIs) are developed and adopted by IACS. IMO agreed statutory requirements address the safety and security of ships and those on board and the protection of the environment. On the basis of 'no more favourable treatment', they facilitate the efficiency of global trade in providing a regulatory 'level playing field' that allows a 'compliant' ship flying the flag of one country to trade anywhere in the world. IACS' UIs look to assist with the practical delivery of these requirements by identifying and resolving vague expressions and the likelihood of differences of interpretation.

AID AND ASSIST

IACS establishes, reviews, promotes and develops minimum technical requirements in relation to the design, construction, maintenance and survey of ships.

These requirements are considered minimum prerequisites. Any Member remains free to set and publicise requirements that result in an equivalent or higher safety level compared to the IACS requirements.

IACS also assists international regulatory bodies and standard organisations to develop, implement and interpret statutory regulations and industry standards in ship design, construction and maintenance, with a view to improving safety at sea and the prevention of marine pollution.

The support that IACS can offer to regulators such as the IMO and ILO and the industry relates to the following values:

1. Leadership: ability to be ahead and co-operate with regulators and industry on initiatives that can effectively promote maritime safety, protection of the environment and sustainability;

2. Technical knowledge: collective and individual knowledge and experience, leading to the development, adoption and implementation of technical rules and minimum requirements that reflect current practice and changing demands of society, supporting innovation and new technologies;

Classification Societies are involved with ships throughout their life cycle

3. Quality performance: commitment of its Members to define and adhere to the highest global quality standards;

4. Transparency: ability to provide advice on the implementation of regulations, interpretations or enhancements thereof, if need is identified, so that practical solutions can be effectively developed in cooperation and with the support of other stakeholders, increasing the trust on class.

IACS also engages bilaterally with individual Flag Administrations and regulatory bodies as required. Regionally, IACS is also active in Brussels promoting the aims of IACS to the European Institutions and, where appropriate, making technical contributions to EU regulatory developments related to shipping.

THE CLASSIFICATION PROCESS

1. A technical review of the design plans and related documents for a new vessel to verify compliance with the applicable Rules.
2. Attendance at the construction of the vessel in the shipyard by classification society surveyors to verify that the vessel is constructed in accordance with the approved design plans and classification Rules.
3. Attendance by classification society surveyors at the relevant production facilities that provide key components such as the steel, engines, generators and castings to verify that the component conforms to the applicable Rule requirements.
4. Attendance by classification society surveyors at the sea trials and other inspections and tests relating to the vessel and its equipment prior to delivery to verify conformance with the applicable Rule requirements.
5. Upon satisfactory completion of the above, the builder's or shipowner's request for the issuance of a class certificate will be considered by the relevant classification society and, if deemed satisfactory, the assignment of class may be approved and a certificate of classification issued.
6. Once in service, the owner must submit the vessel to a clearly specified programme of periodical class surveys, carried out on board the vessel, to verify that the ship continues to meet the relevant Rule requirements for continuation of class.

03 IACS Technical Work

Setting the bar for Goal-based standards

IACS rules in line with IMO's goal-based ship construction standards for bulk carriers and oil tankers

By Toshiro Arima, Expert Group on GBS Chair

Toshiro Arima (NK), Expert Group on GBS Chair

In May 2010, IMO's Maritime Safety Committee (MSC) adopted a set of Resolutions related to Goal-Based Ship Construction Standards (GBS). These introduced a five-tier system, is shown in *Figure 2*, with Tier IV specifically relevant to class rules and regulations. The Goals in Tier I are specified in SOLAS regulation II-1/3-10, while the 15 Functional Requirements in Tier II are stipulated in the *International Goal-Based Ship Construction Standards for Bulk Carriers and Oil Tankers*. Classification societies' rules, which must be confirmed by MSC to conform to the Tier I Goals and Tier II Functional Requirements through the verification process in Tier III, are placed in Tier IV. Tier V relates to the Applicable Industry Standards and Codes of Practice.

> *"MSC confirmed that ships contracted under the current IACS Members rules meet the International goal-based ship construction standards for bulk carriers and oil tankers"*

As IACS undertook the task of harmonising its Common Structural Rules (CSR), it decided to fill gaps between IMO GBS and IACS CSR for Bulk Carriers and Oil Tankers (CSR for BC and OT) to allow IACS Members to submit their GBS initial verification requests

IACS has developed new self-assessment and verification request processes for the rectification of GBS non-conformities

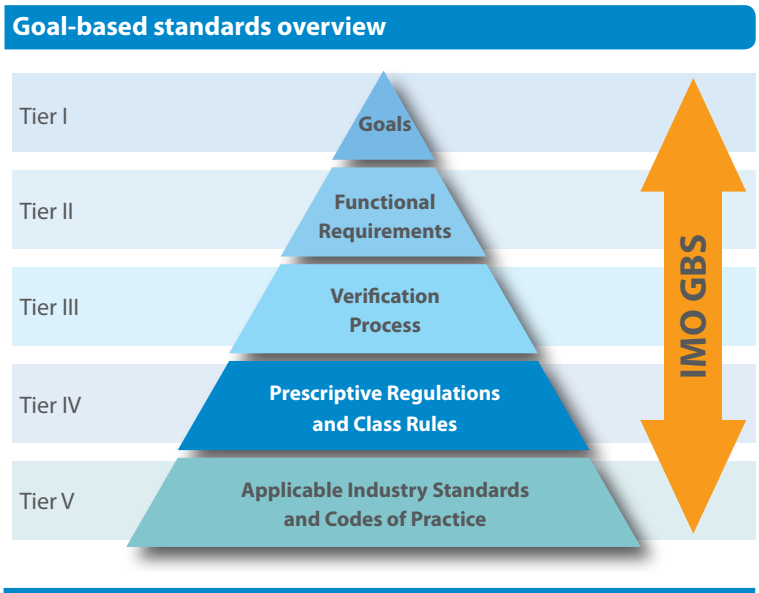


Figure 2
GBS Five-Tier System

together with self-assessments on individual class rules fully conforming to the Tier I Goals and Tier II Functional Requirements. IACS also noted that there were some Functional Requirements that cannot be covered by class rules alone and therefore covered these through the upgrade or development of new IACS technical resolutions. This work is evidenced through resolutions covering hull in-service surveys, new construction survey, transparency of class and statutory information, and human element and ship design.

Accordingly, IACS management and appropriate technical bodies worked towards the common goal of establishing class rules that fully conform to IMO GBS Goals and Functional Requirements. At the end of 2013 and the culmination of many years of work, IACS Members submitted their initial GBS verification requests to the IMO Secretariat, in line with the schedule agreed at MSC 87.

AUDIT TEAM SUPPORT

In 2014 and 2015, IMO GBS audit teams appointed by IMO Secretary-General carried out the initial GBS verification audit. There was an open dialogue between IACS and IMO Secretariat throughout the process to provide additional technical information where required, with a view to facilitating the work of the IMO Secretariat.

In February 2016, in response to the GBS verification audit reports on IACS Common Package (CP) 1 and 2 – parts of the initial GBS verification requests by 12 IACS Members submitted to IMO Secretariat at the end of 2013 – IACS developed and submitted Corrective Action Plans on the findings of the audit. These action plans supported the successful implementation of IMO GBS.

The MSC, at its 96th session held in May 2016, considered the audit team reports and the IACS and IACS Members' action plans and confirmed that ships contracted under the current IACS Members rules meet the International goal-based ship construction standards for bulk carriers and oil tankers, mandated by SOLAS regulation II-1/3-10. This is a major achievement for IACS Members and marks one of the most significant decisions on this issue since the 47th IACS Council in 2003 decided to develop IACS CSR.

ADDRESSING AUDIT FINDINGS

The findings related to the Functional Requirements are all addressed with appropriate corrective actions. In addition to address the findings of the audit, IACS has developed two papers. One provides comments both on the report on the observations of the GBS audit teams and on the GBS audit process in general, based on the experience gained to date in the GBS audit process. In the other IACS proposes amendments to the introduction and part A of the Guidelines based on its experience of the audit process to date.

As a next step in response to MSC 96's decision, IACS developed new self-assessment and verification request processes for the rectification of non-conformities, and generated a status report on the addressing of observations which was submitted to the IMO Secretariat at the end of 2016.

Cyber systems – the time is now

IACS organises to respond to cyber threats
By George Reilly, Cyber Systems Panel Chair

George Reilly (ABS), Cyber Systems Panel Chair

Maritime Cyber Systems, the combination of computers and maritime systems, have been stealthily increasing their hold on the industry for over 30 years. In the earlier stages of this development, control systems were viewed in relation to the equipment that they were used to control, and were developed by each manufacturer independent of the others.

The progression from separate, classic control systems, through programmable logic controllers (PLCs) then on to embedded computer chips and the introduction of networking technologies eventually led to the realisation that control could be exercised over significant parts of the vessel, through highly integrated control systems.

This change, from the computerisation of the individual pieces of equipment or systems towards the full interaction of multiple pieces of equipment, was probably inevitable. However, it is misleading and disarming to simply consider the development as a next step.

The step when it came was facilitated by the networking technologies and techniques that had already been developed and proven in other industries and which were available to be transferred into the maritime industry with ease. Along with this easy transfer or introduction of mature technology from other industries, was a realization that further benefits could be derived from the information collected from across different systems. This could be aggregated in real time to influence the decisions regarding day-to-day operation of the whole vessel operations, and over time to collect data and monitor performance.

The result of this technology availability and the desire for more operational data created the driving force to transform a next step into a leap.

However, the technical ease of the migration has masked the fact that the technical development did not take place within the maritime industry which, in turn, has meant that an appropriate regulatory process was not developed in parallel.

It is natural that the maritime industry should be able to benefit from the technologies and the leap that they enabled, but there is also a growing appreciation that the risks that are associated with other cyber-enabled industries will now also be applicable to the maritime sector.

IACS Members had already recognised the need for common, coherent requirements for dealing with cyber threats as they became ever more prevalent due to the technological leap. Equally, for those outside of the classification societies there was an expectation that Class, preferably coordinated through IACS, would step-in and use their technical resources and globally recognised role in safety to take the lead in developing and implementing the necessary guidance and criteria.

"We have now been brought to a point where the industry agrees that the time is right for industry-wide requirements"

ADDING EXTERNAL COMMUNICATION TO INTEGRATION

While the last few decades have seen the maritime industry benefitting from the steady stream of improvements made possible by the adoption of computer control and digital

There is a growing appreciation that the risks that are associated with other cyber-enabled industries will now also be applicable to the maritime sector

communication, there have been very few unpleasant surprises or unforeseen costs due to the incremental adoption. The recent and unprecedented leap in degree of integration and the resulting increased dependence on data-enabled technologies means that the same painless and limited downside experience cannot automatically be assumed in the future. The degree of uncertainty may be further deepened by the rapid and widespread interconnection of vessels systems to the outside world through the increasing availability of external communications. These developments will create the potential for significant benefits and rewards, but with this comes an additional, unquantified level of risks and unknowns.

In view of the above, in 2014, IACS created an Expert Group to address the area of system complexity and cyber. This Group investigated software integrity issues and investigated best practice from other industry sectors in relation to the development and implementation of complex systems with the objective of identifying aspects and standards that can be usefully adopted into a regulatory framework for the maritime industry. Through the Expert Group, IACS was involved in a paper submitted to the IMO Facilitation Committee to discuss the benefits of developing a single set of cyber risk management guidelines addressing the safety of cyber systems on board ships, and participated in the development of IMO Circular MSC.1/Circ.1526 June 1, 2016, Interim Guidelines on Maritime Cyber Risk Management.

The widespread publicity surrounding cyber-attacks on public and private institutions that were previously regarded as very secure has altered perceptions of the reality of cyber-risks in the maritime industry. As a result, we have now been brought to a point where the industry agrees that the time is right for industry-wide requirements. The requirements should include the application of the principle of risk, consistent with the intent of the IMO interim Guidelines which provide an initial benchmark and starting point.

On July 1, 2016, the IACS Expert Group was changed to the Cyber Systems (CS) Panel, a change that acknowledges the importance of Cyber Systems within IACS as well as to the wider industry. As a panel, it now has the same status as the well-established, Environmental, Hull, Machinery, Safety and Survey panels. In fact, an IACS panel is more effective than an Expert Group because it is a permanent working group that must be attended by all IACS Members. This abiding status allows for continuity in planned activities over a longer period and the ability to take a longer-term view allows a more comprehensive strategy. The Cyber Systems Panel worked on developing and beginning to implement that strategy for its first six months in existence through the second half of 2016. The Cyber Panel activities and developments will continue over the course of 2017 by building on the principles in the IMO Interim Guidelines on Maritime Cyber Risk Management; the research undertaken and the foundations laid by the original expert group; and the discussions from the newly established Joint Working Group (JWG) on Cyber Systems.

In fact, IACS has also taken the initiative to establish a JWG on Cyber Systems involving relevant industry partners with the primary aim of providing a forum for active communication among industry groups that have an interest in the production, use and operation of cyber systems; a common understanding and sense of the technology as it develops; and direction and strategy for effectively managing cyber systems. The JWG can also assist in developing, reviewing or refining standards, operating procedures and best practices that are practical and result in effective and achievable outcomes.

Cleaning up BWMS transitions

IACS publishes unified requirements to facilitate successful ballast water system installations

By Oh Joo-won, IACS Machinery Panel Chair, and Philippe Ricou, Environmental Panel Chair

Oh Joo-won (KR), IACS Machinery Panel Chair

Philippe Ricou (BV), Environmental Panel Chair

After years of work, the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was finally ratified on September 8, 2016 and will enter into force on September 8, 2017.

The Convention applies to ships designed or constructed to carry ballast water, and ships of 400 GT and above are subject to surveys and certification (excluding floating platforms, FSUs and FPSOs).

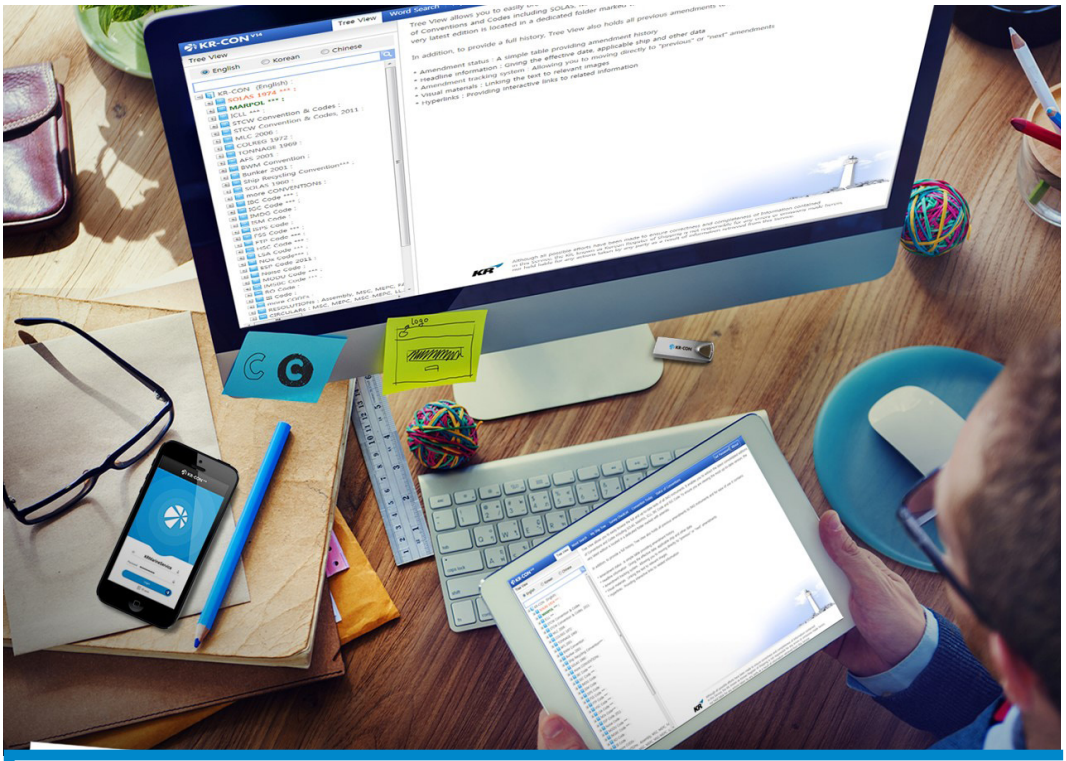
Acting on behalf of flag States, IACS Members can be involved in the approval of a Ballast Water Management System (BWMS). This approval is to take account of the G8 Guidelines for approval of ballast water management systems; and the G9 Guidelines for approval of ballast water management systems that make use of active substances.

It is worth noting that IMO has embarked upon a revision of the G8 Guidelines and decided to include the requirements in a new Code. IACS, based on the experience of its Members in undertaking this approval work and using these Guidelines, is actively participating in this work.

FORWARD PLANNING

In an effort to cope with the challenges of ensuring a smooth transition to compliance with the BWM Convention, IACS developed a Unified Requirement (UR) for Installation of Ballast Water Management System intended to mitigate the risks related to BWMS installations.

The main risks identified were: a spark or hot surface; mechanical damage caused by internal shock; power failure; explosive and/or toxic gas leak; and gas being present in the ballast water.



IACS' URs will ensure a smooth transition to compliance with the BWM Convention

The URs will assist stakeholders with technically sound criteria relevant to BWMS installation

The UR provides practical requirements with respect to installation of BWMS such as piping systems, electrical installations, ventilation, the arrangement of the BWMS compartment, additional requirements applicable to BWMS installations on tankers, and automation arrangements.

Special consideration is given to tankers, where ballast water operations occur both fore and aft in which two independent BWMS may be required, for example one for ballast tanks in a hazardous area and the other for ballast tanks in a safe area. The UR clarifies that one BWMS fitted with the interconnection of ballast piping between hazardous area and safe area may be accepted provided that an appropriate isolation arrangement is applied, such as two screw down check valves in series with a spool piece, two screw down check valves in series with a liquid seal at least 1.5m in depth, or automatic double block and bleed valves and a non-return valve.

"IACS' URs will assist stakeholders with technically sound criteria relevant to BWMS installation to navigate through challenges with confidence"

With the significant investment required by shipowners to ensure compliance with the applicable provisions of the convention, the URs will assist stakeholders with technically sound criteria relevant to BWMS installation to navigate through challenges with confidence.

Fuelling safe future trade

Guidelines issued in response to the rising use of liquefied natural gas as a fuel
By Oh Joo-won, IACS Machinery Panel Chair

Oh Joo-won (KR),
IACS Machinery Panel Chair

The use of natural gas as ship's prime source of energy has been widely accepted as a possible solution for compliance with stricter environmental regulations governing emissions of harmful atmospheric pollutants, such as nitrogen oxides (NOx) and sulphur oxides (SOx).

IMO's Maritime Safety Committee (MSC) adopted the International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code), along with amendments to make the Code mandatory under the International Convention for the Safety of Life at Sea (SOLAS). The Code entered into force on January 1, 2017.

The IGF Code aims to minimise the risk to the ship, its crew and the environment in relation to the nature of the fuels involved. The IGF Code contains mandatory provisions for the arrangement, installation, control and monitoring of machinery, equipment and systems using low-flashpoint fuels, focusing initially on LNG. It addresses all areas that need special consideration for the usage of low-flashpoint fuels, taking a goal-based approach, with goals and functional requirements specified for each section forming the basis for the design, construction and operation of ships using this type of fuel.

"IACS has been fully involved in the development of the IGF Code since 2011"

IACS SUPPORT

IACS has been fully involved in the development of the IGF Code since 2011. Since practical implementation of the Code will remain with IACS Members in their role as Recognized Organisations, IACS feedback has been provided aiming to make the Code easy-to-use and identifying any ambiguities which need to be resolved.

IACS identified a number of requirements that require further clarification in order to facilitate its consistent and global implementation and therefore prepared draft Unified Interpretations (UIs) which were subsequently forwarded to the IMO for their consideration with a view to their approval.

ASSESSING RISK

The IGF Code requires that a risk assessment is undertaken using acceptable and recognised techniques, and the risks and their mitigation are documented to the satisfaction of the flag State Administration under IGF Code Part A, 4.2. Noting that there are many acceptable and recognised techniques and means to document a risk assessment, IACS raised the need for a risk assessment methodology to be used to allow for a uniform application of risk assessment techniques and criteria in respect of the IGF Code requirement for risk assessment.

To this end, IACS has published IACS Recommendation. No.146 Risk Assessment as required by the IGF Code

BUNKERING GUIDELINES

LNG bunkering is being developed worldwide in line with the increasing trend of using natural gas as a fuel compliant with stringent environmental regulations. As a consequence of rapid technological and operational developments in using LNG as a fuel for cargo and passenger ships, IACS has published IACS Recommendation No.142 *LNG Bunkering Guidelines*, which provide recommendations for the responsibilities, procedures and equipment required for LNG bunkering operations, and sets of harmonised minimum baseline recommendations for bunkering risk assessment, equipment and operation.

In conjunction with the implementation of the IGF Code from January 1, 2017, the recommendations in IACS Recommendation No.142 will assist the industry in the promotion of safe LNG bunkering operations.

Keeping pace with evolving design

IACS moves to ensure the ongoing structural strength of ever-large container ships
By Peter Thompson, Hull Panel Chair

Peter Thompson (LR), Hull Panel Chair

Major structural failures of large container ships have taken place in recent years. To address recommendations made by the UK MAIB on the first of these incidents the IACS Hull Panel quickly revised UR S11 to include the strength assessment along the entire ship's length and also established a new team to continue the review of the existing IACS UR S11 and to propose improvements to this Unified Requirement.

A second structural failure of a container ship prompted IACS to establish a group of experts from various technical areas to review the latest structural designs, construction and operation of large container ships. Within the Group's remit was assessment of the existing technical requirements and identification of the need for additional studies and/or improvements to those requirements.

"The results of the impact study showed that even if there were significant changes to the loads of the new Unified Requirement S11A when compared with the Unified Requirement S11, the impact on existing containerships would be relatively limited. This justifies that an adequate safety margin is already being used for existing ships."

The team reviewing IACS UR S11 considered the final report produced by this group of experts, reports issued by the Japanese Committee on large container ship safety, and an *Investigation Report on Structural Safety of Large Container Ships* by Class NK.

As a result of this review, a new Unified Requirement was published, UR S11A, developed following, as far as possible, the philosophy of the latest version of the *IACS Common Structural Rules for Oil Tanker and Bulk Carrier* (CSR), as those Rules represent the latest design assessment methodology.

Wave load definitions, which are an essential component of the longitudinal strength assessment, were revised based upon the results of non-linear wave load computations for more than 120 ships of varying size, and with two standard loading conditions for each being considered.

Considerable changes to the strength requirements were made allowing a technically sound and transparent concept (based on the CSR philosophy) to be followed, applying general and consistent methods to the strength assessment.

IMPACT STUDIES

To investigate the impact of the rule change on existing designs, studies were carried out by most of IACS' Members. In these studies, three to five cross sections per ship were checked, using both the existing requirements of UR S11, and the newly developed requirements of UR S11A. Locations were checked longitudinally at mid-ships and in the regions with high shear forces, near 0.3L and 0.35L in the aft of the ship, and near 0.6L and 0.65L in the forward part of the ship. The buckling assessments were carried out for plate and stiffeners at ten locations on each of the chosen cross sections.

Wave bending moments and shear forces were compared; the new deflection approach was checked; bending strength was determined; shear strength was determined; buckling strength was determined; and the new Ultimate Hull Girder Strength requirement was checked.

The results of the impact study showed that even if there were significant changes to the loads of the new UR S11A when compared with the UR S11 requirement, the impact on existing container ships would be relatively limited. This justifies that an adequate safety margin is already being used for existing ships.

More detailed information on the impact studies that were undertaken can be found in the *Technical Background* document for UR S11A, which is available on the IACS website.

At the end of UR S11A (S11A.6.3), mention is made of the effect of whipping for large containerships and that the contribution of whipping is to be taken into consideration in hull girder ultimate strength calculations.

NEW REQUIREMENTS

In other container ship developments, Unified Requirement S34 has also been developed, entitled *Functional Requirements on Load Cases for Strength Assessment of Container Ships by Finite Element Analysis*. UR S34 was issued about the same time as UR S11A.

The functional requirements introduced in UR S34 are intended to set a minimum standard for finite element calculations that need to be undertaken. They cover the *Global Analysis*, which utilises a full ship length model to verify the strength of the hull girder, and the *Cargo Hold Analysis*, which utilises a model of restricted length to confirm the strength of cargo hold primary structural members, such as floors, girders and web frames.

Analysis is required for ship lengths of over 290 metres for the global analysis and 150 metres for the cargo hold analysis. The wave environment to be considered is the North Atlantic and the vertical wave bending moment to be used is that determined by UR S11A.

For the global analysis, both static and dynamic load components need to be considered and include, among other items, torsional loading from both wave motion, and that caused statically by an uneven cargo distribution.

As container ships have grown in size, they use thicker steel in the upper regions to meet

Larger container ships use thicker steel in their upper regions

KEY CHANGES IN LONGITUDINAL STRENGTH STANDARD

The revised Unified Requirement, UR S11A, contains a newly developed strength standard for container ships. Some of the more significant changes when compared with previously used UR S11, are as follows:

a Net thickness approach: The net thickness approach in the new UR S11A is similar to that used in the IACS CSR. This approach requires that the global or large-area scantling properties of the hull structure are modelled taking into account corrosion margin values.

b Yield strength assessment: The minimum section modulus and plate thickness requirements contained in UR S11 have been replaced by stress assessments in UR S11A, where yielding strength is assessed for bending and shear stresses separately.

c Ultimate buckling strength assessment of structural elements & Hull girder ultimate strength assessment: The ultimate buckling strength assessment of the structural elements contributing to the longitudinal hull girder strength is a new requirement in UR S11A and has been based on the approach in the IACS CSR.

IACS now has three fundamental sets of requirements to assess the longitudinal strength of varying ship types, those being: Unified Requirement S11 – Longitudinal Strength Standard; Unified Requirement S11A – Longitudinal Strength Standard for Container Ships; and Common Structural Rules for Bulk Carriers and Oil Tankers. These three documents use varying methodologies to calculate the longitudinal strength of the ship, which it is acknowledged can, at times, be confusing. To address this, IACS is working towards harmonising the methodologies of all three documents. This is a complex task that will require a substantial investment of time and resources by IACS Members. A workshop attended by hydrodynamics and structural strength experts from all IACS Members was held in September 2016 to determine the approach for this undertaking.

strength requirements. This UR is to be applied when any of YP36, YP40 and YP47 (YP = Yield Point) steel plates of thickness greater than 50mm, but not greater than 100mm, are used for the longitudinal structural members.

Another new Unified Requirement, S33, encompasses the *Requirements for Use of Extremely Thick Steel Plates in Container Ships*. It identifies when measures for the prevention of brittle fracture of extremely thick steel plates are required for longitudinal structural members. The objective of this UR is to prevent a crack propagating through the extremely thick steel plates of the ship's structure from the point of initiation to such a size that the ship's hull girder strength is compromised.

IACS established a group of experts from various technical areas to review the latest structural designs, construction and operation of large container ships

Taking the edge off cold operations

Technical advice from IACS helped mould the landmark Polar Code
By James Bond, Expert Group on Polar Code Chair

James Bond (ABS), Expert Group on Polar Code Chair

The International Maritime Organization (IMO) adopted the International Code for Ships Operating in Polar Waters (Polar Code), with entry into force on 1 January 2017, as the culmination of a 20+ year international effort to promote safety and reduce the potential for environmental pollution from vessels operating in Arctic and Antarctic waters. The Polar Code introduces a broad spectrum of new binding regulations for ship design, construction, onboard equipment and machinery, operational procedures, training standards and pollution prevention.

Polar Code is mandatory for ships undertaking voyages within the defined boundaries of Arctic waters and the Antarctic area. Polar waters generally cover areas north of 60°N or south of 60°S, with slight deviations for Arctic waters.

- Safety measures (Polar Code Part I-A) are enacted via amendments to the International Convention for the Safety of Life at Sea appearing as new SOLAS Chapter XIV. These amendments are mandatory for ships certified under SOLAS Chapter I and engaged on voyages within Polar waters.

- Environmental protection measures (Polar Code Part II-A) are enacted via amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) annexes and are applicable to all ships engaged on international or domestic voyages within Polar waters.

- Amendments of the training standards for masters and officers on ships operating in polar waters are enacted via the Standard for Training, Certification and Watchkeeping (STCW) Code.

The Polar Code is applicable to new and existing ships. “New ships” are defined as those with keel laying dates on or after 1 January 2017. “Existing ships” are those constructed before 1 January 2017. Existing ships are exempted from requirements considered impractical to accommodate, including ice damage residual stability, escape route arrangements, navigation equipment redundancy, enclosed bridge wings on ice class ships and fuel oil tank separation from the side shell.

IACS supported IMO in creating the Polar Code as a key technical advisor via associated IMO Working and Correspondence Groups. IACS representatives constructively challenged the process and phraseology during the Code development process with the aim of making the provisions in the Code implementable and enforceable. The IACS I-series Unified Requirements (URs) concerning POLAR CLASS are the Polar Code referenced standard for construction and underpin the Code’s structure and functionality. As the Polar Code comes into force, the IACS Polar Classes are anticipated to be the lone choice in ice class for the design of Polar bound ships.

IACS supported IMO in creating the Polar Code as a key technical advisor via associated IMO Working and Correspondence Groups

The Polar Code recognizes risks to materials, equipment, and human performance resulting from low temperatures

An important advance in Polar navigation safety is an outcome of the introduction of formal methodologies for determining operation limits as a function of ice class and ice conditions, enacted into the Polar Code via the new IMO MSC.1/Circ.1519 *"Guidance on Methodologies for Assessing Operational Capabilities and Limitations in Ice"* and the flagship "**P**olar **O**perational **L**imit **A**ssessment **R**isk **I**ndexing **S**ystem (POLARIS)" contained therein. IACS played a pivotal role in creating POLARIS, proposing, then refining and validating it. POLARIS and historic ice data can be used by industry for necessary voyage planning and determining an appropriate ice class for the intended area and season of operation.

The Polar Code recognizes risks to materials, equipment, and human performance resulting from low temperatures and is the first IMO instrument to formally introduce a holistic concept for design temperature. IACS played an essential role in defining how temperature is considered in the Polar Code, providing definition and validation of the Polar Service Temperature – which is recorded on the Polar Ship Certificate and promotes risk-based decision-making during design and operation.

"IACS played an essential role in defining how temperature is considered in the Polar Code"

IACS is honored to have contributed to the successful collaborative efforts that produced the Polar Code. Today, IACS Members are working to provide guidance and advice to industry as the new requirements are implemented.

Monitoring, reporting and verification (MRV) and data collection system (DCS)

IACS provides guidance on new requirements for collection of fuel consumption data
By Philippe Ricou, Environmental Panel Chair

Philippe Ricou (BV), Environmental Panel Chair

Consistent with the global mandate to reduce carbon dioxide emissions, the IMO and the European Commission have both produced regulations requiring the collection of fuel consumption data and other relevant information on an annual basis.

Through Regulation (EU) 2015/757 on the monitoring, reporting and verification of CO2 emissions, European Parliament and Council require that all companies operating ships above 5,000 gross tons calling at European Ports must submit to the verifiers monitoring plans and emission reports for each ship concerned. In parallel, the 70th session of IMO MEPC adopted Regulation 22A of MARPOL Annex VI which establishes a new requirement for all ships of 5000 GT and above on international voyages to collect data related to fuel consumption while the Ship Energy Efficiency Management Plan (SEEMP) will need to be updated to document the methodologies that will be used for the data collection and reporting that data to the Flag Administration.

Data collection on fuel consumption is a routine procedure for shipping companies; the new element of these regulations is the reporting and verification aspect of the fuel consumption and efficiencies, and in the case of the EU, the publication of data. Additional data that must also be captured includes the cargo carried (for the EU MRV only), the time at sea and the distance travelled. These parameters can then be further utilised to compute transport work and efficiency indices.

Recognised Organisations (ROs) can, on behalf of the flag State Administrations, verify the reported data and assess compliance of the SEEMP. Acting as accredited ROs, IACS Members can undertake these two tasks.

IACS and relevant industry stakeholders formed a Joint Working Group (JWG) in order to provide a clear view of the issues related to the EU MRV and IMO DCS, and to deliver practical inputs to facilitate the alignment of the two systems, where appropriate to the benefit of the international maritime community.

In addition to IACS Members, Intertanko, Intercargo, ICS, CLIA, SIGTTO, OCIMF and ASEF are also represented in the JWG. Its members advocate the alignment of EU MRV and IMO DCS requirements and the Group aims is to establish position papers.

Having met to discuss the basic framework of its operation, the JWG decided to focus on producing various position papers to address the issues. The aim is for the JWG to act as a resource centre to complement the Correspondence Group of IMO and the sub-groups on verification and monitoring established by the European Sustainable Shipping Forum (Consultative forum to the

New regulations require the collection of fuel consumption data and other relevant information on an annual basis

EU). The following issues have been selected to form the first position papers:

1. Distance travelled: Speed and distance over ground (compared to speed and distance in water) reflects the actual distance travelled or "the distance made true" and should be used in the estimation of transport work. This is corroborated by the fact that distance over ground is measured accurately by the GPS. Distance over ground has been decided for both regulations.

2. Guidance is needed to address the levels of uncertainty associated with each monitoring method used. The JWG aims to define this in a simplified non-mathematical way. It is expected that the uncertainty values for the different monitoring methods will also be provided by the EU.

3. In accordance with EU MRV requirements the verifier needs to identify potential risks related to the monitoring and reporting process and to take into consideration any effective risk control methods applied by the company to reduce levels of uncertainty associated with the accuracy specific to the monitoring methods used. The JWG plans to provide guidance on this assessment process.

4. A critical task is to define method(s) to fill data gaps. In case of malfunctions or omissions there must be ways to replace the missing data either through correlated data analysis or through alternative recording means. For example, LRIT (Long Range Identification and Tracking) and AIS (Automatic Identification System) can be utilised to determine the position of the ship with high accuracy and calculate the distance travelled in case missed to be reported.

Taking a deeper look

Traditional surveying techniques are evolving as they benefit from new technologies

By Li Zhiyuan, IACS GPG Chairman

Li Zhiyuan (CCS), IACS GPG Chairman

Nowadays, new technologies such as advanced non-destructive testing (NDT) techniques (Phased Array Ultrasonic Testing (PAUT), Time of Flight Diffraction (TOFD) and Automated Ultrasonic Testing (AUT), etc.), remote inspection techniques (RIT) (real-time sensing devices carried by drone, remote operated vehicle (ROV), unmanned robotic arm, divers and climbers, etc.) and other techniques (remote monitoring/diagnosis, condition-based maintenance/inspection, design of network/cyber platform, etc.) are being increasingly applied by the maritime industry.

IACS Members have recognised the benefits of using new technologies in their day-to-day activities of survey and inspection, enjoying greater efficiency, higher flexibility and increased reliability.

There is a growing need for uniform surveying rules and standards to be proactively developed and applied

For example, TOFD has been used in detecting defects in the butt/fillet weld of a ship's structure, drones have been used to survey cargo holds, and ROVs have been used in the inspection of the outside of the ship's bottom. IACS Members are at the frontier of promoting the application of these new technologies, not only for their own benefit, but also for the benefit of the maritime industry as a whole.

However, as with any fast-growing application and practice, a lack of common, comprehensive and specific Rules and Requirements can hamper the consistent and safe use of new technologies. In other words, there is a growing need for uniform rules and standards to be proactively developed and applied. To this end, IACS Council fully endorsed that IACS survey requirements should be updated to be in line with advanced technology, and also requested that relevant common requirements be developed to meet the demand of the latest technological advancements. This has led to the following tasks areas:

- Development of common requirements for the application of new NDT technologies
- Development of common requirements for RIT technologies
- Development of new guidelines/recommendations on remote monitoring/diagnosis for condition based inspection/maintenance etc.

In order to promote the application of new technologies in the survey regime, IACS will work closely with industry and flag States to update the impacted survey requirements, and to develop new instruments to cater for these technological advancements.

04 Quality & safety

A gold standard at 25

The IACS quality certification scheme meets the industry's needs for quality oversight
By Peter Williams, IACS Quality Secretary

Peter Williams, IACS Quality Secretary

The entry into force of the IMO Flag State Audit Scheme on January 1, 2016 was a reminder to the maritime industry of the importance attached to demonstrating safety and quality in shipping. Coming a year after entry into force of the Code for Recognized Organisations (RO Code), it reinforced the need for flag State Administrations to practice effective and transparent oversight of their ROs.

At a time of a growing global fleet, and with the emergence of new ship types and technologies, the need for effective management of organisational and operational performance factors is as important as ever.

In 2016 IACS celebrated the 25th anniversary of its Quality System Certification Scheme (QSCS), a programme put in place to benchmark the work of IACS Members including their actions as Recognised Organisations.

QSCS has its roots in the spate of serious casualties at the end of the 1980s and early 1990s. While many of these casualties were the consequence of operational failings, the high casualty rate of bulk carriers in particular was of enough concern to prompt the IMO to adopt guidelines on the enhanced programme of inspections during surveys of bulk carriers and oil tankers, known as ESP and originally developed by IACS.

IACS' response in 1991 was to create QSCS which now forms the 10th criterion of membership – it remains central to the IACS ethos and compliance is mandatory for members.

Its scope is comprehensive, covering the classification of ships and mobile offshore installations in respect of new buildings and in-service assets, including statutory work carried out on behalf of nominating Flag Administrations.

The development, maintenance and continuous improvement of QSCS represents a significant effort by IACS and its members. QSCS embraces the entire 'class cycle' of rule development, design approval, survey during construction, survey during service, research and development and feedback gained from experience in the practical implementation of rules and regulations as well as industry feedback, incidents and casualties.

Indeed, QSCS has evolved into what the immediate past IACS chairman, ABS chairman, president and CEO Christopher J. Wiernicki referred to as the 'gold standard' for classification societies. This reflects the widely-held credibility QSCS enjoys within the shipping industry and acknowledges IACS' role as principal technical adviser to IMO.

QSCS forms the 10th criterion of membership and remains central to the IACS ethos

SOLID FOUNDATIONS

The basis of the IACS Quality Management System Requirements (IQMSR) is ISO 9001, itself subject to major revision in the 2015 version. As in other industries, IACS has

Since the scheme's inception, IACS has recognised that industry input is crucial to the ability of QSCS to address expectations of the stakeholders

supplemented ISO 9001 with further requirements specific to the work of classification societies and ROs.

Consequently, IQMSR include compliance with all IACS technical resolutions, that are: – Procedural Requirements; – Unified Interpretations of statutory requirements; and – Unified (classification) Requirements, including the Common Structural Rules for Bulk Carriers and Oil Tankers.

In 2014, IACS completed a comprehensive review of the IQMSR and it is now considered to be fully aligned with the provisions of the IMO's RO Code.

Since 2010, the audit of IACS Members against IQMSR has been conducted by independent Accredited Certification Bodies (ACBs) that comply with the ISO/IEC 17021 standard on requirements for bodies providing audit and certification of management systems.

Consequently, the certification of IACS members against the requirements of IQMSR is entirely independent of IACS itself.

Since the scheme's inception, IACS has recognised that industry input is crucial to the ability of QSCS to address expectations of the stakeholders that classification societies serve, including their capacity to act as a recognized organization on behalf of flag States. To that end, IACS Council established the Advisory Committee, comprised of senior industry representatives tasked to provide feedback.

To enhance the transparency of the QSCS, IMO has had a dedicated observer to the scheme since it began in the early 1990s. The observer regularly witnesses audits and visits the QSCS Operations Centre located at Lymington in the south of England. The IMO Observer also reports to every other meeting of the IMO's Maritime Safety Committee on the state of the scheme.

The Operations Centre was strengthened in 2016 following the recruitment of an additional audit manager, and now has two auditor managers and a secretary supporting the IACS Quality Secretary. As part of their duties, the Operations Centre team observe around 40 audits per year, around 16% of all audits conducted, provide annual refresher training for the auditors and organise the annual End User Workshop.

"QSCS remains a powerful and relevant tool and one that aids IACS in its commitment to ensuring that it continues to meet the needs of the shipping industry"

The IACS End User Workshop is attended by all ACBs involved with the scheme and provides a forum for them to reflect on their joint experiences of the scheme. It also gives them an opportunity to discuss any possible adjustments deemed appropriate to ensure the scheme continues to meet fully the demands and needs of all stakeholders for a robust and consistent scheme of certification of IACS Members. Administrations are welcome to attend and EMSA and the European Commission have previously participated.

Celebrating its 25th anniversary in 2016, QSCS remains a powerful and relevant tool and one that aids IACS in its commitment to ensuring that it continues to meet the needs of the shipping industry.

05 Competence building

Focused on optimum performance

IACS Members invest in focused training and continuous improved performance
By Steve Hryshchyshyn, Quality Committee Chair

Steve Hryshchyshyn (ABS), Quality Committee Chair

For members of IACS, sustaining a competent workforce requires an extraordinary amount of training and development. IACS Members' primary output is the service provided by their technical staff, and considering the services provided are fundamental for maritime safety and marine pollution prevention, the word training takes on a whole new meaning.

IACS Members train their technical staff for improved performance in carrying out their job. By utilising common key performance indicators, such as Port State Control records, internal and external audit findings and defined business standards, training and development programs are designed to target needs that most positively impact industry performance.

"Professional development programs among IACS Members reach beyond the purely technical"

Training for IACS Members no longer means long hours of lectures in the classroom; the surveyors and engineers of today have a wide array of development opportunities, from self-paced video or web courses to simulations, virtual classrooms, online communities and in-class group exercises.

On-the-job training (OTJ) is a critical method of training surveyors, auditors, and plan review engineers (collectively technical staff). Typically, a competent trainer demonstrates a process and the trainee observes and asks questions. OTJ continues until the trainee demonstrates to the trainer their ability to carry out the process, only then is a qualification granted to carry out the process independently.

Collectively, these training experiences provide an environment of continual learning. Surveyors and engineers receive timely updates on regulatory and class-specific changes to Rules that impact their daily work. Job aids and other means of performance support, such as discussion forums, reinforce formal training and embed the learning into everyday job functions.

When groups gather for formal classroom training, they work through scenarios often

IACS Members train their technical staff for improved performance in carrying out their job

Robust training and development programs align to business needs and are supported by proper performance management aids

derived from real world cases, thereby learning from one another and building invaluable peer networks. Interactive lectures and guided discussions address pertinent technical concepts.

These training methodologies are grouped into many programs – from newly recruited to junior, senior and managerial staff – each targeting the specific needs for each group. Plan review and survey offices aid in the development and delivery of the training programs, validating that the training will address current and anticipated performance requirements.

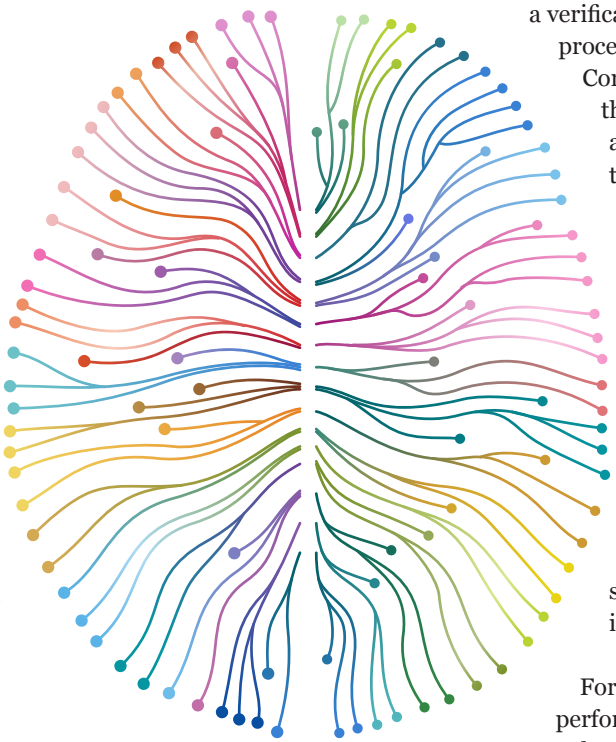
Professional development programs among IACS Members reach beyond the purely technical, with each classification society also providing opportunities for growing into roles meeting organisational managerial, quality, research or technical consistency needs. These programs are supported through tuition reimbursement, professional accreditations and in-house multi-year study programs.

Robust training and development programs align to business needs and are supported by proper performance management aids which IACS Members use in cultivating and sustaining competent and motivated surveyors, auditors, and plan review engineers.

BENEFITS OF EXCLUSIVITY

The current day demands placed on the work of a classification society merit the use of exclusive surveyors. An exclusive surveyor is a person solely employed by a classification society, who is duly qualified, trained and authorised to execute all duties and activities incumbent upon his employer, within his level of work responsibility. Exclusive surveyors are not permitted to undertake other employment. The Recognised Organisation (RO) Code requires that statutory certification and services be performed only by the use of exclusive surveyors and auditors which IACS Members meet.

As a part of the continuing program to ensure competency, technical staff of IACS Members are subjected to an individual annual performance appraisal which includes a verification of their process qualifications. Complementing the performance appraisal process, technical staff are also subjected to activity monitoring process. Activity monitoring is an assessment by a society of the society's technical staff, conducted by a monitor, for plan approval or in the course of a survey, audit or MLC inspection.



For optimum performance, IACS Members are investing considerable resources in the training and development of human resources to ensure that competent technical staff are ready to serve the industry, meeting the needs of the various stakeholders.

06

International and inter-industry relations

An unparalleled contribution to IMO

IACS delivers its technical expertise to the shipping's global standard-setting authority

By Paul Sadler, IACS Accredited Representative to the IMO

Paul Sadler, IACS Accredited Representative to the IMO

The synergistic relationship between IACS and the IMO has been in place for nearly 50 years. Not only is it well established but it is continuously evolving, deepening, and becoming more important to both IACS and the IMO. In that regard, 2016 was an exceptional year.

The IACS Charter states that in terms of the purposes and aims, IACS "assists international regulatory bodies and standard organisations to develop, implement and interpret statutory regulations and industry standards in ship design, construction and maintenance, with a view to improving safety at sea and the prevention of marine pollution".

The primary international regulatory body is the IMO. Since it was first granted consultative status as a non-governmental organisation (NGO) in 1969, IACS has maintained a focus on delivering its role as the Organization's principal technical advisor.

Through its dedicated Accredited Representative, Paul Sadler, who is supported by representatives from IACS Members who are world-leading technical experts in the matters under consideration, IACS submits papers to, and actively participates in, all the meetings of the IMO's technical bodies. These experts not only contribute technical input to the development of new IMO requirements, and amendments to existing ones; they also provide an unparalleled degree of insight and feedback on the implementation of the IMO agreed regulatory framework. This is because IACS Members are not only classification societies, they also act as Recognised Organisations (ROs). In this latter capacity, they act on behalf of IMO Member States to verify compliance with IMO's statutory regulations and requirements on ships that fly the flag of those countries.

"In further recognition that they share common goals and objectives with regard to safe, secure and environmentally sound shipping, the IMO and IACS signed a Memorandum of Agreement in December 2016"

UNRIVALLED CONTRIBUTIONS

The contribution of IACS, as an NGO, to the work of the IMO is unparalleled. Every two years the IMO determines whether the continuance of the consultative status of the NGOs "is necessary and desirable". In March 2015, as part of this biennial review of the NGOs, the IMO Secretariat collated information on their attendance at IMO meetings and the papers they had submitted to those meetings. The review found that while it had attended as many meetings as any other NGO, IACS had submitted 123 papers – nearly three times as many papers than the next active NGOs – to IMO meetings. A vast majority of the papers proposed interpretations of regulations with the view to providing a level playing field through uniform implementation of regulations on a world-wide basis.

Recognising the importance of the work of IACS and its members, the IMO has, for many years, observed the IACS Quality System Certification Scheme (QSCS). Since 1991, the IACS Charter has made compliance with the Scheme mandatory for IACS membership. QSCS certificates are issued to IACS Members that address both the classification of ships and mobile offshore installations in respect of both new building and in service, and the statutory work they carry out in their capacity as ROs. IACS believes the QSCS framework to be the "Gold Standard" available to all ROs.

After 25 years, QSCS is proven to work well and IACS now believes it offers a viable solution which IMO Member States could tap into to meet, in part, their obligations for the oversight of authorised ROs in accordance with the IMO's Code for Recognized Organizations (RO Code).

IACS continued to support the work of the IMO in 2016

By virtue of the technical expertise and experience of its members, IACS is therefore unique in the support it offers the IMO.

A MONUMENTAL YEAR

As it continued to support the work of the IMO in 2016, there were two stand-out highlights for IACS over the year.

At the meeting of the IMO's Maritime Safety Committee in May 2016 (MSC 96), it was confirmed that all 12 IACS member ROs had demonstrated that their Rules conform to the International Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers, in accordance with SOLAS regulation II-1/3-10.

This decision was confirmed by the approval of MSC.1/Circ.1518 on Promulgation of rules for the design and construction of bulk carriers and oil tankers of an organisation, which is recognised by Administrations in accordance with the provisions of SOLAS regulation XI-1/1, confirmed by the Maritime Safety Committee to be in conformity with the goals and functional requirements of the Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers.

In practice, this means that only the Rules of the IACS Members can, at this time, be used in the design and construction of such ships for which the building contract is placed on or after July 1, 2016.

IACS chairman at that time, Christopher J. Wiernicki, commented: "This monumental decision is the direct result of IACS and IMO collaboration which represents a new era in maritime safety. This IMO recognition, ahead of the entry into force of the relevant SOLAS amendment on July 1, 2016, reinforces IACS' trusted technical advisory role."

Mr Ki-tack Lim, IMO Secretary-General, added: "The completion of this process of developing goal-based standards for oil tankers and bulk carriers, followed by the detailed verification audit process, means that we now have a much closer alignment between the classification societies' rules and the IMO regulatory process. This marks a very significant development in the IMO rule making process."

This outcome was the result of a lengthy and intensive period of work for IACS and its members. However, there is still further work to be done: as agreed by its Committee, IACS has undertaken further work to address the limited number of findings that had been identified by the IMO audit teams that had reviewed the Rules of the IACS Members. This work will continue to receive priority within IACS in 2017.

FORMALISING AGREEMENT

In further recognition that they share common goals and objectives with regard to safe, secure and environmentally sound shipping, the IMO and IACS signed a Memorandum of Agreement in December 2016. This formalises their agreement to collaborate to further these goals and objectives within their respective mandates, governing regulations and rules.

The purpose of this agreement is to provide a framework of co-operation and understanding that further demonstrates the unique level of collaboration between the IMO and IACS. In particular, it signals, and will deliver, a further strengthening of the bond between IACS Members, in their capacities as Recognized Organizations, and the IMO Member States on whose behalf they act, for the benefit of the membership of both the IMO and IACS.

This agreement will be a living document. In order to deliver tangible outcomes, it has been agreed that work will initially concentrate on three areas: Cyber safety; the ongoing maintenance of verification process of the IACS Members' Rules with the GBS Standards; and the re-design of the Marine Casualty Investigation (MCI) module of the IMO Global Integrated Shipping Information System (GISIS) . The aim of this last area of work is to provide a tangible deliverable that addresses the views of the IMO Secretary-General on "the importance of analysing statistics related to maritime casualties and incidents, caused by various factors" and "to this end, I feel that it is appropriate that the Organization deals proactively with safety issues, based on the analysis of maritime casualties and incidents statistics" – views that are shared by IACS.

A seat at the European table

IACS benefits from involvement in a variety of European Commission committees and working groups

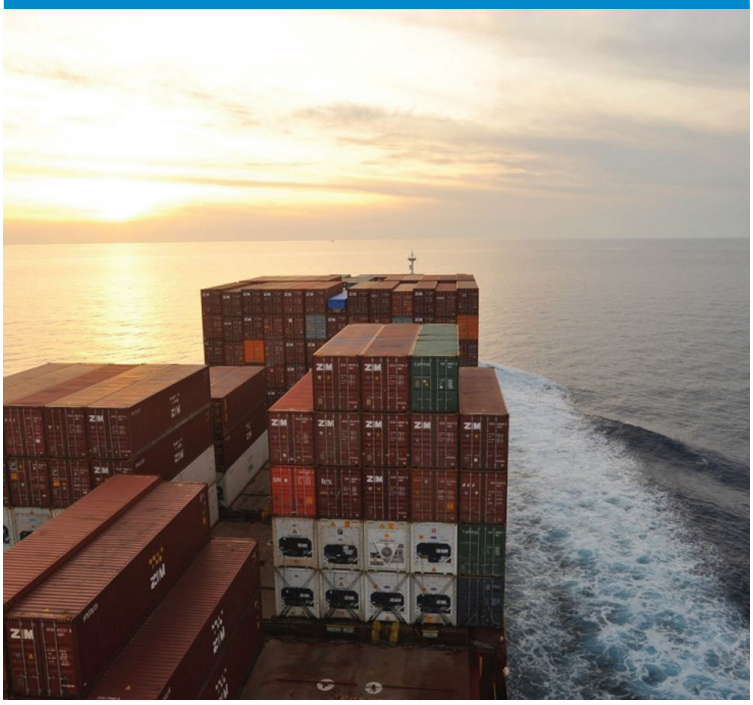
By Astrid Silvia Grunert, IACS Representative to the EU

Astrid Silvia Grunert, IACS Representative to the EU

IACS maintains a permanent office in Brussels in order to liaise with the relevant European institutions and stakeholders. The IACS European Union (EU) Representative supports a permanent IACS expert group, known as EG/EU, through monitoring and analysing of EU initiatives applicable to shipping. The group meets twice per year in Brussels.

In response to the European Commission's increased involvement of stakeholders in the preparation and follow-up of its legislative deliberations, IACS decided to become actively involved in EC expert groups relevant to the scope of the association and the activities of its members. These expert groups include the European Sustainable Shipping Forum (ESSF) and its sub-groups, the Expert Group on Passenger Ship Safety and the Group on Places of Refuge. As an example of the work undertaken by IACS through these expert groups, the Association has contributed to the latter by compiling an IACS Recommendation for the Operation of Shore-Based Emergency Response Services.

The cultivation of relationships goes hand-in-hand with an increased legislative focus on environmental topics, specifically on tackling emissions from shipping



EUROPEAN COMMISSION CONTACTS

While IACS' primary contact at European Commission level is with DG MOVE – and specifically the Maritime Safety Unit – continuous working contacts have been established over the past years with other Directorate-Generals, such as CLIMA and ENV. The cultivation of these relationships goes hand-in-hand with an increased legislative focus on environmental topics, specifically on tackling emissions from shipping.

Close relations also exist with the European Member States and the European Parliament in their role as European co-legislators.

Even though the EU is a regional body, its contributions towards the IMO have gained a high level of traction and are therefore closely followed by IACS. The ESSF sub-groups, comprising representatives from the Commission, Member States and industry, have produced several submissions to relevant IMO committees. IACS and its member societies are involved in several of these sub-groups, notably the ones dealing with liquefied natural gas as ship's fuel and exhaust gas cleaning systems.

Under the renewed mandate of the ESSF, which will run until mid-2018, a new sub-group on Air Emissions is being set up and IACS will actively contribute to this group. The Terms of Reference of this new sub-group have been deliberately kept rather open and after the implementation of the EU's Sulphur Directive, discussions on possibly addressing other emissions, such as nitrogen oxides and particulate matter, are expected to start.

IACS has also had a presence in the sub-group on the implementation of the EU Regulation on Monitoring, Reporting and Verification of ships emissions since the creation of the group in 2015. The Association has provided input on shaping the delegated and implementing acts deriving from the regulation. The group will also monitor progress on the IMO data collection system for fuel consumption under MARPOL Convention and evaluate ways of aligning the EU system with the international one.

IACS has had a presence in the sub-group on the implementation of the EU Regulation on Monitoring, Reporting and Verification of ships emissions since the creation of the group in 2015

Moreover, IACS has contributed to the implementation of the EU Ship Recycling Regulation which made large parts of the Hong Kong Convention enter into force at European level ahead of the entry into force of the IMO convention. This includes guidance documents related to the approval of ship recycling facilities for the EU list, and for the inventory of hazardous materials.

A new expert group on Passenger Ship Safety started in November 2016, with IACS' participation. The group will consider follow-up actions resulting from the regulatory fitness check of EU passenger ship-related legislation, and seek to influence international discussions on stability and survivability of passenger ships.

SHIPPING WEEK WORKSHOP

With 2017 being designated the EU Year of Maritime, IACS is to organise a workshop within 2017 European Shipping Week, to be held in Brussels for the second time from February 27-March 3. The IACS workshop will be set up in close co-operation with the DG MOVE Maritime Safety Unit.

Digitalisation of transport, including trends, safety and environmental aspects of cyber systems in shipping, is the overarching theme of the workshop which will bring together speakers from the European institutions and the industry. IACS' newly created Cyber Systems Panel will lend its support.

DG MOVE has previously voiced strong interest in this topic and has confirmed that it is considering further measures in this field. This echoes the EC's intention – as laid down in the recently published mid-term review of the 2018 Maritime Strategy – to extend cyber security to a number of sectors not yet covered by appropriate rules. Transport, including maritime transport, is one of those sectors. Since 2014, IACS has contributed to the EC's deliberations on maritime security via its seat in the Stakeholder Advisory Group on Maritime Security (SAGMAS).

Targeting pan-industry initiatives

Joint Working Groups offer a broad knowledge base to assist in the development of publications
By Robert Ashdown, IACS Secretary General

Robert Ashdown, Secretary General

One of the ways that IACS contributes to driving forward pan-industry initiatives is through the use of Joint Working Groups (JWGs). These are established periodically in response to a particular technical or policy development where it is recognised that either additional operational/3rd party input is required or where the issue identified clearly affects not only IACS Members but other segments of the industry. The IACS JWG on Anchoring and Mooring is a good example of the former while the (now concluded) JWG on the Structured Approach for the Development of Regulations (SADR) is an example of the latter. The objective of establishing a JWG is to allow other stakeholders to assist IACS in the development of a Resolution (URs, UIs or PRs) or Recommendation that will be of value to the wider industry.

"IACS greatly values the added benefit and experience that the wider participation in JWGs can bring to certain discussions, especially where operational experience is required"

NEW JOINT WORKING GROUPS IN 2016

In 2016, IACS established two new JWGs; on Monitoring, Reporting and Verification (MRV) and on Cyber Systems.

In broad terms, the MRV JWG aims to provide the industry with a clear view of the issues related to EU MRV of CO_2 emissions and IMO data collection system (DSC) on fuel consumption and to provide practical inputs to facilitate the possible alignment, where appropriate, of EU and IMO systems to the benefit of the International Maritime Community. The objective of the group is to establish straightforward, pragmatic guidelines for verification which could be practiced by IACS societies accredited for EU MRV and recognized for IMO DSC verification activities. However, the political challenges that accompany this objective are not to be underestimated.

The JWG on Cyber Systems is addressing an almost entirely new area. In a marine context, cyber systems are considered to be physical systems and/or machinery which have some degree of their operation or status reporting interfacing with a computer or computer based network and encompass both machinery control systems and navigation and safety systems. The primary aim of the JWG is to provide a forum for active communication amongst industry groups involved in the production and operation of cyber systems with the aim of developing a common understanding and sense of how the technology is developing and provide for an informed direction and strategy for effectively managing cyber systems.

This JWG will review, develop and/or refine standards, operating procedures and best practices as may be appropriate in producing practical and achievable outcomes. The JWG will also look to develop approaches (possibly through a guidance document) regarding best practices, standards and guidelines that may be followed in the design, commissioning and maintenance sections of the cyber system lifecycle.

The work of both the JWGs will provide useful background information to the parallel work that is being done in similar, more IACS specific areas in the Environmental Panel and in the Cyber Systems Panel (pages 14-15).

IACS greatly values the added benefit and experience that the wider participation in JWG's can bring to certain discussions, especially where operational experience is required. Such initiatives also affirm IACS ongoing commitment to technical contribution and leadership in the global shipbuilding and shipping industry and to further strengthening relationships with the industry.

Channelling shipbuilding voices

Tripartite provides a unique forum to discuss common construction-related issues

By Robert Ashdown, IACS Secretary General

Tripartite meetings – so called because their principal participation comes from shipyards, ship-owners and classification societies – have been held annually since 2002. Tripartite meets, on a rotating basis, in one of the major shipbuilding nations (China, Japan, Korea) and the meetings were originally established to facilitate high-level discussions between the parties on areas of policy and common interest. The original meeting in Shanghai discussed matters such as shipbuilding standards, contractual relationships and ship yard capacity. Important outcomes included universal acknowledgement of the need to ensure that ships were designed and built 'fit for purpose' and there was general acceptance of the desirability of more robust designs.

Over the years Tripartite discussions have covered many important issues and worked well as a unique forum to identify and address key issues facing the industry. Tripartite's success has, however, led to an increasingly crowded agenda with many highly technical issues being brought forward. In parallel, the years since Tripartite's inception have also seen an increase in the provision of technical forums where such matters can be better discussed. In 2016, therefore, IACS initiated an industry-wide discussion on how to make Tripartite even more effective and to ensure that the significant resources committed to Tripartite by all participants result in a forum that is much more than the sum of its parts.

IACS believes that by recalibrating the focus of Tripartite, its focus on matters of policy can be restored while also facilitating the progression of more technical items in other, more appropriate fora. IACS has contributed to this process in 2016 by (re)establishing an IACS/Industry Technical meeting and ensuring that the traditional industry participatory session at the IACS December Council meeting builds on the discussions held earlier at Tripartite.

Building on the IACS proposal, Tripartite 2016 held a lengthy and positive discussion on how to move to the next stage in its development which has resulted in the formation of a dedicated working group that will evaluate the structure of the meeting, how to best engage, at policy level, the representatives of the three industry segments, and how to ensure high-level representation is maintained and the expectations of those attendees are met.

Over the years Tripartite has worked well as a channel to identify and address key issues facing the industry

"IACS ... is fully committed to seeing a revitalised and more focused Tripartite evolve"

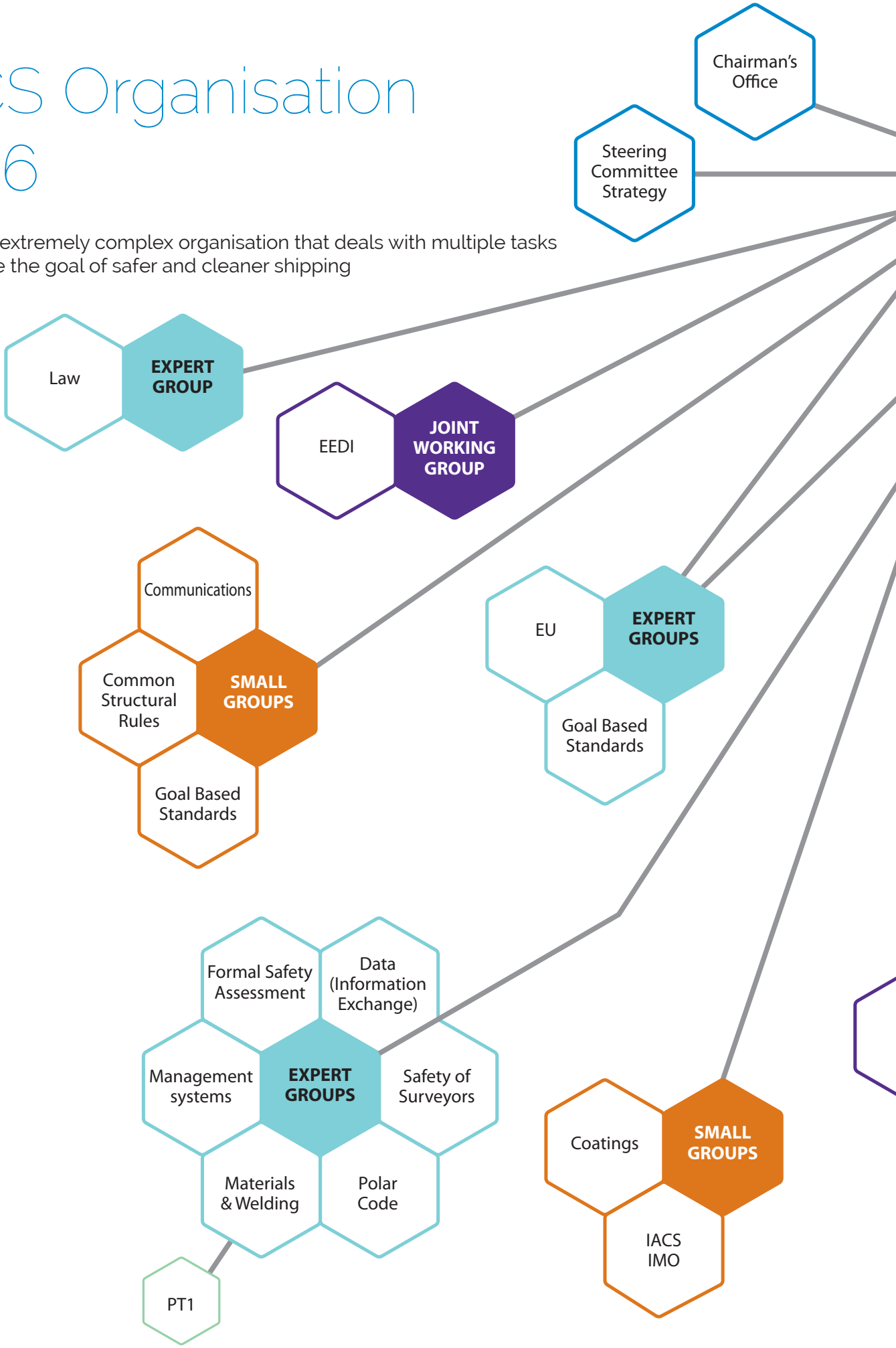
IACS will participate fully in the Working Group and is fully committed to seeing a revitalised and more focused Tripartite evolve and to ensuring that the ideas, initiatives and issues identified by that body are taken forward in a structured way by the appropriate associations and groupings. Moving Tripartite from an annual discussion group to a body more able to drive forward, collectively, the key policy challenges that face the maritime industry is, IACS believes, a worthwhile ambition.

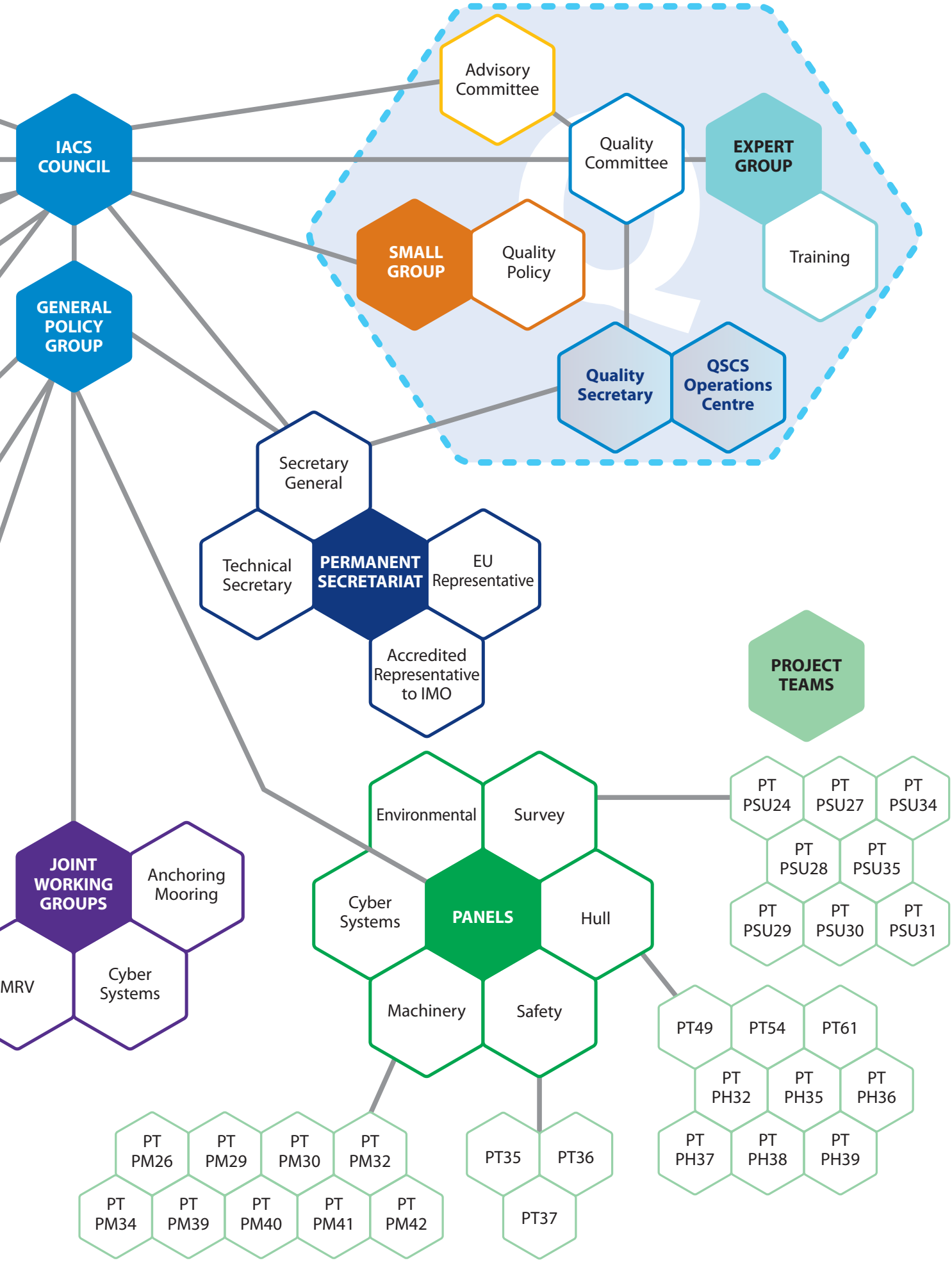
07

IACS organisation 2016

IACS Organisation 2016

IACS is an extremely complex organisation that deals with multiple tasks to advance the goal of safer and cleaner shipping




IACS COUNCIL
Advisory Committee
Quality Committee
EXPERT GROUP
SMALL GROUP
Quality Policy
Training
GENERAL POLICY GROUP
Quality Secretary
QSCS Operations Centre
Secretary General
Technical Secretary
PERMANENT SECRETARIAT
EU Representative
Accredited Representative to IMO
PROJECT TEAMS
JOINT WORKING GROUPS
Anchoring Mooring
MRV
Cyber Systems
Environmental
Survey
Cyber Systems
PANELS
Hull
Machinery
Safety
PT PSU24
PT PSU27
PT PSU34
PT PSU28
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IACS Council Meeting (C73), June 2016, Washington D.C.

08 IACS publications

IACS contribution to the smooth and efficient functioning of the maritime industry

IACS resolutions cover technical, regulatory and operational topics throughout the industry

The development and continuous review of IACS resolutions is an essential part of the Association's work. Keeping this large body of material up-to-date is vital to maintain their ongoing relevance while the production of new Resolutions in response to technical, regulatory or operational advances demonstrates IACS technical leadership and responsiveness. The selection below represents only a small selection of the work undertaken in 2016 and highlights IACS' activity across the maritime sphere. A list of the IACS Resolutions amended or developed in 2016 can be found in the Appendix which starts on page 59.

SAFE AND SOUND SHIPS

IACS commitment to safer shipping remains unstinting. In 2016, IACS published a number of new and revised safety-related resolutions to help meet this commitment

- UI SC276 and SC277, for example, were both updated to provide clearer details of the arrangements providing the means of escape from machinery spaces on passenger (SOLAS II-2/13.4.1) and cargo ships (SOLAS II-2/13.4.2), respectively.

- UI SC267 was revised to clarify the scope of application of the LSA Code in relation to the material used for the inner control cable for lifeboats. Where inner cables inside the lifeboat are covered with a protective sheath (i.e. they are not in a corrosive environment) UI SC267 clarifies the application of the LSA Code testing for the "inner cables" made of 304 type stainless steel.

- To facilitate more accurate and uniform values of lightship characteristics, UI MPC128 was developed to clarify that the weights of medium on board for the fixed fire-fighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) be included in the approved lightship characteristics.

- IACS published UI SC280 which contains an interpretation regarding the angle of down-flooding taking into account openings that may be fitted with weathertight covers, but are required to remain open for the safe operation of the ship (2008 IS Code, International Grain Code, SOLAS/Ch.II-1-Reg.7-2).

- In another new publication, Rec.145 gives recommendations for the operation of shore-based emergency response services in order to assist in providing rapid technical assistance to Masters and other authorities in the event of a casualty situation. Such a response service is required for complying with several regulations and guidelines, as well as applicable National Authority requirements.

Other safety-related publications in 2016 included UI SC275, UI SC278, UI SC253, UI HSC10, UI SC281, UR M75, UR M35, UR M36, UR G1, UI MPC11, Rec.144, UI GC15, UI GC5, UI CC7, UI GC17, UI LL80, UI MPC129, UI MODU1, UI SC191 and UR E25.

ADDRESSING INCREASED ENVIRONMENTAL AWARENESS

IACS has long been committed to further improving international shipping's environmental performance. This has resulted in the development of many IACS resolutions over the years as well as ongoing initiatives that keep IACS at the forefront of environmental protection. Notable revisions and developments in 2016 include:

- Additional to the requirements contained in BWM Convention (2004), IACS revised UR M74 Installation of Ballast Water

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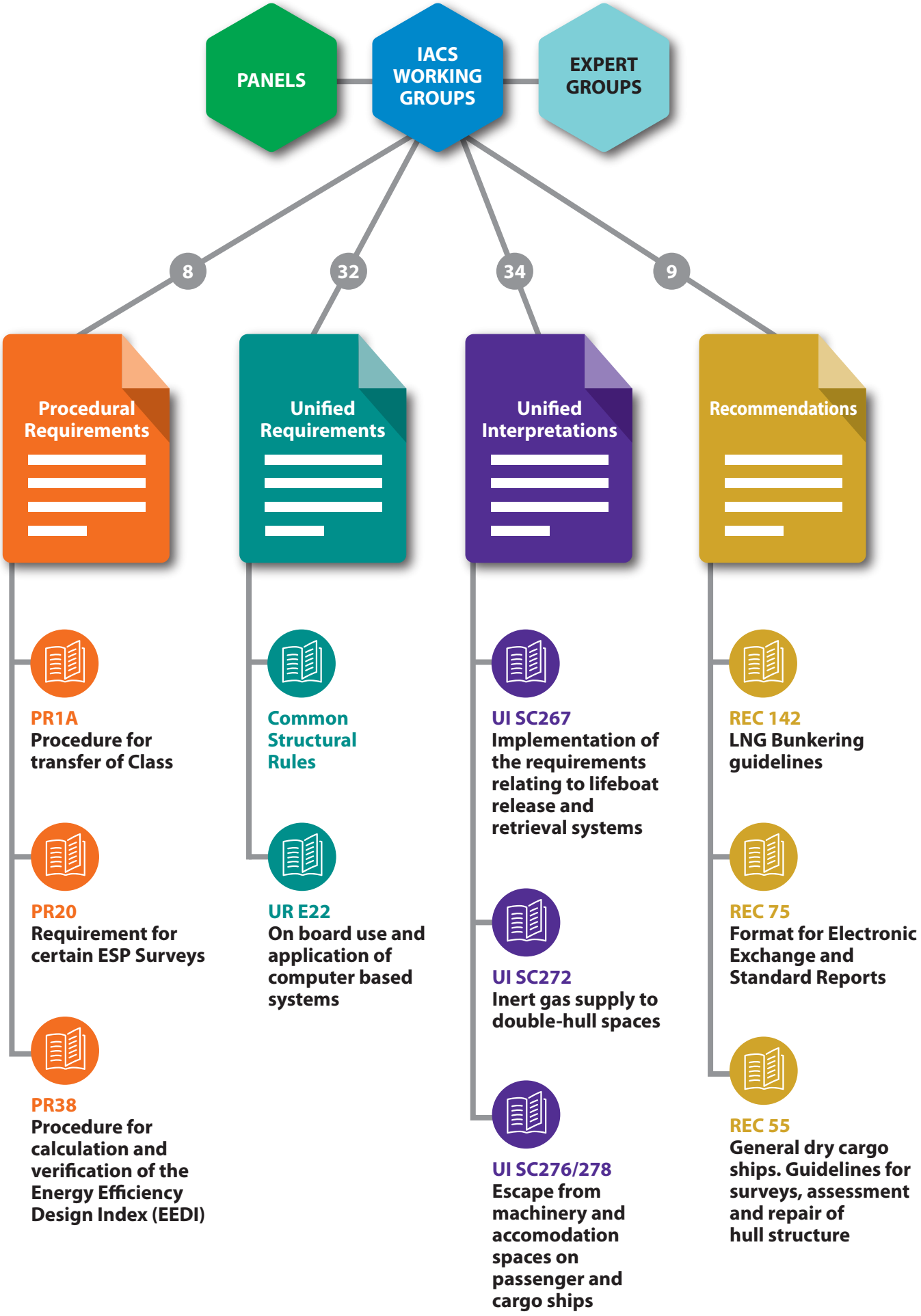
PANELS
IACS WORKING GROUPS
EXPERT GROUPS
8
32
34
9
Procedural Requirements
Unified Requirements
Unified Interpretations
Recommendations
PR1A
Procedure for transfer of Class
PR20
Requirement for certain ESP Surveys
PR38
Procedure for calculation and verification of the Energy Efficiency Design Index (EEDI)
Common Structural Rules
UR E22
On board use and application of computer based systems
UI SC267
Implementation of the requirements relating to lifeboat release and retrieval systems
UI SC272
Inert gas supply to double-hull spaces
UI SC276/278
Escape from machinery and accomodation spaces on passenger and cargo ships
REC 142
LNG Bunkering guidelines
REC 75
Format for Electronic Exchange and Standard Reports
REC 55
General dry cargo ships. Guidelines for surveys, assessment and repair of hull structure

Advances in technology are making ships more intelligent and designs are constantly evolving

Management Systems (BWMS) stipulating requirements for the installation of BWMS to address the risks associated with each type of ballast water treatment technology as it interfaces with the hazards of shipboard environments. The updated UR comes into effect from January 1, 2017.

- IACS has also developed UR M76 on the Location of Fuel Tanks in Cargo Area On Oil and Chemical Tankers in consideration of Emission Control Areas requirements to use marine fuels with a sulphur content not exceeding 0.1% m/m (per MARPOL Annex VI) and minimum viscosity of 2 cSt (per UI SC255 and IMO MSC.1/Circ.1467). The ultra-low sulphur fuel tank capacity on-board standard designs is sometimes found inadequate and UR M76 details acceptable locations and arrangements for fuel tanks on oil and chemical tankers for owners and yards seeking to expand such capacity by adding fuel tanks within the cargo area.

- Clarifying class societies' involvement in surveys relating to the IMO's Energy Efficiency Design Index, IACS has revised PR38. The revision takes into account the expanded scope of the application to deal with ship types and technologies covered by Chapter 4 of MARPOL Annex VI, remains in line with the latest IMO Guidelines including reference to the standard for speed trial analysis (ISO 15016:2015), adds procedures for acceptance of towing tank tests witnessed by another Society than the one verifying the ship or towing tank tests performed before the entry into force of the MARPOL Annex VI amendments on energy efficiency for ships and provides examples of EEDI calculations for LNG carriers and cruise passenger ships.

- Another notable environment-related publication is Rec.142, which provides recommendations for the responsibilities, procedures and equipment required for LNG bunkering operations, setting harmonised minimum baseline recommendations for bunkering risk assessment, equipment and operations.

Other environment publications released in 2016 include UI MPC127 and UI MPC93.

TECHNICAL

Advances in technology are making ships more intelligent and designs are constantly evolving. To keep pace, IACS has introduced a number of new and revised technical publications to support the maritime industry and to reflect its Members' ongoing investment in technology, research and development.

- For example, UR I2, relating to the Structural Requirements for Polar Class Ships, was also revised in 2016. This Unified Requirement for Polar Class ships applies to ships constructed of steel and is intended for independent navigation in ice-infested polar waters. The IACS I-series unified requirements concerning Polar Class are referenced by the IMO's Polar Code as the

standard for construction and underpin the code's structure and functionality. As the Polar Code comes into force, the IACS Polar Classes are anticipated to be the sole choice in ice class for the design of Polar bound ships.

- The revision of Rec.55 amended the guidelines intended for a single-skin general dry cargo ship which is designed with one or more decks specifically for the carriage of diverse forms of dry cargo. The revision deals mainly with updating the various sketches so that they are aligned with those in other IACS Recommendations and improving the advice and guidance on voyage repairs and maintenance.

- UR W32 provides requirements for a qualification scheme for welders intended to be engaged in the fusion welding of specific hull structural steels. Such welders shall be tested and qualified in accordance with the scheme described in this UR and issued a qualification certificate endorsed by the Society.

Other technical publications in 2016 included Rec.57, UI SC242, UI TM1, UI SC94, UI GC8, UR P3, UR G3, UR Z7, UR M72, UR W16, UR P2.11, UR P2.12, UR P2.7.4, UR Z1, UR E7, UR W22, UR E24, UR M44, UR M71, UR M73, URS14, UR Z7.1, UR Z7, CSR Corrigenda, UI GC16 and UI GC6.

ENABLING QUALITY OPERATIONS

Helping to facilitate and enable high quality operations at sea is of the upmost importance to IACS and as such, IACS has continued to introduce new or revised publications in this area.

- In June, UR E22 related to the design, construction, commissioning and maintenance of computer based systems – where they depend on software for the proper achievement of their functions – was revised. The requirements focus on the functionality of the software and on the hardware supporting the software. These requirements apply to the use of computer-based systems which provide control, alarm, monitoring, safety or internal communication functions that are subject to classification requirements.

- Meanwhile, a revision to Rec.42 - Guidelines for Use of Remote Inspection Techniques for surveys - adopted remote inspection techniques as a possible support to the close-up surveys of the ships subjected to the ESP Code (Oil Tankers and Bulk

DEFINITIONS

UR

Unified Requirements are adopted resolutions on matters directly connected to or covered by specific Rule requirements and practices of classification societies, and the general philosophy on which the rules and practices of classification societies are established.

Subject to ratification by the governing body of each IACS Member, Unified Requirements should be seen as minimum requirements to be incorporated in the Rules and practices of Members within one year of approval by the IACS General Policy Group.

While each Member remains free to set more stringent requirements, the existence of a UR does not oblige a Member to issue respective Rules if it chooses not to have Rules for the type of ship or marine structure concerned.

CSR

The IACS Council adopted the **Common Structural Rules** for Double Hull Oil Tankers (CSR-OT) and Common Structural Rules for Bulk Carriers (CSR-BC) on December 14, 2005, for implementation on April 1, 2006, on the basis that these Rules were founded on sound technical grounds, and achieved the goal of more robust and safer ships.

These two sets of Rules were developed independently, and in order to remove variations and achieve consistency, IACS decided to harmonise these Rules to create a single set of Rules – "*Common Structural Rules for Bulk Carriers and Oil Tankers*" (CSR BC & OT). This comprised two parts: Part One gave requirements common to both bulk carriers and double hull oil tankers and Part Two provided additional specialised requirements specific to either bulk carriers or double hull oil tankers.

PR

Procedural Requirements are adopted resolutions on matters of procedures to be incorporated in the practices and procedures of IACS Members within the periods agreed by the IACS General Policy Group.

UI

Unified Interpretations are adopted resolutions on matters arising from implementing the requirements of IMO Conventions or Recommendations. The resolutions can involve uniform interpretations of Convention Regulations or IMO Regulations on matters that are unclear.

Interpretations are circulated to the flag State Administrations concerned or sent to IMO for information. They are also designed to aid the development of regulations that are clear, unambiguous and can be easily applied by IACS Members to ships whose flag State Administrations have not issued definite instructions on the interpretation of the IMO regulations concerned, amid statutory certification on behalf of those flag Administrations.

RECOMMENDATIONS

IACS produces recommendations and guidelines related to adopted resolutions that not only deal with matters of class but also offer some advice to the marine industry.

Carriers) and the use of remote inspection techniques being authorised by the flag State Administration.

Other operations publications in 2016 included Rec.98, UI GC11, UI GC13 and UI GC7.

FOCUSING ON PRACTICAL IMPLEMENTATION

IACS collaborates with many sectors of the industry and maritime regulators to ensure that the legislative framework required for safe, efficient and environmentally friendly ships is supported by class Rules that allow for its practical implementation. IACS also works closely with the IMO with the view to ensuring that adopted legislation can be globally applied in a consistent manner. As such, a number of IACS' 2016 publications related to operational issues relevant to its Members.

- For example, the revision of PR20 Procedural Requirement for certain ESP Surveys was undertaken in order to improve the quality of surveys, and recognises that, given the size of vessels and the scope of these surveys, it is more effective to have more than one surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for conditions of Class / Recommendations.

- The revision of UR I1, Polar Class Descriptions and Application, concerned the introduction of specific requirements for the notation Icebreaker, as well as proposed requirements and assumptions with regard to hull form, performance, and operational limitations.

Other operational publications in 2016 included PR1A, PR1C, PR12, PR28 and PR20 and corrigenda of PR 16 and Rec.75.

IACS works closely with the IMO to ensure that adopted legislation can be globally applied in a consistent manner

09 Major events

IACS in 2016 – the year at a glance

25th ANNIVERSARY YEAR OF IACS QUALITY SYSTEM CERTIFICATION SCHEME (QSCS)

2016 marked the 25th anniversary of QSCS. The gold standard for classification societies and the only quality certification scheme in the maritime industry.

JANUARY

IMO RECOGNITION THAT IACS MEMBERS' RULES COMPLY WITH GOAL-BASED STANDARDS

A pivotal moment that ushers in a new era in maritime safety, reinforcing IACS' trusted technical advisory role to the IMO.

MAY

IACS/INDUSTRY TECHNICAL MEETING

IACS responds to the need for a technical forum in which the maritime industry can gather to discuss and progress key technical challenges.

COUNCIL 73, WASHINGTON, USA 28-29 JUNE 2016

Christopher J. Wiernicki of ABS hands over the IACS Chairmanship to Dr Sun of the China Classification Society. Dr Sun highlights ongoing GBS work, cyber safety and facilitating the use of innovative survey techniques as essential to IACS role in the safe and efficient functioning of the global maritime industry.

JUNE

IACS MEETS THE REGULATORS EVENT – WASHINGTON

IACS hosts an informal event for Flag States based in North America to promote the work and objectives of IACS and listen to the regulators key concerns.

IACS INITIATES JOINT WORKING GROUP ON MRV

IACS establishes a Joint Working Group on a key issue for the maritime industry with the aim of acting as a resource centre to complement the Correspondence Group of IMO and the EU's ESSF sub-groups.

JULY

IACS CHAIRMAN – INDUSTRY VISITS

As part of IACS commitment to listening carefully to industry partners, the IACS Chairman conducts his traditional visit of the London based maritime associations. Nine associations are met with along with the IMO and EU.

SEPTEMBER

OCTOBER

TRIPARTITE

IACS once again engages fully at Tripartite, leading discussions on how to revitalise and focus its work in order to restore its high-level policy remit.

IACS INITIATES JOINT WORKING GROUP ON CYBER SYSTEMS

The Joint Working Group on Cyber Systems meets in London. Intense interest in the work of this group means that several flag States attend as observers.

NOVEMBER

END USER WORKSHOP (EUW)

IACS convenes its 8th EUW between its Members and their Accredited Certification Bodies (ACBs), along with other stakeholders, to receive the feedback necessary to ensure it remains a robust and consistent scheme of certification of its members.

DECEMBER

IACS SIGNS MEMORANDUM OF AGREEMENT (MoA) WITH IMO

Marking a significant milestone in relations between the two organisations, the MoA provides a framework of co-operation and understanding that further demonstrates the unique level of collaboration between the IMO and IACS. In particular, it signals, and will deliver, a further strengthening of the bond between IACS Members, in their capacities as Recognized Organizations, and the IMO Member States on whose behalf they act, for the benefit of the membership of both the IMO and IACS.

IACS CHRISTMAS RECEPTION IN BRUSSELS

IACS hosts its traditional Brussels reception for the EU shipping community and brings together the industry, Commission and Presidency to hear high-level speeches on future EU maritime initiatives.

COUNCIL 74

IACS Council meets in London and focuses heavily on continuing to oversee, promote and support work related to the International Maritime Organization, including delivering on its commitments to the IMO in relation to the Goal Based Standards (GBS) for oil tankers and bulk carriers and agreeing new focus areas for IACS gold-standard Quality System Certification Scheme (QSCS).

IACS / INDUSTRY HIGH-LEVEL MEETING

IACS Council also use the occasion of their gathering to meet with senior executives from a wide variety of other maritime organisations, taking the opportunity to further develop agreements reached earlier in the year at the industry's Tripartite event and reaffirming IACS commitment to lead work-streams on cyber issues, monitoring, reporting and verification of ships' fuel consumption and innovative survey techniques.

IACS Members

IACS Members

IACS consists of 12 member societies, details of which are listed below. Chairmanship of IACS is on a rotational basis with each member society taking a turn.

The current chairmanship is as follows:

Chairman of Council	Dr. Licheng Sun	CCS
Vice-Chairman (incoming Chairman)	Mr. Knut Ørbeck-Nilssen	DNV GL
Vice-Chairman (immediate past-Chairman)	Mr. Christopher J. Wiernicki	ABS

ABS
American Bureau of Shipping
www.eagle.org

BV
Bureau Veritas
www.veristar.com

CCS
China Classification Society
www.ccs.org.cn/ccswzen/

CRS
Croatian Register of Shipping
www.crs.hr

DNV GL
www.dnvgl.com

IRS
Indian Register of Shipping
www.irclass.org

KR
Korean Register of Shipping
www.krs.co.kr

LR
Lloyd's Register
www.lr.org

NK
Nippon Kaiji Kyokai
www.classnk.or.jp

PRS
Polish Register of Shipping
www.prs.pl

RINA
RINA Services S.p.A.
www.rina.org

RS
Russian Maritime Register of Shipping
www.rs-class.org/en/

11 Appendix

Appendix

Summaries of the IACS resolutions published in 2016

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED REQUIREMENTS PUBLISHED IN 2016

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	UR W17	Rev.4	Jan 2016	Approval of consumables for welding normal and higher strength hull structural steels	01 Jul 2017
2	UR P3	Rev.4	Jan 2016	Air Pipe Closing Devices	01 Jan 2017
3	UR G3	Rev.6	Jan 2016	Liquefied gas cargo and process piping	01 Jan 2017
4	UR M75	New	Feb 2016	Ventilation of emergency generator rooms	01 Jan 2017
5	UR Z7	Rev.24	Feb 2016	Hull Classification Surveys	01 Jul 2017
6	UR W16	Rev.3	Mar 2016	High Strength Steels for Welded Structures	01 Jul 2017
7	UR P2.11	Rev.4	Mar 2016	Type Approval of Mechanical Joints	01 Jan 2017
8	UR P2.12	Rev.2	Mar 2016	Flexible Hoses	01 Jan 2017
9	UR P2.7.4	Rev.8	Mar 2016	Mechanical joints	01 Jan 2017
10	UR M35	Rev.7	Mar 2016	Alarms, remote indications and safeguards for main reciprocating I.C. engines installed in unattended machinery spaces	01 Jul 2017
11	UR M36	Rev.5	Mar 2016	Alarms and safeguards for auxiliary reciprocating internal combustion engines driving generators in unattended machinery spaces	01 Jul 2017
12	UR M72	Rev.1	Mar 2016	Certification of Engine Components	01 Jul 2017
13	UR M76	New	Apr 2016	Location of fuel tanks in cargo area on oil and chemical tankers	01 Jul 2017
14	UR Z1	Rev.6	Apr 2016	Annual and intermediate classification survey coverage of IMO Resolution A.1104(29)	-
15	UR E7	Rev.4	Apr 2016	Cables	01 Jul 2017
16	UR I1	Rev.2	Apr 2016	Polar Class Descriptions and Application	01 Jul 2017
17	UR I2	Rev.3	Apr 2016	Structural Requirements for Polar Class Ships	01 Jul 2017
18	UR M74	Rev.1	May 2016	Installation of Ballast Water Management Systems	01 Jan 2017
19	UR W22	Rev.6	Jun 2016	Offshore Mooring Chain	01 Jul 2017
20	UR E24	New	Jun 2016	Harmonic Distortion for Ship Electrical Distribution System including Harmonic Filters	01 Jul 2017

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED REQUIREMENTS PUBLISHED IN 2016

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
21	UR M44	Corr.1	Jun 2016	Documents for the approval of diesel engines	01 Jul 2016
22	UR M71	Corr.1	Jun 2016	Type Testing of I.C. Engines	01 Jul 2016
23	UR M73	Corr.1	Jun 2016	Turbochargers	01 Jul 2016
24	UR Z7.1	Rev.12	Jun 2016	Hull Surveys for General Dry Cargo Ships	01 Jul 2017
25	UR E22	Rev.1	Jun 2016	On Board Use and Application of Computer based systems	01 Jul 2017
26	UR Z7	Rev.25	Jun 2016	Hull Classification Surveys	01 Jul 2017
27	UR E25	New	Jun 2016	Failure detection and response of all types of steering control systems	01 Jul 2017
28	UR G1	Rev.3	Jun 2016	Cargo containment of gas tankers	01 Jul 2016
29	UR Z18	Rev.6	Aug 2016	Periodical Survey of Machinery	01 Jul 2017
30	UR W1	Rev.3	Aug 2016	Material and welding for gas tankers	01 Jan 2017
31	UR M77	New	Sep 2016	Storage and use of SCR reductants	01 Jan 2018
32	UR W32	New	Sep 2016	Qualification scheme for welders of hull structural steels	01 Jan 2018
33	UR S14	Rev.6	Sep 2016	Testing Procedures of Watertight Compartments	01 Jan 2018
34	UR Z15	Corr.1	Oct 2016	Hull, Structure, Equipment and Machinery Surveys of Mobile Offshore Drilling Units	01 Jan 2016
35	UR A1	Rev.6	Oct 2016	Anchoring Equipment	01 Jan 2018
36	UR A2	Rev.4	Oct 2016	Shipboard fittings and supporting hull structures associated with towing and mooring on conventional ships	01 Jan 2018
37	UR M44	Corr.2	Nov 2016	Documents for the approval of diesel engines	01 Jul 2016
38	UR Z10.2	Rev.33	Nov 2016	Hull Surveys of Bulk Carriers	01 Jan 2018
39	UR Z10.4	Rev.14	Nov 2016	Hull Surveys of Double Hull Oil Tankers	01 Jan 2018
40	UR Z10.5	Rev.16	Nov 2016	Hull Surveys of Double Skin Bulk Carriers	01 Jan 2018
41	UR Z23	Rev.6	Nov 2016	Hull Survey for New Construction	01 Jan 2018
42	UR Z17	Rev.12	Nov 2016	Procedural Requirements for Service Suppliers	01 Jan 2018
43	UR A1	Corr.1	Dec 2016	Anchoring Equipment	01 Jan 2018
44	UR A2	Corr.1	Dec 2016	Shipboard fittings and supporting hull structures associated with towing and mooring on conventional ships	01 Jan 2018

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED REQUIREMENTS PUBLISHED IN 2016

1. UR W17 (Rev.4 Jan 2016):

UR W17 gives the conditions of approval and inspection of welding consumables used for hull structural steel welding and is not applicable for welding procedure qualification tests at the shipyard. Following a suggestion made by an IACS member, panel noted that the mercury method has been severely restricted due to environmental factors and is the only test method for determining hydrogen content of welding consumables with H5 rating. Some new acceptable methods are to be added in this revision to replace the mercury method.

2. UR P3 (Rev.4 Jan 2016):

UR P3 deals with the air pipes required by the Rules or Load Line convention, 1966 which are to be fitted with automatic closing devices. This revision of UR P3 is done to clarify the definition of the term "chambers" in UR P3.2.9 for its uniform application as per the agreed IACS common understanding, more specifically in order to improve overall robustness of the air pipe head, if its function is integral to providing functions of the closing device, the side cover is considered as a part of chambers where the minimum wall thickness shall be not less than 6 mm.

3. UR G3 (Rev.6 Jan 2016):

UR G3 gives general principles for approval and survey of the relevant items of liquefied gas tankers for classification purposes. They do not intend to cover full details of such approval and survey procedures which are to be found in the rules of each Classification Society. These requirements are applicable to liquefied gas cargo and process piping including cargo gas piping and exhaust lines of safety valves or similar piping. The prototype testing and the unit production testing for valves used for isolation of instruments are reconsidered and para G3.6.1.2 is modified.

4. UR M75 (New Feb 2016):

UR M75 is applicable to ventilation louvers for emergency generator rooms and to closing appliances where fitted to ventilators serving emergency generator rooms. UR M75 is suggested by an IACS member following reports of failures of emergency generators caused by inadvertent ventilation louver closing.

5. UR Z7 (Rev.24 Feb 2016):

UR Z series covers hull surveys of ships in service of different types of vessels. Z7 specifically deals with self-propelled vessels. An IACS member proposed to review paragraph 2.3.1 of UR Z10.2 and UR Z10.5 with the aim to delete the embedded table dealing with the survey requirements of Fuel Oil Tanks located in cargo length area of ESP bulk carriers. This revision contains modified table 3 of UR Z7 stipulating requirements for the surveys of fuel oil tanks not located in engine room or in the cargo length area.

6. UR W16 (Rev.3 Mar 2016):

UR W16 requirements apply to hot-rolled, fine-grain, weldable high strength structural steels, intended for use in marine and offshore structural applications. Due to the requests from Offshore & Marine industry and suggestion made by an IACS member, URW16 is revised taking into account of advancement of steel making technology and international material standards for high strength steels.

7-9. UR P2.11 (Rev.4 Mar 2016) UR P2.12 (Rev.2 Mar 2016) UR P2.7.4 (Rev.8 Mar 2016):

UR P2 gives the rules for piping design, construction and testing. UR 2.7.4 requirements are applicable to pipe unions, compression couplings, slip-on joints. UR 2.11 describes the type testing condition for type approval of mechanical joints intended for use in marine piping systems. UR 2.12 apply to flexible hoses of metallic or non-metallic material intended for a permanent connection between a fixed piping system and items of machinery. Machinery panel revised the above URs with regards to application and details of fire resistant type tests for mechanical joints following a suggestion by an IACS member.

10. UR M35 (Rev.7 Mar 2016):

UR M35 deals with alarms, remote indications and safeguards referred to cross-head and trunk-piston reciprocating i.c. engines. Revision to this UR adds the requirement - speed of turbocharger to monitoring item for maintaining consistency with section 5 of UR M73 which require turbocharger speed alarm for Categories B and C turbochargers.

11. UR M36 (Rev.5 Mar 2016):

UR M36 refers to trunk-piston reciprocating i. c. engines on fuel oil. Revision to this UR adds the requirement - speed of turbocharger to monitoring item for maintaining consistency with section 5 of UR M73 which require turbocharger speed alarm for Categories B and C turbochargers.

12. UR M72 (Rev.1 Mar 2016):

UR M72 stipulates that the engine manufacturer is to have a quality control system that is suitable for the actual engine types to be certified by the Society. The Society requires that certain parts are verified and documented by means of Society Certificate (SC), Work Certificate (W) or Test Report (TR). Machinery Panel revised UR M72 to clarify that hydraulic testing is to be certified for all parts of the high pressure piping system for components for engines of cylinder bore >300mm and that test Reports are required for components for engines of cylinder bore <= 300mm.

13. UR M76 (New Apr 2016):

UR M76 deals with the Location of fuel tanks in cargo area on oil and chemical tankers. New requirements are introduced Due to Emission Control Areas requirements to use of marine fuels with a sulphur content not exceeding 0,1 % m/m (per MARPOL Annex VI) and minimum viscosity of 2 cSt (per UI SC255 and IMO MSC.1/Circ.1467), typically for marine gas oil MGO, the ultra-low sulphur fuel tank capacity on-board standard designs is found inadequate and therefore owners and yards are seeking to expand such capacity by adding fuel tanks within the cargo area.

14. UR Z1 (Rev.6 Apr 2016):

UR Z1 text identifies the Annual and Intermediate Survey requirements of IMO Res. A.1104(29) “Survey Guidelines Under the Harmonized System of Survey and Certification, (HSSC) 2015”, which are, as a minimum, to be covered by classification surveys. This UR is revised as IMO Res.A.1053(27), amended by IMO Res. A.1078(28), which is incorporated in UR Z1(Rev.5) had been revoked by IMO Res.A.1104(29).

15. UR E7 (Rev.4 Apr 2016):

UR E7 stipulates that the electrical and electronic cables are to be of a type approved by the Classification Society. This UR is revised due to withdrawal or replacement of several IEC standards mentioned in the previous version and consideration given to cables not manufactured to the IEC publications.

16-17. UR I1 (Rev.2 Apr 2016) and UR I2 (Rev.3 Apr 2016):

These unified Requirements for Polar Class ships apply to ships constructed of steel and intended for independent navigation in ice-infested polar waters. The UR I1 was updated as a consequence of the revision of UR I2. This concerns the introduction of specific requirements for the notation Icebreaker, as well as proposed requirements and assumptions with regard to hull form, performance, and operational limitations.

18. UR M74 (Rev.1 May 2016):

In addition to the requirements contained in BWM Convention (2004), UR M74 stipulates requirements to the installation of Ballast Water Management Systems. This requirement is revised to address comments on the UR M74 (New Sept 2015) as well as additional issues raised by the IACS members.

19. UR W22 (Rev.6 June 2016):

UR W22 applies to the materials, design, manufacture and testing of offshore mooring chain and accessories intended to be used for applications such as: mooring of mobile offshore units, mooring of floating production units, mooring of offshore loading systems and mooring of gravity based structures during fabrication. In this revision subsea connectors are added, documentation to be submitted to the Classification Society for approval has been revised, requirements have been added to the manufacturing approval conditions for heat treatment furnaces and processes for chain and accessories, additional details have been defined for CTOD testing conditions, additional requirements for approval, manufacturing and testing of forged and cast accessories have been incorporated, additional requirements for non-destructive examination of chain cables, forged and cast accessories have been incorporated, requirements for dimensions and dimensional tolerances of chain links have been further detailed and various updates of referenced standards were done.

20. UR E24 (New June 2016):

UR E24 deals with Harmonic Distortion for Ship Electrical Distribution System including Harmonic Filters. New requirements are introduced for survey of harmonic filters and harmonic distortion levels due to MAIB investigation following the catastrophic failure of a harmonic filter installed on board a UK flag passenger vessel.

21. UR M44 (Corr.1 June 2016):

UR M44 lists the necessary documents to approve a diesel engine design for conformance to the Rules and for use during manufacture and installation are listed. The document flow between engine designer, Classification Society approval centre, engine builder/licensee and Classification Society's Surveyors is provided. This corrigendum is published in order to clarify that re-type approval is not necessary and that certification process (production) for individual engines whose application is dated on or after 1 July 2016 is carried out in this UR accepting the existing type approval, etc.

22. UR M71 (Corr.1 June 2016):

UR M71 deals with the type testing of I.C. Engines. Type approval of I.C. engine types consists of drawing approval, specification approval, conformity of production, approval of type testing programme, type testing of engines, review of the obtained results, and the issuance of the Type Approval Certificate. This corrigendum is published in order to clarify that UR M71 applies for type approval process of IC Engines.

23. UR M73 (Corr.1 June 2016):

UR M73 requirements are applicable for turbochargers with regard to design approval, type testing and certification and their matching on engines. Turbochargers are to be type approved, either separately or as a part of an engine. The requirements are written for exhaust gas driven turbochargers, but apply in principle also for engine driven chargers. This corrigendum is published in order to clarify that the requirements are also to be applied for new turbocharger types. Additionally, a footnote providing the definition of "a generic range" was inserted at the bottom of a page containing paragraph 3.2.2 so as to give clearer understanding.

24. UR Z7.1 (Rev.12 June 2016):

UR Z7.1 deals with Hull Surveys for General Dry Cargo Ships. The requirements apply to surveys of hull structure and piping systems in way of cargo holds, cofferdams, pipe tunnels, void spaces and fuel oil tanks within the cargo area and all ballast tanks. This revision is carried out to include the cargo holds in paragraph 2.4.4 so that the special considerations can be applied also to these compartments, the deletion of paragraph 2.4.2 and the consequent renumbering of the subsequent paragraph.

25. UR E22 (Rev.1 June 2016):

UR E22 applies to design, construction, commissioning and maintenance of computer based systems where they depend on software for the proper achievement of their functions. The requirements focus on the functionality of the software and on the hardware supporting the software. These requirements apply to the use of computer based systems which provide control, alarm, monitoring, safety or internal communication functions which are subject to classification requirements. The complete revision of the UR was carried out by the Machinery Panel.

26. UR Z7 (Rev.25 June 2016):

UR Z series covers hull surveys of ships in service of different types of vessels. Z7 specifically deals with self-propelled vessels. This revision contains modification of table 3 of UR Z7 by introducing the requirements for the surveys of fuel oil tanks not located in engine room or in the cargo length area.

27. UR E25 (New June 2016):

UR E25 deals with the failure detection and response of all types of steering control systems. The UR provides more details on which failures shall be alarmed and provide the operator with sufficient information to decide what action is required for the different failure scenarios.

28. UR G1 (Rev.3 June 2016):

UR G1 gives the general principles which are applied by Classification Societies for approval and survey of the relevant items of liquefied gas tankers for classification purposes. They do not intend to cover full details of such approval and survey procedures which are to be found in the individual Rules of Classification Societies. The IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk has been updated to include the content of the UR. Hence, UR G1 is only applicable to vessels which do not have to comply with the requirements of the new Gas Code and the same is revised accordingly.

29. UR Z18 (Rev.6 Aug 2016):

UR Z18 deals with the periodical surveys of Machinery. It stipulates the requirements for special surveys, annual surveys and continuous surveys. This UR also deals with survey of steam boilers, propulsion steam turbines and machinery verification runs. This revision deals with the surveys of boilers that may have not sufficient spaces to grant the surveyor accessibility or that may present components of limited dimensions considering the remote inspection technology. A new sentence has been introduced at the end of paragraph 2.1.

30. UR W1 (Rev.3 Aug 2016):

UR W1 gives the requirements for plates, sections, pipes, forgings, castings and weldments used in the construction of cargo tanks, cargo process pressure vessels, cargo and process piping and secondary barriers. This document also gives the requirement for plates and sections of hull structural steels which are subject to reduced temperature due to the cargo and which are not forming part of secondary barrier. IMO Resolution MSC.370(93) (revised IGC code) adopted in May 2014 comes into force for the ships whose keels are laid on after 1 July 2016. The relevant requirements of UR W1 are to be updated in line with the revised IGC Code.

31. UR M77 (New Sep 2016):

These requirements apply to the arrangements for the storage and use of SCR reductants which are typically carried on board in bulk quantities. The NOx Technical Code, in 2.2.5 and elsewhere, provides for the use of NOx Reducing Devices of which Selective Catalytic Reduction (SCR) is one option. SCR requires the use of a reductant which may be a urea/water solution or, in exceptional cases, aqueous ammonia or even anhydrous ammonia.

32. UR W32 (New Sep 2016):

This UR gives requirements for a qualification scheme for welders intended to be engaged in the fusion welding of steels as specified in UR W7, W8, W11 and W31 for hull structures. This qualification scheme applies to the welders engaged in the welding processes used for the construction of steel ship hull structures, except oxy-acetylene welding and welding of pipes. The UR was developed from the existing IACS Recommendation 104 “Qualification scheme for welders of steels”, and taking into consideration the standards ISO 9606-1 “Qualification testing of welders –Fusion welding – Part 1: Steels” and EN 287-1“Qualification testing of welders –Fusion welding – Part 1: Steels”.

33. UR S14 (Rev.6 Sep 2016):

UR S14 stipulates the testing procedures of watertight compartments. The CSR BC & OT refers to UR S14 which was considered by the IMO to be a lesser standard than the SOLAS tank testing requirements. In order to resolve this issue, UR S14 is amended to comply with SOLAS II-1/11. Annex I is divided into two parts, PART A - SOLAS Ships (including CSR BC & OT) & PART B - Non-SOLAS Ships and SOLAS Exempt/Equivalent Ships.

34. UR Z15 (Corr.1 Oct 2016):

The requirements apply to all Mobile Offshore Drilling Units after their construction. These requirements apply to surveys of the hull, structure, equipment, and machinery subject to classification. This corrigendum is issued to correct the title of paragraph 5.2 of the UR Z15 relevant to tail shaft survey. Moreover, it has replaced the wording “tail shaft” with “propeller shaft” so that the terminology used in UR Z15 and UR Z21 will be coherent.

35. UR A1 (Rev.6 Oct 2016):

UR A1 gives the minimum requirements for the anchoring equipment. The anchoring equipment required herewith is intended for temporary mooring of a ship within a harbour or sheltered area when the ship is awaiting berth, tide, etc. In view of an increasing number of incidents, such as anchor losses, IACS revised UR A1.

36. UR A2 (Rev.4 Oct 2016):

UR A2 give the minimum requirements for shipboard fittings and supporting hull structures associated with towing and mooring on conventional ships. This is applicable to design and construction of shipboard fittings and supporting structures used for the normal towing and mooring operations. Normal towing means towing operations necessary for manoeuvring in ports and sheltered waters associated with the normal operations of the ship. Due to recurrent incidents during mooring and towing, IACS revised UR A2.

37. UR M44 (Corr.2 Nov 2016):

UR M44 stipulates the documents necessary to approve a diesel engine design for conformance to the Rules and for use during manufacture and installation are listed. This also gives document flow between engine designer, Classification Society approval centre, engine builder/licensee and Classification Society's Surveyors is provided. Deletion of "(common rail)" in Item Nos. 20 and 21 of Table 2 was carried out in this corrigendum for the sake of clarity.

38. UR Z10.2 (Rev.33 Nov 2016):

The requirements apply to all self-propelled Bulk Carriers other than Double Skin Bulk Carriers as defined in 1.1.1 of UR Z10.5. These Requirements apply to surveys of hull structure and piping systems in way of the cargo holds, cofferdams, pipe tunnels, void spaces, fuel oil tanks within the cargo length area and all ballast tanks. In this revision, wordings of Para 1.4 and Para 2.2.4.1 are changed considering the application of the Thickness Measurements when the close-up surveys are performed.

39. UR Z10.4 (Rev.14 Nov 2016):

These requirements apply to all self-propelled Double Hull Oil Tankers. These requirements apply to surveys of hull structure and piping systems in way of cargo tanks, pump rooms, cofferdams, pipe tunnels, void spaces within the cargo area and all ballast tanks. This revision is to address the Observation 04, raised by the IMO Auditing Team of the IACS common package 1 in respect to the functional requirements (FR) 9-15.

40. UR Z10.5 (Rev.16 Nov 2016):

The requirements apply to all self-propelled Double Skin Bulk Carriers. The requirements apply to surveys of hull structure and piping systems in way of cargo holds, cofferdams, pipe tunnels, void spaces, fuel oil tanks within the cargo length area and all ballast tanks. This revision is to address the Observation 04, raised by the IMO Auditing Team of the IACS common package 1 in respect to the functional requirements (FR) 9-15.

41. UR Z23 (Rev.6 Nov 2016):

This UR covers the survey of all new construction of steel ships intended for classification and for international voyages. This UR covers all statutory items, relevant to the hull structure and coating, i.e. Load Line and SOLAS Safety Construction. This revision is to address the Observation 04 & Observation 07, raised by the IMO Auditing Team of the IACS common package 1 in respect to the functional requirements (FR) 9-15.

42. UR Z17 (Rev.12 Nov 2016):

UZ17 stipulates procedures for the Society to approve firms providing services, such as measurements, tests or maintenance of safety systems and equipment. The objective of this procedure is to set minimum requirements for approval and certification of service suppliers and is applicable to both initial and renewal audits. This revision will provide clarity for the provisions for the certifications of the Supervisors and the Operators of certified service suppliers engaged in thermographic testing of primary and secondary barriers of gas carriers with membrane cargo containment systems.

43. UR A1 (Corr.1 Dec 2016):

UR A1 gives the minimum requirements for the anchoring equipment. The anchoring equipment required herewith is intended for temporary mooring of a ship within a harbour or sheltered area when the ship is awaiting berth, tide, etc. In this Corrigendum, only editorial correction is made.

44. UR A2 (Corr.1 Dec 2016):

UR A2 give the minimum requirements for shipboard fittings and supporting hull structures associated with towing and mooring on conventional ships. This is applicable to design and construction of shipboard fittings and supporting structures used for the normal towing and mooring operations. Normal towing means towing operations necessary for manoeuvring in ports and sheltered waters associated with the normal operations of the ship. In this Corrigendum, only editorial correction is made.

SUMMARY OF NEW/REVISIONS TO IACS PROCEDURAL REQUIREMENTS PUBLISHED IN 2016

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	PR1A	Rev.5	Jan 2016	Procedure for Transfer of Class	01 Jul 2016
2	PR1C	Rev.5	Jan 2016	Procedure for Suspension and Reinstatement or Withdrawal of Class in Case of Surveys, Conditions of Class or Recommendations Going Overdue	01 Jan 2017
3	PR16	Corr.2	Feb 2016	Procedure for providing lists of classed ships to Equasis	01 Jul 2009
4	PR38	Rev.1	Mar 2016	Procedure for calculation and verification of the Energy Efficiency Design Index (EEDI)	01 Jul 2016
5	PR20	Rev.2	Apr 2016	Procedural Requirement for certain ESP Surveys	01 Jan 2017
6	PR12	Rev. 2	Jun 2016	Procedure for Statutory Certification at Change of Class without Change of Flag	01 Jan 2017
7	PR28	Rev.1	Jun 2016	Procedure for Statutory Certification at Change of Flag without Change of Class	01 Jan 2017
8	PR17	Rev.1	Sep 2016	Reporting on deficiencies possibly affecting the implementation of the ISM Code on board during surveys	01 Jan 2017
9	PR3	Corr.1	Oct 2016	Transparency of Classification and Statutory Information	01 Jul 2016
10	PR 10B	New	Dec 2016	Procedure for the Selection, Training, Qualification and Authorisation of Maritime Labour Inspectors	01 Jan 2017

1. PR1A (Rev.5 Jan 2016):

This Procedure contains procedures and requirements pertaining to transfer of class from one Society (i.e. losing Society) to another Society (i.e. gaining Society) and is applicable, unless stated otherwise, to vessels of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" vessels. The obligations of this Procedure apply to Classification Societies which are subject to verification of compliance with QSCS. Revision for this procedure include the outcomes of the Panel task no. 14022 related to the intermediate surveys of the gas carrier ships.

2. PR1C (Rev.5 Jan 2016):

This Procedure contains procedures and requirements pertaining to suspension and reinstatement or withdrawal of class and is applicable, unless stated otherwise, to vessels of over 100 GT of whatever type, self-propelled or not, restricted or unrestricted service, except for "inland waterway" vessels. The obligations of this Procedure apply to Classification Societies which are subject to verification of compliance with QSCS. This revision states that provisions relevant to the maintenance of the ship according the Rules if the recognized Classification Society, as expected by SOLAS Regulation II-1/3.1 are also applicable to ships built before 1st July 1998.

3. PR16 (Corr.2 Feb 2016):

PR16 gives procedure for providing lists of classed ships to Equasis. This Corrigendum is published correcting DNV GL's details and codes.

4. PR38 (Rev.1 Mar 2016):

This procedure applies to all cases of Class Societies' involvement in conducting the survey and certification of EEDI in accordance with regulations 5, 6, 7, 8 and 9 of MARPOL Annex VI as a Verifier defined in the IMO "2014 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI)" as amended in MEPC.1/Circ.855. The revision is published to expand the scope of application to deal with all ship types and technologies covered by Chapter 4 of MARPOL Annex VI, to remain in line with the amendments of IMO Guidelines for calculation and certification of the EEDI, to accept towing tank tests witnessed by another Society than the one verifying the ship and to accept towing tank tests performed by an experienced or certified organization for ships designed before the entry into force of the MARPOL Annex VI amendments on energy efficiency for ships.

5. PR20 (Rev.2 Apr 2016):

The objective of this PR is to improve the quality of surveys. This PR applies to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the UR Z10.2 or UR Z10.5. This revision is carried out to provide clarity by specifying which areas of the ship are subject to be surveyed by at least two exclusive surveyors.

6. PR12 (Rev.2 June 2016):

This Procedural Requirement lays down common procedures and minimum requirements for statutory surveys and certification which Societies subject to verification of compliance with QSCS shall follow at change of class, when there is no change of Flag involved. However, this Procedural Requirement does not prevent the gaining Society from expanding the scope of statutory surveys at its own discretion or in accordance with the requirements or instructions of the relevant flag State Administration. PR12 has been updated not only with the adding "Obligation and Reporting" and "Plans and Information", also with the remaining sections particularly with reference to "Scope of surveys" and "Type and validity period of certificates" reconstructed and adjusted.

7. PR28 (Rev.1 June 2016):

The purpose of this Procedural Requirement is to lay down common procedures and minimum statutory survey requirements for Societies in case of Change of Flag. However, this Procedural Requirement does not prevent the Societies from expanding the scope of statutory surveys at their own discretion or upon specific instructions of the relevant flag State Administration. This revision introduces "Obligations and Reporting" to reflect the requirements of the RO Code as relevant, Added Subparagraph 1.4 in order to be consistent with Paragraph 5.7.3 of RO Code and Updated subparagraph 2.3 and corrected an error in subparagraph 3.2.4.

8. PR17 (Rev.1 Sept 2016):

The purpose of this Procedural Requirement is to ensure that the Organisation responsible for the SMS audit of the ship is notified when deficiencies that may affect the proper implementation of the safety management system are identified by a surveyor. PR 17 was amended to become better understood, and more practicable and easier to comply with, without changing the objective.

9. PR3 (Corr.1 Oct 2016):

The purpose of this Procedural Requirement is to provide the transparency of classification and Statutory Information. It lists the type of information, the receivers of Information and release of Information. This corrigendum is issued correcting the wording of Note 1 of Table 2 to read "will be available upon request" to avoid any misinterpretation.

10. PR10B (New Dec 2016):

This Procedural Requirement describes the IACS requirements for the selection, training, qualification and authorisation of maritime labour inspectors responsible for verifying compliance with the Maritime Labour Convention, 2006 (MLC, 2006).

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED INTERPRETATIONS PUBLISHED IN 2016

New | Revised | Corrigenda | Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	UI SC267	Rev.1	Jan 2016	Implementation of the requirements relating to lifeboat release retrieval systems (LSA Code Paragraph 4.4.7.6 as amended by resolution MSC.320(89))	01 Jul 2016
2	UI SC275	New	Jan 2016	Suitable number of spare air cylinders to be provided in connection with drills	01 Jan 2017
3	UI SC276	New	Jan 2016	Escape from machinery spaces on passenger ships	01 Feb 2016
4	UI SC277	New	Jan 2016	Escape from machinery spaces on cargo ships	01 Feb 2016
5	UI SC278	New	Jan 2016	Escape from accommodation spaces, service spaces and control stations on cargo ships	01 Feb 2016
6	UI GC11	Rev.1	Feb 2016	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))	01 Jul 2016
7	UI MPC127	New	Feb 2016	Annex I of MARPOL 73/78 Regulation 14.7	01 Jan 2017
8	UI GC15	New	Feb 2016	Closing Devices for Air Intakes	01 Jul 2016
9	UI GC5	Rev.1	Feb 2016	Closing Devices for Air Intakes	Before 01 July 2016
10	UI GC6	Rev.1	Feb 2016	Cargo tank clearances	Before 01 July 2016
11	UI GC13	Rev.1	Mar 2016	Examination before and after the first loaded voyage	01 Jul 2016
12	UI GC16	New	Mar 2016	Cargo tank clearances (on ships built constructed on or after 1st July 2016)	01 Jul 2016
13	UI TM3	Withdrawn	Apr 2016	Interpretation of International Tonnage Calculation: Open Deck Spaces Bounded by Partitions or Bulkheads (ITC69 regulation 2(4), 2(5) and 6)	-
14	UI MPC93	Rev.1	Apr 2016	Annex I of MARPOL 73/78 Regulation 23 Accidental oil outflow performance, as amended by Resolution MEPC.117(52)	01 Jul 2017
15	UI SC242	Rev.1	Apr 2016	Arrangements for steering capability and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control	01 Jul 2017
16	UI SC273	Rev.1	May 2016	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)	01 Jan 2017
17	UI HSC10	New	May 2016	Inclusion of mediums of the fire-fighting systems in lightweight (2000 HSC Code Chapter 1, Regulation 1.4.34)	01 Jan 2017
18	UI MPC128	New	May 2016	Inclusion of mediums of the fire-fighting systems in lightweight (MARPOL Annex I/Regulation 1.24)	01 Jan 2017

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED INTERPRETATIONS PUBLISHED IN 2016

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
19	UI SC253	Rev.1	May 2016	"Fire resistance requirements for fibre-reinforced plastic (FRP) gratings used for safe access to tanker bows (IMO Res. MSC.62(67))"	01 Jan 2017
20	UI MPC107	Withdrawn	May 2016	"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)"	-
21	UI MPC119	Withdrawn	May 2016	"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)"	-
22	UI MPC121	Withdrawn	May 2016	"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)"	-
23	UI MPC124	Withdrawn	May 2016	"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)"	-
24	UI SC279	New	Jun 2016	Annual testing of VDR, S-VDR, AIS and EPIRB	01 Jul 2017
25	UI MPC11	Rev.2	Jun 2016	Interpretation to MARPOL I/27	01 Jan 2017
26	UI CC7	New	Jun 2016	Unprotected openings	01 Jan 2017
27	UI GC17	New	Jun 2016	Unprotected openings	01 Jan 2017
28	UI LL80	New	Jun 2016	Unprotected openings	01 Jan 2017
29	UI MPC129	New	Jun 2016	Unprotected openings	01 Jan 2017
30	UI SC280	New	Jun 2016	Angle of down-flooding (f) / Angle at which an opening incapable of being closed weathertight (v)	01 Jan 2017
31	UI SC234	Delete	Jun 2016	Initial Statutory Surveys at New Construction	-
32	UI LL76	Delete	Jun 2016	Initial Statutory Surveys at New Construction	-
33	UI MPC96	Delete	Jun 2016	Initial Statutory Surveys at New Construction	-
34	UI MODU1	Corr.1	Jun 2016	"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))"	01 Jan 2017
35	UI SC191	Corr.1	Jun 2016	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))	01 Jul 2016
36	UI SC94	Rev.2	Jun 2016	Mechanical, hydraulic and electrical independency of steering gear control systems	01 Jul 2017

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED INTERPRETATIONS PUBLISHED IN 2016

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
37	UI GC7	Rev.1	Jun 2016	Carriage of products not covered by the code	01 Jul 2016
38	UI GC8	Rev.1	Jun 2016	Permissible stresses in way of supports of type C cargo tanks	01 Jul 2016
39	UI SC281	New	Jul 2016	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)	01 Jul 2017
40	UI SC272	Rev.1	Jul 2016	Inert gas supply to double-hull spaces (SOLAS II-2/4.5.5.1)	01 Jan 2017
41	UI MODU2	New	Aug 2016	Inclusion of mediums of the fire-fighting systems in lightweight (2009 MODU Code Chapter 1, paragraph 1.3.30)	01 Jan 2017
42	UI SC275	Rev.1	Sep 2016	Suitable number of spare air cylinders to be provided in connection with drills	01 Jan 2017
43	UI SC220	Corr.1	Sep 2016	Special requirements for vehicle ferries, ro-ro ships and other ships of similar type	15 Apr 2008
44	UI SC267	Rev.2	Sep 2016	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))	01 Jan 2017
45	UI SC 257	Rev.1	Oct 2016	Pilot Transfer Arrangements (SOLAS V/23 as amended by Resolution MSC.308 (88))	01 Jul 2013
46	UI SC213	Rev.4	Nov 2016	Arrangements for remotely located survival craft	01 Jan 2017
47	UI SC227	Rev.2	Nov 2016	The dedicated seawater ballast tanks in SOLAS Chapter II-1, Regulation 3-2	01 Jul 2017
48	UI GC18	New	Nov 2016	Test for cargo tank's high level alarm (on ships built on or after 1 July 2016)	01 Jan 2018
49	UI SC269	Rev.1	Dec 2016	Means of escape from the steering gear space in cargo ships	01 Jan 2018
50	UI SC282	New	Dec 2016	Application of materials other than steel on engine, turbine and gearbox installations	01 Jul 2017
51	UI SC191	Corr.2	Dec 2016	"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))"	01 Jul 2016

SUMMARY OF NEW/REVISIONS TO IACS UNIFIED INTERPRETATIONS PUBLISHED IN 2016

1. UI SC267 (Rev.1 Jan 2016):

UI SC267 was introduced for 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)). This revision was proposed to clarify scope of application of the LSA Code and IACS UI SC267 to the inner cables of the control cable in a lifeboat. The 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 was amended to specifically exclude such inner control cables from the requirements of the UI.

2. UI SC275 (New Jan 2016):

UI SC275 is for interpreting Suitable number of spare air cylinders to be provided in connection with drills as per new regulation SOLAS II-2/15.2.2.6 as adopted by MSC.338(91). Interpretation states that "A suitable number of spare cylinders" to be carried on board to replace those used for fire drills shall be at least one 'set of cylinders' for each mandatory breathing apparatus. 'Set of cylinders' means the number of cylinders which are required to operate the breathing apparatus.

3. UI SC276 (New Jan 2016):

This UI provides interpretations of SOLAS II-2/13.4.1 with respect to the means of escape from machinery spaces on passenger ships. Interpretations for safe position, requirements related to inclined ladders/stairways, machinery spaces, a protected enclosure and for its Internal dimensions are given in this UI.

4. UI SC277 (New Jan 2016):

This UI provides interpretations of SOLAS II-2/13.4.2 with respect to the means of escape from machinery spaces on cargo ships. Interpretations for safe position, requirements related to inclined ladders/stairways, machinery spaces A, machinery spaces other than those of category A, a protected enclosure and for its Internal dimensions are given in this UI.

5. UI SC278 (New Jan 2016):

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. Interpretation states that the "lowest open deck" shall be a category (10) "Open deck" (as defined in SOLAS chapter II-2, regulations 9.2.3.3.2.2 and 9.2.4.2.2.2) at the lowest height from baseline in way of accommodation spaces.

6. UI GC11 (Rev.1 Feb 2016):

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

7. UI MPC127 (New Feb 2016):

This UI interprets the phrase "The accuracy of the 15 ppm Bilge Alarms should be checked at IOPP Certificate renewal surveys according to the manufacturer's instructions." specified in paragraph 4.2.11 of Resolution MEPC.107(49). The validity of calibration certificate should be checked at IOPP annual/intermediate/renewal surveys and the accuracy of 15 ppm bilge alarms is to be checked by calibration and testing of the equipment conducted by a manufacturer or persons authorized by the manufacturer and should be done at intervals not exceeding five years or within the term specified in the manufacturer's instructions, whichever is shorter.

8. UI GC15 (New Feb 2016):

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. Interpretation states that The closing devices need not be operable from within the single spaces and may be located in centralized positions and are to give a reasonable degree of gas tightness. Ordinary steel fire-flaps without gaskets/seals are not to be considered satisfactory.

9. UI GC5 (Rev.1 Feb 2016):

UI GC5 provides Interpretation for para 3.2.6 of the IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (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). In light of the revised IGC Code (MSC.370(93)), UI GC 5 is applicable to ships constructed before 1 July 2016 and complying with MSC.5(48). For ships whose keels are laid, or which are at a similar stage of construction, on or after 1 July 2016 refer to UI GC15. Revised UI is released to clearly indicate that the existing UI GC5 does not apply to the revised IGC Code.

10. UI GC6 (Rev.1 Feb 2016):

UI GC6 provides Interpretation for section 3.5 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (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). In light of the revised IGC Code (MSC.370(93)), UI GC 6 is applicable to ships constructed before 1 July 2016 and complying with MSC.5(48). For ships whose keels are laid, or which are at a similar stage of construction, on or after 1 July 2016 refer to UI GC16. Revised UI is released to clearly indicate that the existing UI GC6 does not apply to the revised IGC Code.

11. UI GC13 (Rev.1 March 2016):

UR GC13 gives Interpretation for paragraphs 4.10.14 and 4.10.16 of the International Code for the Construction and Equipment of Ships Carrying Liquid Gases in Bulk (IGC Code), 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). This revision is made 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)). All the modifications have been applied in the revision 1 of the Unified Interpretation GC13.

12. UI GC16 (New Mar 2016):

UI GC16 gives interpretation for the clause 3.5.3.1.2 of The International Code for the Construction and Equipment of Ships Carrying Liquid Gases in Bulk (IGC Code) as amended by Res. MSC.370(93). For cargo tank clearances the minimum clear opening of 600 mm x 600 mm may have corner radii up to 100 mm maximum. In such a case where as a consequence of structural analysis of a given design the stress is to be reduced around the opening, it is considered appropriate to take measures to reduce the stress such as making the opening larger with increased radii in which a clear opening of 600 mm x 600 mm with corner radii up to 100 mm maximum fits. The interpretation is based upon the established Guidelines in MSC/Circ.686.

13. UI TM3(Withdrawn Apr 2016):

UI TM3 was withdrawn as 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).

14. UI MPC93 (Rev.1 Apr 2016):

UI MPC93 gives interpretation regarding overpressure for Annex I of MARPOL 73/78 Regulation 23. Accidental oil outflow performance, as amended by Resolution MEPC.117(52). The interpretation is amended as if an inert gas system is fitted, the normal overpressure, in KPa, is to be taken as 5 KPa, in this revision.

15. UI SC242 (Rev.1 Apr 2016):

UI SC242 gives the interpretation of Arrangements for steering capability and function on ships fitted with propulsion and steering systems other than traditional arrangements for a ship's directional control (SOLAS Chapter II-1, Regulations 29.1, 29.2.1, 29.3, 29.4, 29.6.1, 29.14, 28.3 and 30.2). UI is revised to eliminate the contradiction between interpretation of paragraph 29.6.1 and 29.1 with respect to applicability of an auxiliary steering gear on vessels fitted with multiple steering gears.

16. UI SC273 (Rev.1 May 2016):

UI SC273 is regarding the 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). The revision is 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".

17. UI HSC10 (New May 2016):
UI HSC10 is regarding the inclusion of mediums of the fire-fighting systems in lightweight (2000 HSC Code Chapter 1, Regulation 1.4.34). This UI clarifies that the weights of mediums on board for the fixed fire-fighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) shall be included in the lightweight and lightship condition.

18. UI MPC128 (New May 2016):
UI MPC128 is regarding the inclusion of mediums of the fire-fighting systems in lightweight (MARPOL Annex I/ Regulation 1.24). This UI clarifies that the weights of mediums on board for the fixed fire-fighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) shall be included in the lightweight and lightship condition.

19. UI SC253 (Rev1 May 2016):
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. Revision to this UI is provided to align with the IMO interpretation in MSC.1/circ.1504.

20-23. UI MPC 107, UI MPC 119, UI MPC 121, UI MPC 124:
UI MPC 107, UI MPC 119, UI MPC 121, UI MPC 124 are not supported by PPR3 and hence withdrawn.

24. UI SC279 (New June 2016):
UI SC279 is introduced 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. UI states that the annual performance test of VDR (or S-VDR) shall be carried out within the “time window” of the annual / periodical / renewal survey under the Harmonized System of Survey and Certification (HSSC), but not later than the date of completion of the survey for endorsement / renewal of the relevant Certificate.

25. UI MPC11 (Rev.2 June 2016):
UI MPC11 gives interpretation regarding Intact stability (MARPOL I/27). Revised unified interpretations states that while applying f θ (down flooding angle), openings which “cannot be closed weathertight” include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

26. UI CC7 (New June 2016):
UI CC7 gives interpretation regarding unprotected openings stated in IBC Code 2.9. UI states that other openings capable of being closed weathertight do not include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

27. UI GC17 (New June 2016):
UI GC17 gives interpretation regarding unprotected openings stated in IGC Code 2.7. UI states that other openings capable of being closed weathertight do not include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

28. UI LL80 (New June 2016):
UI LL80 gives interpretation regarding unprotected openings stated in ICLL Regulation 27(13) (e). UI states that unprotected openings include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

29. UI MPC129 (New June 2016):

UI MPC129 gives interpretation regarding unprotected openings stated in MARPOL Annex I / Regulation 28.3.3. UI states that unprotected openings include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

30. UI SC280 (New June 2016):

UI SC 280 gives interpretation regarding Angle of down-flooding (ϕf) / Angle at which an opening incapable of being closed weathertight (θv) (2008 IS Code, International Grain Code, SOLAS/Ch.II-1-Reg.7-2). UI states that in applying ϕf or θv, openings which cannot be or are incapable of being closed weathertight include ventilators (complying with ILLC 19(4)) that for operational reasons have to remain open to supply air to the engine room or emergency generator room (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective operation of the ship.

31 -33 UI SC234, UI LL76 & UI MPC96 (Deleted)

34. UI MODU1 (Corr.1 June 2016):

UI MODU1 is introduced 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)). This corrigendum corrected the provision relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder.

35. UI SC191 (Corr.1 June 2016):

UI SC191 is introduced 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)). Corrigendum for the UI corrected the provisions relevant to the height of the handrails of the resting platforms between the sections of a vertical ladder and extended the interpretation given for the arrangement of the vertical ladder, when fitted in a space of a bulk carrier, also to the oil tankers.

36. UI SC94 (Rev.2 June 2016):

UI SC94 applies to steering gear control systems, as defined in SOLAS regulation II-1, 3/1, for the main and auxiliary steering gear, operable from the navigation bridge, for which SOLAS stipulates two steering gear control systems independent of each other (SOLAS II-1, Reg. 29/6.1, 29/7.2, 29/7.3, Reg. 29/15 and Reg. 29/16). 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 is removed.

37. UI GC7 (Rev.1 June 2016):

UI GC7 is for the carriage of products not covered by the gas code. 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 Liquefied Gases in Bulk. The purpose of this UI is to ensure that Class Societies treat the carriage of such products in the same way. The IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk has been updated and as a result the UI is revised in line the new Gas Code.

38. UI GC8 (Rev.1 June 2016):

UI GC8 is for the permissible stresses in way of supports of type C cargo tanks. The IMO International Code for the Construction and Equipment of Ships Carrying Liquefied 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. The IMO International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk has been updated and as a result the UI is revised in line the new Gas Code.

39. UI SC281 (New July 2016):
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.

40. UI SC272 (Rev.1 July 2016):
UI SC272 gives interpretation as double-hull spaces required to be fitted with suitable connections for the supply of inert gas as per SOLAS II-2/4.5.5.1.4.1 are 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 cargo pump-rooms and ballast pump-rooms. The revision of UI SC 272 is aligned with the draft MSC Circular developed at SSE 3(Refer Annex 8 of SSE 3/16).

41. UI MODU2 (New Aug 2016):
UI MODU2 is introduced to extend the scope of UI SC273, clarifying that the weight of mediums on board for the fixed fire-fighting systems (e.g. freshwater, CO2, dry chemical powder, foam concentrate, etc.) shall be included in the lightweight, to MODU Code, in view of approval of MSC.1/Circ.1540.

42. UI SC275 (Rev.1 Sept 2016):
UI SC275 give the interpretation for SOLAS II-2/15.2.2.6, that “A suitable number of spare cylinders” to be carried on board to replace those used for fire drills shall be at least one ‘set of cylinders’ for each mandatory breathing apparatus. The revision has added the text “unless additional spare cylinders are required by the shipboard safety management system (SMS)” to the above statement.

43. UI SC220 (Corr.1 Sept 2016):
Special requirements for vehicle ferries, ro-ro ships and other ships of similar type. This UI gives interpretation to SOLAS regulation II-1/20-2 and SOLAS regulation II-1/17-1.1.1. Corrigenda for this UI is issued to correct the references which are editorial in nature.

44. UI SC267 (Rev.2 Sept 2016):
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))”. This UI is to clarify scope of application of the LSA Code and regarding the inner cables of the control cable in a lifeboat. This revision to the interpretation aligns the text with MSC.1/Circ.1529.

45. UI SC257 (Rev.1 Oct 2016):
The UI is intended to clarify the circumstances under which the “adverse list of 150 “ 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. This revision has changed the interpretation for SOLAS Reg V/23.3.3.1.

46. UI SC213 (Rev.4 Nov 2016):
This UI has been developed in order to clarify whether life raft 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 this revision, paragraph 6 was deleted, thereby aligning it with the revised MSC.1/Circ.1490.

47. UI SC227 (Rev.2 Nov 2016):
This UI gives the tanks that 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)). The text was revised based on IMO Circ.1539.

48. UI GC18 (New Nov 2016):

UI GC18 gives interpretation of The International Code for the Construction and Equipment of Ships Carrying Liquid Gases in Bulk (IGC Code) as amended by Res. MSC.370(93), 13.3.5. The expression “each dry docking” is considered to be the survey of the outside of the ship’s bottom required for the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate.

49. UI SC269 (Rev.1 Dec 2016):

This UI provides 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). This UI is revised to ensure that the fire integrity of escape route is at least equivalent to the space(s) through which it travels.

50. UI SC282 (New Dec 2016):

This UI provides interpretation on Application of materials other than steel on engine, turbine and gearbox installations - SOLAS Reg. II-2/4.2.2.5, Reg. II-2/4.2.3, Reg. II-2/4.2.4 and MSC.1/Circ. 1321.

51. UI SC191 (Corr.2 Dec 2016):

This UI provides interpretation on 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)). In this corrigendum, for resolution MSC.158(78), paragraph 3.13.2 and paragraph 3.13.6, editorial correction is made.

SUMMARY OF NEW/REVISIONS TO IACS RECOMMENDATIONS PUBLISHED IN 2016

New Revised Corrigenda Deleted/Withdrawn

Index	Resolution no.	Revision	Adoption	Title	Implemention Date
1	Rec.144	New	Feb 2016	Inspection of ship's side valves	-
2	Rec.75	Corr.1	Feb 2016	Format for Electronic Exchange and Standard Reports	-
3	Rec 57	Rev.1	Mar 2016	Maintenance and inspection of electrical equipment on the ship	-
4	Rec 145	New	May 2016	Recommendation for the Operation of Shore-based Emergency Response Services	-
5	Rec 55	Rev.1	Jun 2016	GENERAL DRY CARGO SHIPS - Guidelines for Surveys, Assessment and Repair of Hull Structure	-
6	Rec 42	Rev.2	Jun 2016	Guidelines for Use of Remot Inspection Techniques for surveys	-
7	Rec 98	Rev. 2	Jun 2016	Duties of Surveyors under Statutory Conventions and Codes	-
8	Rec 142	New	Jul 2016	LNG bunkering guidelines	-
9	Rec 146	New	Aug 2016	Risk assessment as required by the IGF Code	-
10	Rec 130	Rev.1	Sep 2016	Procedures for verifying that materials are asbestos free	-
11	Rec 41	Corr.1	Oct 2016	Guidance for IACS Auditors to the ISM Code	-
12	Rec 77	Rev.3	Oct 2016	Guidelines for the Surveyor on how to control the Thickness Measurement Process	-
13	Rec 10	Rev.3	Oct 2016	Anchoring, Mooring, and Towing Equipment	-
14	Rec 147	New	Oct 2016	Type Approval Certificate of Internal Combustion Engine	-
15	Rec 10	Corr.1	Dec 2016	Anchoring, Mooring, and Towing Equipment	-
16	Rec 75	Rev.2	Dec 2016	Format for Electronic Exchange and Standard Reports	-

1. Rec.144 (New Feb 2016):

This recommendation details the minimum survey criteria for the ship's side valves and their actuating mechanisms. This recommendation is introduced after an accident investigation report No. 14/2015 issued by the 'Marine Accident Investigation Branch' (MAIB) of the UK Government. The report deals with the flooding of the engine room caused by the malfunctioning of the closing mechanism of a ship's side valve.

2. Rec.75 (Corr.1 Feb 2016):

Rec.75 deals with Format for Electronic Exchange and Standard Reports. This Corrigendum is published correcting DNV GL's details and codes.

3. Rec.57 (Rev.1 Mar 2016):

Rec.57 covers factors directly related to the maintenance and inspection of the electrical equipment fitted to the main switchboards, propulsion switchboards, emergency switchboards and section boards. This revision updates the maintenance schedule for the electrical Equipment.

4. Rec.145 (New May 2016):

This document gives recommendations for the operation of shore-based emergency response services in order to assist in complying with the several regulations and guidelines, as well as any applicable National Authority requirements. The aim of an emergency response service is to provide rapid technical assistance to Masters and other authorities in a casualty situation by assessing the damage stability and residual longitudinal strength of the ship.

5. Rec.55 (Rev.1 June 2016):

These Guidelines are intended for a general dry cargo ship, single skin, which is designed with one or more decks specifically for the carriage of diverse forms of dry cargo. These Guidelines focus on the IACS Member Societies' survey procedures but may also be useful in connection with inspection/examination schemes of other regulatory bodies, owners and operators. The revision contains modification of some sketches of proposed repairs, for generic part of the ship, so that they are aligned to those contained in the other IACS Recommendations, modification of some sketches of proposed repairs dedicated for the dry cargo ships, updating of some photographs detailing the typical damages, the removal of the reference to the Early Warning Scheme and addition of a new paragraph relevant to the "Voyage repairs and maintenance".

6. Rec.42 (Rev.2 June 2016):

Rec.42 gives the guidelines for use of remote inspection techniques for surveys. Following the advances made in the field of remote inspection techniques during the last 10 years (such as non-invasive inspection performed by miniaturized cameras), revision to the recommendation is proposed. This revision adopts the remote inspection techniques as a possible support to the close up surveys of the ships subjected to the ESP Code (Oil Tankers and Bulk Carriers) and the use of remote inspection techniques shall be authorized by the Flag Administration.

7. Rec.98 (Rev.2 June 2016):

In line with the requirements of the statutory codes and conventions, Classification Societies, individually or in groups, have entered into agreements with several Flag Administrations. These agreements cover the application of the duties of surveyors in the performance of surveys and their duties toward Flag Administrations and take preference over any other guidelines for such surveys. This Recommendation does not apply to the ISM Code, ISPS Code and MLC 2006 certification. This revision is published following the issue of the IMO Resolution A 1104(29), Survey Guidelines under the Harmonized System of Survey and Certification (HSSC) 2015, and the revision of the Procedural Requirements PR12 (rev.2) and PR 28(Rev.1) to harmonize the terminology with that used by the IMO Resolution itself.

8. Rec.142 (New July 2016):

As a consequence of rapid technological and operational developments in using LNG as a fuel for cargo and passenger ships, these LNG bunkering guidelines are developed based on international/national standards as well as relevant and available Class documents, in order to enhance and promote the safety of ships undertaking LNG bunkering operations and to be made available to the industry. This guideline provides recommendations for the responsibilities, procedures and equipment required for LNG bunkering operations and sets harmonised minimum baseline recommendations for bunkering risk assessment, equipment and operations. These guidelines do not consider commercial aspects of the bunker transfer such as Bunker Delivery Notes and measurement of quantity or quality of LNG.

9. Rec.146 (New Aug 2016):

Rec 146 is introduced to provide consistency in the application of risk assessment techniques and criteria in respect of the IGF Code requirement for risk assessment. This recommendation would promote consistency in application, reporting and judgements made on the level of risk.

10. Rec.130 (Rev.1 Sept 2016):

Rec 130 has been developed as guidelines for new building yards, owner, manufacture of equipment and components for having a procedure of purchasing and controlling asbestos free material. This recommendation is revised in view of Resolution MEPC 269(68) -2015 guidelines for the development of the inventory of Hazardous material.

11. Rec.41 (Corr.1 Oct 2016):

Rec.41 provided guidance for IACS Member Societies' auditors when performing certification under the ISM Code. This document is also intended to promote audits' consistency and uniformity among IACS by providing examples, which, however, are not to be interpreted as prescriptive solutions or checklists. This Corrigendum adds the text ', including measures intended to prevent recurrence' after the word 'action' in Rec 41, ISM Code –paragraph 9.2

12. Rec.77 (Rev.3 Oct 2016):

Rec.77 gives guidelines for the surveyor on how to control the thickness measurement process. In this revision, "the master of the ship or an appropriately qualified representative appointed by the master or Company" is added to the members of meeting held prior to the commencement of the survey.

13. Rec.10 (Rev.3 Oct 2016):

Rec.10 deals with the Anchoring, Mooring and Towing equipment. This applies to ships which are not covered under UR A1, i.e. for ships having 50 ≤ EN < 205. The mooring lines for ships with Equipment Number EN of less than or equal to 2000 are given in 2.1.1. For other ships the mooring lines are given in 2.1.2. Rec. 10 has been reviewed and updated with respect to operational practices being adopted by many owners, in particular, anchoring in deep and unsheltered waters.

14. Rec.147 (New Oct 2016):

A harmonised Type Approval Certificate Form is requested to be developed to define agreed contents to be contained and consequently to enable the TACs to be shown to any third parties without disclosure of critical information. Rec.147 contains the form which is a harmonised Type Approval Certificate of Internal Combustion Engine defining the information and particulars to be contained in the certificate.

15. Rec.10 (Corr.1 Dec 2016):

Rec.10 deals with the Anchoring, Mooring and Towing equipment. This applies to ships which are not covered under UR A1, i.e. for ships having 50 ≤ EN < 205. The mooring lines for ships with Equipment Number EN of less than or equal to 2000 are given in 2.1.1. For other ships the mooring lines are given in 2.1.2. As the referenced UR A3 is not yet published, the references to UR A3 are removed in this corrigendum.

16. Rec.75 (Rev.2 Dec 2016):

This document details the data requirements that have been developed to facilitate the exchange of class and statutory data by IACS Member Societies with flag state administrations. Two means of exchange are defined in this document Electronic exchange and Formats and Layout. The revision introduced changes in the table 1 and added Recommended protocols and other exchange issues.

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