

MARITIME SAFETY COMMITTEE
103rd session
Agenda item 7

MSC 103/INF.9
1 March 2021
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Pre-session public release:

GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

Status report addressing GBS audit observations common to IACS members

Submitted by IACS

SUMMARY

Executive summary: This document provides the updated status of the work which has been undertaken to address the IACS "common" observations as of 28 February 2021

Strategic direction, if applicable: Other work

Output: OW 7

Action to be taken: Paragraph 5

Related documents: MSC 102/24, MSC 102/INF.20; MSC 101/24, MSC 101/INF.13; MSC 100/20, MSC 100/6/5, MSC 100/6/10; MSC 99/22, MSC 99/INF.19; MSC 98/23, MSC 98/INF.7, MSC 98/INF.12, MSC 98/INF.14; MSC 96/5, MSC 96/5/1, MSC 96/5/1/Add.1 and MSC 96/5/9

Background

1 The Maritime Safety Committee (MSC), at its 101st session, having received the information contained in document MSC 101/INF.13, noted that IACS and its members would provide an update to MSC 102 on the progress made regarding their audit observations.

2 Although the Committee, at its 102nd session, received the information contained in document MSC 102/INF.20, the Committee agreed to consider at that session only the GBS audit reports and to postpone, inter alia, document MSC 102/INF.20 to a future session.

Updated reports on the status as on 28 February 2021

3 IACS has prepared updated reports on the status of work to address the "common" observations of both the initial verification and the first maintenance verification. These updated reports are provided in the annex to this document and are relevant to the work in progress. The latest updated status is indicated in "grey shading" to highlight all modifications.

4 The reports related to observations on the work which has been completed, are not included in this document and can be found in documents MSC 98/INF.12, MSC 99/INF.19, MSC 101/INF.13 and MSC 102/INF.20.

Action requested of the Committee

5 The Committee is invited to note the information provided.

ANNEX

STATUS REPORT ON ADDRESSING OBSERVATION

<p>Submitted to: IMO Secretariat Date: 28 February 2021</p>	<p>Observation No.: IACS/2015/FR1-8/OB/02</p>
<p>Corrective Action Plan: Annex 2 of MSC 96/5/1/Add.1</p>	<p>Audit Report: Annex 13, page 8 of MSC 96/5</p>
<p>Observation (extracted from the audit report – part only)</p> <p>Modern data show both an increase in mean significant wave height for the North Atlantic and that more extreme weather is being experienced in recent years, including the existence of rogue waves and the possible effect of climate change. However, IACS' Rec. No.34 that is based on old wave statistics was last revised in 2000/2001 and there is no evidence of monitoring since its adoption. While the TB report notes that significant discrepancies are observed between predictions by different databases, no studies have been submitted to show how new data have been assessed to conclude that none of the new databases could be used, nor has any sensitivity study been provided to assess the potential effect of the new data on motions and loads.</p> <p>[paragraphs omitted]</p> <p>The audit has not found sufficient justification that the wave data used in the rules properly represent North Atlantic conditions.</p> <p>Detailed Action Plan</p> <ol style="list-style-type: none"> 1. Periodical reviewing the available information on published or commercially available new wave data. 2. Updating the mathematical model and Technical Background Report using the information on new wave data when reliable data are available. 3. Updating the information contained in Rec. 34 on probabilities of occurrence of the sea states (scatter diagram) in the North Atlantic when reliable and accepted data are available. <p>Deliverables</p> <ol style="list-style-type: none"> 1) Detailed plan to periodically review available wave data, taking into consideration weather routing as required. The plan to determine how Rec. 34 can be updated and identification of the source(s) of necessary reliable wave data were completed in January 2018. 2) Revised IACS Rec. 34. A dedicated project team (PT) is working for using data obtained by the latest technology, this work will be finalized up to 2022. <p>Timescales</p> <p>The next status report will be submitted to the IMO at the appropriate juncture.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2015/FR1-8/OB/04
Corrective Action Plan: Annex 4 of MSC 96/5/1/Add.1	Audit Report: Annex 13, page 11 of MSC 96/5
<p>Observation (extracted from the audit report– part only)</p> <p>No benchmarking of reference values (values obtained by direct analysis) with experimental or service data has been found, as requested by the GBS audit standard 2.2.4.</p> <p>IACS replied 6 November 2014 that: "current CSR-OT and CSR-BC have been developed based on experiences from successful operation of ships and have been modified based on feedback from operational experience. This indicates current CSR-OT and CSR-BC already comprise service history data." However, the successful operation and operational experience referred to has not been reported as evidence of benchmarking to the audit.</p> <p>[paragraphs omitted]</p> <p>However, upon a direct question at the last meeting with IACS 7 May 2015, IACS could not provide evidence that procedures for a systematic collection of data to benchmark CSR-H is in place.</p> <p>Detailed Action Plan</p> <ol style="list-style-type: none">1. Development of a procedure for collection of experimental and service history data to benchmark CSR requirements.2. Validation and benchmarking of a method for determining the life-time ship motions and loads based on available experimental and service history data. <p>Deliverables</p> <ol style="list-style-type: none">1) IACS common procedure for the systematic collection of data to benchmark CSR requirements. <p>IACS decided to hold the discussion on a common procedure for collection of experimental and service history data to benchmark design loads in the CSR until the on-going work related to IACS/2015/FR1-8/OB/02 is completed.</p> <p>Timescales</p> <p>The next status report will be submitted to the IMO at the appropriate juncture.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

<p>Submitted to: IMO Secretariat Date: 28 February 2021</p>	<p>Observation No.: IACS/2015/FR1-8/OB/08</p>
<p>Corrective Action Plan: Annex 8 of MSC 96/5/1/Add.1</p>	<p>Audit Report: Annex 13, page 20 of MSC 96/5</p>
<p>Observation (extract from the audit report – part only)</p> <p>Statement of facts</p> <p>CSR-H Pt 1 Ch 10 Sec 2 [3.1.1] requires that "Main engines and thrust bearings are to be effectively secured to the hull structure by foundations of strength that is sufficient to resist the various gravitational, thrust, torque, dynamic, and vibratory forces which may be imposed on them."</p> <p>[paragraphs omitted]</p> <p>Neither the rule text nor the justification seem to provide full explanation of how the CSR-H consider the vibration levels that may damage or impair the ship structure, equipment or machinery according to GBS audit standard 3.2.1.11 and 3.3.10.</p> <p>In reply to this finding, IACS has further explained: "<i>During testing (sea trials) vibration levels will usually be considered and strengthening or other rectification will be required by the surveyor in cases where high vibration levels are identified.</i>"</p> <p>However, no references have been given to such requirements in the rules and no guidelines for surveyors on acceptable corrective measures have been submitted to the audit.</p> <p>Detailed Action Plan:</p> <ol style="list-style-type: none"> 1. Consider possible options for more prescriptive guidance or requirements for structure supporting machinery to determine what is effective and practical. Options will need to consider the variation in support requirements for different types of machinery. Further consider the observation holistically, taking into account the recommendations made by the audit teams together with the para 6 of MSC 96/5/9. 2. Consider the development of IACS Guidelines for Surveyors on acceptable corrective measures for vibration. Such guidelines will be written in order to address the need as suggested in the audit, and include: <ol style="list-style-type: none"> a) Locations to check; b) Corrective measures (local reinforcement, vibration analysis, dampers, change excitation frequency, etc.) <p>Deliverables</p> <ol style="list-style-type: none"> 1) Report of the study that addressed issues raised in the audit report. 2) IACS Guidelines, if considered to be necessary. <p style="padding-left: 40px;">IACS Rec 167 "Guidelines for the Identification of Vibration Issues and Recommended Remedial Measures on Ships" was published on the IACS Website in December 2020.</p> <p>Timescales</p> <p style="padding-left: 40px;">The outcome will be submitted to the IMO Secretariat as part of 2nd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2021.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2015/FR1-8/OB/10
Corrective Action Plan: Annex 10 of MSC 96/5/1/Add.1	Audit Report: Annex 13, page 25 of MSC 96/5
<p>Observation (extract from the audit report – part only)</p> <p>[paragraphs omitted]</p> <p>Limit standards for fabrication, fairness, alignment, welding, etc. are closely linked with the structural safety level adopted in the rules. Although, rules allow alternative standards, no guidance or criteria have been found for keeping the same safety level when accepting alternative standards.</p> <p>In a reply to the teams' early comments on this issue 6 November 2014, IACS replied: "<i>One should assume that other standards force shipbuilders to apply measures of ship construction accuracy not lesser than those defined in IACS Rec.47. Maintenance Team will be asked to reconsider wording of [5.1.2].</i>" In a later reply to our interim report 14 March 2015, this was changed to: "<i>The acceptance of another standard as an alternative to IACS Rec. 47 is left up to the individual Class Societies with IACS Rec. 47 as a reference document.</i>"</p> <p>However, neither of these interpretations "<i>not lesser than those defined in IACS Rec.47</i>" or "<i>with IACS Rec. 47 as a reference document.</i>" provide enough evidence to support IACS self-assessment about compliance with this audit standard since equivalence criteria have not been established in CSR-H and the consideration of this recommendation by the individual Class Societies cannot be predicted.</p> <p>Detailed Action Plan:</p> <ol style="list-style-type: none">1. Consider the development of an IACS Guideline for acceptance of other recognized standards:<ol style="list-style-type: none">a) Identify accepted recognized standards in order to develop, document and verify equivalency;b) Develop a procedure for accepting other standards;c) Develop acceptance criteria for accepting other standards. <p>Deliverables</p> <ol style="list-style-type: none">1) Report of the study that addressed issues raised in the audit report.2) IACS Guidelines, or updates to Recommendations as considered necessary. <p>IACS completed the study on the issues raised in the audit report and included the report of this study in IACS explanatory paper. In addition, IACS decided to revise UR Z23. The Rev.7 of UR Z23 was approved and published on the IACS Website in October 2020.</p> <p>Timescales</p> <p>The outcome will be submitted to the IMO Secretariat as part of 3rd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2022.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2015/FR1-8/OB/17
Corrective Action Plan: Annex 17 of MSC 96/5/1/Add.1	Audit Report: Annex 13, page 37 of MSC 96/5
<p>Observation (extracted from the audit report – part only)</p> <p>IACS notes that post-weld treatment is widely applied in industry to improve fatigue performance. The vast majority of welds enjoying this fatigue life credit will be located in: (a) void spaces (e.g. bulkhead lower and upper stools), for which there are no rules mandating coatings, and which enclose humid-salty air and must be considered a corrosive environment; and (b) ballast tanks (e.g. top side tanks, double bottom, etc.), where PSPC standards mandated by SOLAS require a coating design life of 15 years in "good" condition, where the definition of "good" allows a certain percentage of coating failure, thus not safeguarding corrosion-free conditions even in the first 15 years of a ship's life. [paragraph omitted]</p> <p>Furthermore, the post-weld treatment relaxation, requiring the presence of an effective coating, is also inconsistent with IACS's own Rules, which in Pt 1, Ch 1, Sec 2 [4.3.4] state that: "<i>No credit is given in the assessment of structural capability for the presence of coatings or similar corrosion protection schemes.</i>"</p> <p>Finally, the additional condition established in Pt 1 Ch 9 Sec 3 [6.4.1] that the benefit of post-weld treatment applies only in the absence of low cycle fatigue conditions, appears very difficult to predict and control during the design life.</p> <p>Detailed Action Plan</p> <ol style="list-style-type: none"> 1. Review relevant documents (Rule text and related Technical Background (TB) reports), taking into account the recommendations made by the audit teams together with the para 6 of MSC 96/5/9. 2. Consider void space and ballast tank coating provisions and their influence on fatigue life calculations. 3. Investigate how areas with low cycle fatigue loads have to be handled. 4. Consider the development of an inspection procedure to check on the soundness of coatings at post-weld treated critical locations, in service. 5. Make Technical Background clearer and/or make Rule Change Proposal as found necessary. <p>Deliverables</p> <ol style="list-style-type: none"> 1) Report on document review. 2) New IACS procedure for inspection of post-weld treated critical locations if found necessary. 3) Revised Technical Background documents and/or Rule Change as considered necessary. <p>The Rule Change was included in RCN1 to IACS CSR 2020 and relevant TB report will be published in due course.</p> <p>Timescales</p> <p>The outcome will be submitted to the IMO Secretariat as part of 2nd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2021.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2015/FR1-8/OB/20
Corrective Action Plan: Annex 20 of MSC 96/5/1/Add.1	Audit Report: Annex 13, page 42 of MSC 96/5
<p>Observation (extracted from the audit report – part only)</p> <p>The rule requirements on coating of cargo hold in bulk carriers do not specify target useful life or coating performance standard to be followed as required by 6.1.2.1.3-4.</p> <p>As an example of the relevance of this observation, note that while the fatigue assessment assumes target life and performance standards not inferior to those required by SOLAS for coatings in other spaces, no evidence of such requirements were found in the rules for coating required in CSR-H for cargo holds in bulk carriers.</p> <p>Detailed Action Plan:</p> <ol style="list-style-type: none">1. IACS will investigate coating requirements for the coating in the cargo holds of bulk carriers, or develop a standard to satisfy the IMO GBS requirements.2. Consultation with Owners / Operators / coating manufacturers and shipyards, will be undertaken to identify if there are any practical solutions for coating part, or all of bulk carrier cargo holds.3. Subsequent actions will depend on the initial investigation and consultation undertaken.4. The actions would depend on the outcome of the initial consultation with Owners / Operators / coating manufacturers and shipyards. If a consensus on an effective and practical way forward is identified, IACS will develop a coating requirement:<ul style="list-style-type: none">• Establish an IACS project team.• Consultation with various parties.• Update Technical Background documents and prepare appropriate Rule Change if found to be necessary. <p>Deliverables</p> <ol style="list-style-type: none">1) Summarized report. The outcome of consultations with the industry will be included in a new TB Report on "Coatings in cargo holds of bulk carriers".2) Coating requirement or UR for cargo holds of bulk carriers if considered to be necessary. IACS completed the study on the issues raised in the audit report and included the report of this study in IACS internal TB-report finalized in 2020. <p>Timescales</p> <p>The outcome will be available in 2nd package for the first three-year cycle GBS maintenance of verification in March 2021.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2015/FR9-15/OB/02
Corrective Action Plan: Annex 23 of MSC 96/5/1/Add.1	Audit Report: Annex 14, page 8 of MSC 96/5
<p>Observation (extracted from the audit report – part only)</p> <p>Objective evidence</p> <p>There is evidence that concept of rule formulation stated in the Technical Background Document is not uniformly adopted while formulating the rules.</p> <p>[paragraphs omitted]</p> <p>With regard to the inclusion of, or reference to, the IMO requirements in the Rules as per EC 9.3.6, the concept for rule formulation documented in the TB Document (2.1.2, p.990/1810 of CP2) is not consistently adopted during the formulation of rules. In some cases the references are made as per the concept mentioned in the TB Document, while in certain other cases, similar references (or inclusion) are not made.</p> <p>Detailed Action Plan</p> <ol style="list-style-type: none">1. After identifying structural requirement content which is contained in the various IMO instruments, analyze whether the requirements will be kept in CSR BC & OT or not. The Rules and TB will be amended according to following principle:<ol style="list-style-type: none">a) The requirements from the various IMO instruments which are addressed in CSR BC & OT are to be identified.b) Where the study determines IMO adequately addresses the requirement and it seems appropriate to remove the requirement from the Rules then this shall be proposed.c) The Rule requirements based on IMO instruments, which are necessary to be kept in CSR BC & OT, are to be listed. <p>Deliverables</p> <ol style="list-style-type: none">1) A report about the analysis undertaken.2) Rule Change and/or TB update as considered necessary. The Rule Change was included in RCN1 to IACS CSR 2020 and related TB rule reference will be published in due course. The related IACS internal TB report was finalized in January 2021. <p>Timescales</p> <p>The outcome will be submitted to the IMO Secretariat as part of 2nd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2021.</p>	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2018/Maint/ OB/2
Improvement Action Plan: Annex 2 of MSC 100/6/10	Audit Report: Annex, page 12 of MSC 100/6/5
Improvement Action to address IACS/2018/Maint/OB/2 As shown in page 12 of the Annex to MSC 100/6/5, IACS will develop the Technical Background document to justify that the acceptable limits of yielding have been considered in revising the requirement about net connection area of connecting bracket (Pt 2, Ch 1, Sec 3, [1.4.2]). Deliverables 1) New Technical Background document. IACS work to address this observation is in progress. Timescales The next status report will be submitted to the IMO at the appropriate juncture.	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2018/Maint/ OB/3
Improvement Action Plan: Annex 2 of MSC 100/6/10	Audit Report: Annex, page 17 of MSC 100/6/5
Improvement Action to address IACS/2018/Maint/OB/3 As shown in page 18 of the annex to MSC 100/6/5, IACS will improve Technical Background documentation and explicitly specify in the rules the protective measures to be taken in order to support and clarify the modified rule requirements. Deliverables 1) Revised Technical Background documents such as TB-Report "Fatigue Assessment on Hatch Corner" and Rule Change. The revised TB-Report was published and Rule Change based on the TB-Report was included in RCN1 to IACS CSR 2020. Timescales The outcome will be submitted to the IMO Secretariat as part of 2nd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2021.	

STATUS REPORT ON ADDRESSING OBSERVATION

Submitted to: IMO Secretariat Date: 28 February 2021	Observation No.: IACS/2018/Maint/ OB/4
Improvement Action Plan: Annex 2 of MSC 100/6/10	Audit Report: Annex, page 22 of MSC 100/6/5
Improvement Action to address IACS/2018/Maint/OB/4 As shown on page 23 of the annex to MSC 100/6/5, IACS will revise the rules in order to ensure consistency in definitions of NDT/NDE. Deliverables 1) Revised UR Z23 and/or IACS CSR for BC&OT. The Rev.7 of UR Z23 was approved and published on the IACS Website in October 2020. Timescales The outcome will be submitted to the IMO Secretariat as part of 3rd "IACS common package" for the first three-year cycle GBS maintenance of verification in March 2022.	