INTERNATIONAL MARITIME ORGANIZATION

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MARITIME SAFETY COMMITTEE
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Agenda item 5

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# GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

## Proposed amendments to the Guidelines for Ship Construction File implementation

## Balancing design transparency and intellectual property protection

**Submitted by CESA, ICS, INTERCARGO, INTERTANKO, BIMCO, OCIMF and IACS**

**SUMMARY**

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|---|---|
| ***Executive summary:*** | This document describes a detailed proposal to amend the draft Guidelines for the Information to be included in a Ship Construction File (SCF), Guidelines for verification of conformity with goal-based ship construction standards with a view to providing both design transparency and intellectual property protection precautions. |
| ***Strategic direction:*** | 10 |
| ***High-level action:*** | 10.0.1 |
| ***Planned output:*** | 10.0.1.2 |
| ***Action to be taken:*** | Paragraph 3 |
| ***Related documents:*** | MSC 87/5/1, MSC 86/5, MSC 86/WP.5, MSC 86/5/7, MSC 86/INF.10 and MSC 87/5/4 |


1 This document is to supplement the cross industry submission MSC 87/5/4 which has proposed a "SCF onboard – SCF Supplement ashore" model to implement the GBS design transparency requirements.

2 Taking the "SCF onboard – SCF Supplement ashore" model into consideration, the co-sponsors would like to propose amending the relevant MSC resolutions, including the Guidelines for verification of conformity with goal-based ship construction standards for bulk carriers and oil tankers (as set out in the annex to document MSC 87/5/1), and the MSC circular on Guidelines for the information to be included in a Ship Construction File (as set out in annex 4 to document MSC 86/5), as set out in the annex, so that the goals of safe operation and intellectual property protection can be achieved.

**Action requested of the Committee**

3 The Committee is invited to consider the annexed proposals presented and take action as appropriate.

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**ANNEX 1**

**AMENDMENTS TO THE DRAFT MSC RESOLUTION**

**GUIDELINES FOR VERIFICATION OF CONFORMITY WITH GOAL-BASED SHIP CONSTRUCTION STANDARDS FOR BULK CARRIERS AND OIL TANKERS**

**ANNEX**
**GUIDELINES FOR VERIFICATION OF CONFORMITY WITH THE INTERNATIONAL GOAL-BASED SHIP CONSTRUCTION STANDARDS FOR BULK CARRIERS AND OIL TANKERS**

**PART B**
**INFORMATION/DOCUMENTATION REQUIREMENTS AND EVALUATION CRITERIA**

## 10 Design transparency

### *10.1 Statement of intent*

Confirm that the design and construction process is transparent, and that design information is clearly stated and made available to the classification society, the owner and the flag State, with due consideration to intellectual property rights.

### *10.2 Information and documentation requirements*

~~[~~10.2.1 Description of how the rules require design specific information ~~[~~as required by SOLAS regulation ...~~] [procedures for updating the SCF]~~ to be included in the Ship Construction File (SCF), including:

~~[~~.1 Areas requiring special attention throughout the ship's life.

.2 All design parameters limiting the operation of a ship.

.3 Any alternatives to the rules, including structural details and equivalency calculations.

.4 ~~Approved and stamped~~ "As built" drawings and information which are verified to incorporate all alterations approved by the classification society or flag State during the construction process.

.5 Procedures for updating the ~~Ship Construction File~~ SCF ~~over the lifetime of the ship~~ throughout the ship's life.

.6 Net (renewal) scantlings for all the structural ~~members~~ constituent parts.

.7 Minimum hull girder section modulus along the length of the ship which has to be maintained throughout the ~~life of the ship~~ ship's life.~~]]~~

10.2.2 Description of the process, requirements and criteria ~~for~~ to be followed when assessing, documenting and communicating alternative methods as being equivalent to specific rule requirements.

10.2.3 Description of procedures for ensuring that all relevant design and construction information, including correspondence exchanged between shipyard and the recognized organization during the construction process, is available to the owner and Flag State ~~during the construction process~~.

*10.3 Evaluation criteria*

10.3.1 Do the rules establish requirements for including and updating design specific and critical information, including limitations, in the ~~Ship Construction File~~ SCF?

10.3.2 Do the rules establish clear criteria and techniques for assessing alternative methods used in the design? Are all equivalencies documented in the ~~Ship Construction File~~ SCF and made available to the owner and/or flag State?

10.3.3 Do the rules establish procedures to provide all relevant design and construction information, including correspondence exchanged between shipyard and recognized organization during the construction process, e.g., on net scantlings, corrosion margins used, etc., to be made available to the owner and flag State ~~during the construction process~~?

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**ANNEX 2**

**AMENDMENTS TO THE DRAFT MSC CIRCULAR**

**GUIDELINES FOR THE INFORMATION TO BE INCLUDED IN A SHIP CONSTRUCTION FILE**

## 1 Purpose

The aim of these Guidelines is to provide additional guidance on the content of the Ship Construction File (SCF) to be provided upon delivery of new bulk carriers and oil tankers in accordance with SOLAS regulation II-1/3-10.4, kept on board the ship and/or ashore and updated as appropriate throughout the ship's life in order to facilitate safe operation, maintenance, survey, ~~and~~ repair and emergency measures. It is to be noted that parts of the content of the SCF may be subject to various degrees of restricted access and that such documentation may be appropriately kept ashore as indicated in this guidance.

## 2 Definition

*Tier II items* means the functional requirements included in the International Goal-based Ship Construction Standards for Bulk Carriers and Oil Tankers, adopted by the Maritime Safety Committee by resolution MSC.~~[~~(.)~~]~~.

## 3 Scope of information

The ~~Ship Construction File~~ SCF should include the list of documents constituting the ~~Ship Construction File~~ SCF and ~~following~~ all information listed in the annex, which is required for a ship's safe operation, maintenance, survey, repair and in emergency situations. Details of ~~the~~ specific information ~~below~~ that is not considered to be critical to safety might be included directly or by reference to other documents.

When developing an SCF, all of the columns in the table at annex to this circular should be reviewed to ensure that all necessary information has been provided.

It may be possible to provide information listed in the annex under more than one Tier II provision as a single item within the SCF, for example, the Coating Technical File required by PSPC is relevant for both "Coating Life" and "Survey during Construction".

## 4 Availability and storage

The SCF should remain with the ship and, in addition, be available to its classification society and flag State throughout the ship's life. Where information not considered necessary to be on board is stored ashore, procedures to access this information should be specified in the onboard SCF. The intellectual property provisions within the SCF should be duly complied with.

## 5 Updates

The SCF should be updated throughout the ship's life at any major event, including, but not limited to, the substantial repair and conversion, or any modification to the ship structure.

ANNEX

**Table 1 List of information to be included in the Ship Construction File (SCF)**

| Tier II items | | ~~Explicit~~ Information to be ~~recorded~~ included | Further explanation of the content | Sample documents | Normal Storage Location |
|---|---|---|---|---|---|
| ***DESIGN*** | | | | | |
| 1 | Design Life | • Assumed design life in years | • Statement or note on Midship Section | • SCF-specific<br>• Midship Section | on board ship<br>on board ship |
| 2 | Environmental conditions | • Assumed environmental conditions | • Statement referencing data source or Rule (specific rule cite and data) or;<br>• In accordance with Rule (date and revision) | • SCF-specific | on board ship |
| 3 | Structural Strength | | | | |
| 3.1<br><br><br>3.2<br><br><br><br>3.3<br><br><br><br>3.4 | General Design<br><br>Deformation and Failure Modes<br><br>Ultimate Strength<br><br><br>Safety Margins | • Applied Rule (date and revision)<br>• Applied alternative to Rule<br>• Calculating conditions and results;<br>• Assumed loading conditions<br>• Operational restrictions due to structural strength<br>• Strength calculation results<br>• Gross hull girder section modulus<br>• Minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life<br>• Gross scantlings of structural constituent parts ~~items~~ | • Applied design method alternative to Rule and subject structure(s)<br>• Allowable loading pattern<br>• Maximum allowable hull girder bending moment and shear force<br>• Maximum allowable cargo density or storage factor<br>• Bulky output of strength calculation<br>• Plan showing highly stressed areas prone to yielding and/or buckling<br>• Structural drawings<br>• Rudder and Stern Frame<br>• Structural details of typical members | • SCF-specific<br>• Capacity Plan<br>• Loading Manual<br>• Trim and Stability Booklet<br>• Loading Instrument Instruction Manual<br>• ~~[~~Operation and Maintenance Manuals~~]~~<br>• General Arrangement<br>• Key Construction Plans<br>• Rudder and Rudder Stock<br>• Structural Details<br>• Yard Plans<br>• Lines Plan or Equivalent<br>• Dangerous area plan<br>• Strength Calculation<br>• Areas prone to yielding and/or buckling | on board ship<br>on board ship<br>on board ship<br>on board ship<br>on board ship<br><br>on board ship<br><br>on board ship<br>on board ship<br>on board ship<br>on board ship<br>on shore archive<br>on board ship<br>on shore archive<br>on board ship<br>on board ship |

| Tier II items | | ~~Explicit~~ Information to be ~~recorded~~ included | Further explanation of the content | Sample documents | Normal Storage Location |
|---|---|---|---|---|---|
| | | • Net scantlings of structural constituent parts ~~items~~<br>• Hull form | • Hull form information indicated in Key Construction Plans<br>• Hull form data stored within an onboard computer necessary for trim and stability and longitudinal strength calculations | | |
| 4 | Fatigue Life | • Applied Rule (date and revision)<br>• Applied alternative to Rule<br>• Calculating conditions and results;<br>• Assumed loading conditions<br>• Fatigue life calculationi results | • Applied design method alternative to Rule and subject structure(s)<br>• Assumed loading conditions and rates<br>• Bulky output of fatigue life calculation<br>• Plan showing areas prone to fatigue | • SCF-specific<br>• Structural Details<br>• Fatigue life calculation<br>• Areas prone to fatigue | on board ship<br>on board ship<br>on shore archive<br>on board ship |
| 5 | Residual Strength | ~~• Assumed conditions~~<br>• Applied Rule (date & revision) | | • SCF-specific | on board ship |
| 6 | Protection against Corrosion | | | | |
| 6.1<br><br><br>6.2 | Coating Life<br><br><br>Corrosion Addition | • Coated areas and target coating life and other measures for corrosion protection in holds, cargo and ballast tanks and other structure-integrated deep tanks<br>~~• Coating specification and selected anti corrosion measures~~<br>• Specification for coating and other measures for corrosion protection in holds, cargo and ballast tanks and other structure-integrated deep tanks | • Plans showing areas prone to excessive corrosion | • SCF-specific<br>• Coating Technical File required by PSPC<br>• Key Construction Plans<br>• Areas prone to excessive corrosion | on board ship<br>on board ship<br><br>on board ship<br>on board ship |

| Tier II items | | ~~Explicit~~ Information to be ~~recorded~~ included | Further explanation of the content | Sample documents | Normal Storage Location |
|---|---|---|---|---|---|
| | | • ~~Corrosion addition and wastage allowance~~<br>• Gross scantlings of structural constituent parts ~~items~~<br>• Net scantlings of structural constituent parts ~~items~~ | | | |
| 7 | Structural Redundancy | ~~• Assumed conditions~~<br>• Applied Rule (date and revision) | | • SCF-specific | on board ship |
| 8 | Watertight and weathertight integrity | • Applied Rule (date and revision)<br>• Key factors for watertight and weathertight integrity | • Details of equipment forming part of the watertight and weathertight integrity | • SCF-specific<br>• Structural details of hatch covers, doors and other closings integral with the shell and bulkheads | on board ship<br>on board ship |
| 9 | Human Element Considerations | • List of ergonomic design principles applied to ship structure design to enhance safety during operations, inspections and maintenance of ship | | • SCF-specific | on board ship |
| 10 | Design Transparency | ~~•List of alternate methods used to demonstrate equivalency to the rules~~<br>• Applied Rule (date and revision)<br>• Applicable industry standards for Design Transparency and IP protection<br>• Reference to part of SCF information kept ashore | | • Summary, location and access procedure for part of SCF information on shore<br>• Intellectual property provisions | on board ship<br>on board ship |

| Tier II items | | ~~Explicit~~ Information to be ~~recorded~~ included | Further explanation of the content | Sample documents | Normal Storage Location |
|---|---|---|---|---|---|
| ***CONSTRUCTION*** | | | | | |
| 11 | Construction Quality Procedures | • Applied construction quality standard | • Recognized national or international construction quality standard | • SCF-specific | on board ship |
| 12 | Survey during Construction | • Survey regime applied during construction (to include all owner and class scheduled inspections during construction)<br>• Information on Non Destructive Examination | • Applied Rules (date and revision)<br>• Copies of certificates of forgings and castings welded into the hull | • SCF-specific<br>• Tank testing Plan<br>• Non Destructive Testing Plan<br>• Coating Technical File required by PSPC | on board ship<br>on board ship<br>on board ship<br>on board ship |
| ***IN-SEVICE CONSIDERATIONS*** | | | | | |
| 13 | Survey and Maintenance | • ~~List of~~ Maintenance plans specific to the structure of the ship where higher attention ~~to structural fatigue and corrosion~~ is called for<br>• Preparations for survey<br>• Gross hull girder section modulus<br>• Minimum hull girder section modulus along the length of the ship to be maintained throughout the ship's life<br>• Gross scantlings of structural constituent parts ~~items~~<br>• Net scantlings of structural constituent parts ~~items~~<br>• Hull form | • Plan showing highly stressed areas prone to yielding, buckling, fatigue and/or excessive corrosion<br>• Arrangement and details of all penetrations normally examined at drydocking<br>• Details for drydocking<br>• Details for in-water survey<br>• Hull form information indicated in Key Construction Plans | • SCF-specific<br>• Docking Plan<br>• Key Construction Plans<br>• Rudder and Rudder Stock<br>• Structural Details<br>• Yard Plans<br>• Lines Plan or Equivalent<br>• Coating Technical File required by PSPC<br>• Operation and Maintenance Manuals (e.g., Hatch covers and doors)<br>• Dangerous area plan<br>• Ship Structure Access Manual | on board ship<br>on board ship<br>on board ship<br>on board ship<br>on shore archive<br>on shore archive<br>on board ship<br>on board ship<br>on board ship<br>on board ship<br>on board ship |

| Tier II items | | ~~Explicit~~ Information to be ~~recorded~~ included | Further explanation of the content | Sample documents | Normal Storage Location |
|---|---|---|---|---|---|
| 14 | Structural Accessibility | ~~• Ship Structure Access Manual (SOLAS regulation II-1/3-6) covering both cargo and other areas~~<br>• Means of access to holds, cargo and ballast tanks and other structure-integrated deep tanks | • Plans showing arrangement and details of means of access | • Ship Structure Access Manual<br>• Means of Access to Other Structure-integrated Deep Tanks | on board ship<br>on board ship |
| ~~[~~*RECYCLING CONSIDERATIONS*~~]~~ | | | | | |
| ~~[~~15~~]~~ | ~~[~~Recycling~~]~~ | ~~[~~• Identification of all materials that were used in construction and may need special handling due to environmental and safety concerns.~~]~~ | ~~[~~• List of materials used for the construction of the hull structure~~]~~ | ~~[~~• SCF-specific~~]~~ | on board ship |

Note:

- "SCF-specific" means Documents to be developed specially to meet the specific requirements of this guidelines.
- "Key Construction Plans" means such as Midship section, Main O.T. & W.T. Transverse Bulkheads, Construction Profiles/Plans, Shell Expansions, Forward and Aft Sections in Cargo Tank (or Hold) Region, Engine Room Construction, Forward Construction and Stern Construction drawings.
- "Yard Plans" means a full set of structural drawings, which include scantling information of all structural members.
- "Hull form" means a graphical or numerical representation of the geometry of the hull. Examples would include the graphical description provided by a Lines Plan and the numerical description provided by the hull form data stored within an onboard computer.
- "Lines Plan" means a special drawing which is dedicated to show the entire hull form of a ship.
- "Equivalent (to Lines Plan)" means a set of information of hull form to be indicated in Key construction Plans for SCF purposes:

  Sufficient information should be included in the drawings to provide the geometric definition to facilitate the repair of any part of the hull structure.
- "Normal Storage Location" means a standard location where each SCF information item should be stored. However, those items listed as being on board in the table above should be on board as a minimum to ensure that they are transferred with the ship on a change of owner.
- "Shore archive" is to be operated in accordance with applicable international standards.