INTERNATIONAL MARITIME ORGANIZATION

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MARITIME SAFETY COMMITTEE
86th session
Agenda item 5

MSC 86/5/4
24 February 2009
Original: ENGLISH

GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

Alternative to the GBS verification process

Submitted by Canada, Norway and Sweden

SUMMARY

Executive summary:	This document outlines an alternative to the GBS verification process, Tier III, according to the invitation by the Committee at its eighty-fifth session
Strategic direction:	10
High-level action:	10.1.1
Planned output:	10.1.1.1, 10.1.1.2
Action to be taken:	Paragraph 23
Related documents:	MSC 85/5/1, annex 1, MSC 85/26 and MSC 85/WP.5

Introduction

1 The Committee, at its eighty-fifth session, did not approve the proposed amendments to SOLAS with respect to GBS (MSC 85/WP.5, annex 1 and MSC 85/WP.5/Add.1, annex 2). One reason for this was expressed as uncertainties regarding the verification process with respect to resources and costs, Tier III (MSC 85/WP.5/Add.1, annex 3). In paragraph 5.71.3 of the report of MSC 85 (MSC 85/26), the Committee invited Member Governments and international organizations to submit proposals to MSC 86, in particular regarding an alternative verification process based on self-assessment only. This submission proposes an alternative verification process.

Background

2 The initial submission from the Bahamas, Greece and IACS proposing a five-tier system for GBS (MSC 78/6/2) did not consider verification of rules. The original Tier III aimed at verification of ship compliance with GBS.

3 The process for verification of Tier IV rules was introduced at MSC 81 and has in principle remained unchanged since then. However, it has always been anticipated that this process should be reassessed after the trial application by the Pilot Panel. Several delegations have pointed out the need for validating the cost-benefit ratio of the verification process when the Pilot Project had been finalized.

General considerations

4 During MSC 85, the majority of the speakers expressed concerns regarding the verification process in that it would be too complicated and not desirable for IMO to handle, with respect to the procedure, cost and resources. Others expressed concerns on legal aspects, etc.

5 MSC has decided to limit the first (short-term) step of the GBS initiative only to bulk carriers and oil tankers above a certain size (>150m). The reason for this was to make the scope manageable before it is expanded to other ship types and other areas. If a mandatory verification procedure, which is already at the absolute limit of manageability with the current limited scope, is introduced at this stage, then it will actually hinder any further progress and expansion of GBS.

6 To try to ensure that IMO uses resources effectively, this initiative proposes that a self-assessment and documented rule development process should be used instead of the verification process that has been applied during the trial period. The introduction of formal verification of rules developed outside of IMO will allow the Organization to act when appropriate and necessary. Therefore, for the sake of efficiency, the focus should be on having a transparent rule development process and monitoring the effectiveness of rules.

7 The self-assessment and documented rule development process is intended to:

.1 ensure transparent technological and state-of-the-art development of classification rules for the benefit of safety at sea;

.2 ensure an efficient use of resources, especially in view of the burden the current proposal would place on IMO with respect to resources and the anticipated number of appropriate and technically competent experts;

.3 relieve IMO of the responsibility of the review process; and

.4 ensure that the rule developer remains solely responsible for the content and effect of their rules.

8 IMO should, at this stage, prioritize between having all structural rules for ships under the GBS framework in a reasonable time **or** having a limited number of ship types under GBS at a huge cost and long implementation time, with possibly, but not necessarily, slightly higher quality.

Practical considerations

Cost

9 The estimate presented by the Secretariat (MSC 85/WP.3) indicates an external cost in the order of US$300,000 for one Group of Experts verifying one set of structural rules. For the first very limited scope covered by IACS CSR, the total initial cost will probably be in the order of ten times higher, to which should be added the cost for the classification societies, the cost of maintenance and the administrative costs. If the scope of GBS should be expanded to all structural rules, which we think it should, the cost may be multiplied with another factor 100 or more. The huge cost involved may effectively prohibit development of new rules.

Expert resources

10 The credibility of an independent group of experts performing a detailed verification that may end up with a non-conformity recommendation will certainly be questioned. It is highly unlikely that it is possible to scrutinize the work of hundreds of experts done over several years

with a handful of other experts in just a few weeks. The availability, number and quality of such independent experts is most likely not sufficient to manage the verification in a reasonable time frame. It is also uncertain if their time will be available to IMO. Furthermore, will it be possible to resolve conflict of interest issues?

Legal aspects

11 Who will be responsible for the rules? An expert verification by IMO may be taken as justification for classification societies to waive their responsibility. Many strongly believe that the rule developer must have the responsibility for a set of rules to comply with IMO instruments. Instead, IMO should only assess their self-assessment and the rule developing process and have the possibility to perform an audit based on reasons explained below. This will be similar to the self-assessment of flag State performance combined with the framework and procedures for the Voluntary IMO Member State Audit Scheme described in resolutions A.912(22) and A.974(24).

Principles

12 This proposed approach is in line with the performance based methodology, including the monitoring and audit, in contrast to detailed inspections and a prescriptive regime.

An alternative verification/justification process

13 The process drafted below shall, as far as possible, be similar to the process of developing mandatory regulations within IMO. The GBS process, including regular monitoring, should step by step be equally applied to other ship types and other areas of safety, including those directly under the responsibility of IMO.

Initial procedure

14 A detailed documentation package, including a self-assessment by the rule developer, should be the basis of the IMO assessment and audit process. The documentation proposed in the Pilot Panel report (MSC 85/5/1, annex 1, part A, paragraph 3), would still be suitable as a basis for a submission, complemented by a rule development process, as further explained in annexes 1 and 2 of this submission.

15 Submitting the documentation package:

.1 The documentation package should be submitted to IMO (MSC or DE Sub-Committee) and should be the basis for an initial audit. When GBS are adopted, there should be a permanent item on the agenda of the Committee or Sub-Committee. In general, the procedural and the self-assessment part of the package would need to be reviewed to ensure that the rule development procedure has been performed according to a given standard[1] (see annex 2).

.2 The documentation package will be reviewed by an audit team – at the premises of the rule developer. An IMO audit team should consist of three to four persons, whereby the team members would be nominated by the Secretary-General from a pool of auditors proposed by the Member States. Travel and a daily subsistence allowance should be covered by the rule developer, whilst the nominating State

[1] Standard to be developed by the Organization.

proposing the auditor would cover the auditors' normal salary cost. The required competences of the auditors are formulated in annex 1. The audit team may require that findings need a third part verification of technical details in the rules. Such costs will be on the rule developer.

16 The MSC evaluates the audit and expresses assent on whether the documentation is sufficient and covers the scope of GBS and whether the rule development procedures are found to be adequate.

17 In general, all necessary information required in order to justify the rules should be public and available to all IMO parties. However, any rule developer may declare intellectual property rights (on parts of the information) and this should be respected by having procedures that prevent parts of the information being published without permission by the original rule submitter.

Maintenance procedure

18 In case the rule developer amends any rules which renders the earlier information sent to IMO out of date, such amendments and their justification shall be reported. When necessary, a supporting analysis of structural failures on ships built according to the rules also needs to be reported. When no amendments to the rules have occurred, a report to that effect shall be sent to IMO on a regular basis – such as yearly or biannually.

19 IMO shall keep a public list of rules that have been given assent and rules that are under reconsideration. A set of rules that has not been monitored and reported for a period of five years shall automatically be marked as non-compliant.

20 IMO should aim to audit 10% of all rules on the list mentioned in paragraph 19 annually.

21 If, in addition, further justification is needed for safety reasons, a renewed audit/assessment of a set of rules, or parts thereof, may be initiated.

Costs and resources

22 The procedure proposed with an initial audit is simple and very cost-effective. The resources needed will be a pool of approximately 30 experts. Initially, there will be quite a few audits per year, the number of which may be gradually reduced unless a real need emerges. Each audit will take about two weeks including preparation, audit and reporting. The external cost will be travel and daily subsistence allowance for four persons. The cost for validating a set of rules will be significantly lower with this scheme, i.e. US$50,000 to 60,000 compared with US$300.000. The pool of experts will also most probably be available for this shorter engagement, i.e. two instead of five to six weeks. The number of experts involved in each set of rules is reduced from five to 11 to three to four persons. The intellectual property rights (IPR) of the rule developer will also be easier for IMO to handle.

Action requested of the Committee

23 The Committee is invited to consider the proposed alternative assessment and assent process described in principle in paragraphs 13 to 22, which is described more in detail in annex 1, and take action as appropriate.

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ANNEX 1

GUIDELINES FOR VERIFICATION OF COMPLIANCE WITH GOAL-BASED NEW SHIP CONSTRUCTION STANDARDS

(This annex is based on document MSC 85/WP.5/Add.1, annex 3, which results from the changes made at MSC 85 to the verification process developed by the Pilot Panel (MSC 85/1/1, annex 1).)

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

Introduction

1 The Organization has established under the SOLAS Convention (resolution MSC...(...)) International goal-based ship construction standards for bulk carriers and oil tankers (hereinafter referred to as the Standards) (resolution MSC...(…)) to ensure that ships are constructed in such a manner that, when properly operated and maintained, they could remain safe for their design life. The Standards also ensure that all parts of a ship can be easily accessed to permit proper inspection and ease of maintenance.

2 These Guidelines provide the instruments necessary for demonstrating, verifying and assessing that the associated hull construction rules and regulations for bulk carriers and oil tankers of a Rule developer comply with the Standards.

3 The Guidelines are composed of two parts:

.1 Part A establishes the procedures to be followed in order to verify by the rule developer and assess by IMO that the rules satisfy the Standards. It includes sections on initial audit and maintenance procedure for the rules. Additionally, part A describes the procedures for establishing an audit team to conduct an initial audit and a maintenance procedure of the rule~~s~~ developer.

.2 Part B provides detailed guidance to assist the Submitter of rules in the process of verifying that the rules comply with the Tier II functional requirements of the Standards. This will also be an essential document for the audit team during initial audit.

Definitions

4 For the purpose of verification of compliance and assessment, the following definitions apply:

.1 *Administration* means [the Government of the State whose flag the ship is entitled to fly].

.2 *Convention* means the International Convention for the Safety of Life at Sea, 1974, as amended.

.3 *Organization* means the International Maritime Organization.

.4 *Rules* means regulations for hull design and construction of bulk carriers and/or oil tankers operating in unrestricted worldwide service established under the Convention.

.5 *Secretary-General* means the Secretary-General of the International Maritime Organization.

.6 *The Standards* means the International goal-based ship construction standards for bulk carriers and oil tankers.

PART A
VERIFICATION PROCESS

Scope of verification

1 This part establishes the procedures to be followed in order to verify, assess and express assent that ship construction rules for bulk carriers and oil tankers satisfy the International goal-based ship construction standards for bulk carriers and oil tankers (resolution MSC…(...)) established under the Convention. It includes sections on initiation and maintenance procedures and the establishment of an audit team.

Initiation procedure

Initiation

2 Any Rule Developer who wishes to have their ship construction rules verified as complying with the Standards (hereinafter referred to as the Submitter) should initiate the process with a letter to the Secretary-General [MSC], requesting such verification. This should be accompanied by a supporting letter from an Administration that has recognized the Submitter.

3 The Secretary-General [MSC] will notify the submitter of his [its] decision to accept or reject the request, and if accepted: 1) the schedule for the submission of the document package and submitter's signed self-assessment; 2) a preliminary plan for the initial audit; 3) the audit team to review their submission and the due date for the documentation package (see paragraph 5). If the request is rejected, the Secretary-General [MSC] will include the reason for doing so.

4 The Submitter may withdraw his application at any time.

Submission

5 The Submitter should provide a technical documentation package for review in hard copy ([…] copies) and in electronic form in English including:

.1 The Rule Development Process according to a given standard[2].

.2 The published set of rule to be verified as complying with the Standards.

[2] Standard to be developed by the Organization.

.3 All items listed under information and documentation requirements in part B of these Guidelines which are not included in paragraph 5.2 above and a confirmation that they are covered by the Submitter's internal quality management system.

.4 A duly signed self-assessment, addressing in detail all items listed under information and documentation requirements and evaluation criteria in part B of these Guidelines.

.5 A clear indication of any instance where a functional requirement or portions of it are satisfied by IMO mandatory instruments that are not part of the submitted rules (for example, SOLAS or MARPOL requirements).

.6 Any other documentation which in the Submitter's opinion may assist the audit team (as defined in paragraph 6).

.7 A completed Submission Template (see appendix 1).

.8 A clear indication of any confidential and/or proprietary information submitted with the documentation package.

Audit team

6 A team of auditors established under the auspices of the Maritime Safety Committee will audit the submitter to verify that submitted rules comply with the Standards established under the Convention. The team will serve as an independent audit team of technical experts, who are not considered to be representing any Member State or organization. The team should consist of three to four members, depending on the complexity of the submission(s).

7 Administrations and non-governmental organizations with consultative status in the Organization may nominate individuals for inclusion in a list of auditors maintained by the Secretary-General from which the members of the audit team will be selected. Nominations should be provided to the Secretary-General and should include curriculum vitae.

8 The members of the audit team will be selected by the Secretary-General as needed from the list of experts, giving due consideration to the qualifications listed in paragraph 9 to ensure appropriate representation and expertise for the specific rules being considered. Additionally, the Secretary-General will select one of the members of the team to be responsible for overall coordination. Team members should not have any conflict of interest relating to the rules being audited.

9 Nominees should have adequate knowledge of and experience in ship structural design and construction, the Standards and classification society rules and rule development and be able to correctly interpret the rules for correlation with relevant regulatory requirements. Additionally, nominees should satisfy at least some of the following requirements:

.1 engineering degree in naval architecture and/or structural engineering;

.2 scientific or engineering knowledge of technical subjects addressed in ship structural standards including strength of materials, structural analysis, fatigue analysis, hydrodynamics and load calculations, and structural reliability;

.3 design, construction or operating experience with the type of ship addressed by the ship rules being verified;

.4 knowledge of ship safety construction requirements including SOLAS requirements and industry standards, guidelines and practices;

.5 knowledge of environmental protection requirements related to ship structures;

.6 knowledge and experience in survey, inspection and maintenance of ship structures;

.7 knowledge and experience in ship building and ship construction practices;

.8 knowledge and experience in structural reliability;

.9 knowledge and experience in auditing; and

.10 research experience in any of the areas in paragraphs 9.1 to 9.9.

10 Each team member should sign a confidentiality agreement with the Secretary-General of the Organization, stating that they will not disclose any proprietary information that is provided to them for the purpose of verifying rules, with the exception of the documentation required for the interim or final reports. If requested by the rule developer/classification society, the auditor may also in some cases have to sign a confidentiality agreement with the rule developer/ classification society.

11 The audit team should conduct their work through a combination of both correspondence and in-person deliberations.

12 The audit team should consider the need for transparency throughout their deliberations.

13 The Secretary-General will provide the audit team with adequate administrative assistance to support the verification process, including a [permanent] secretary.

PART B

INFORMATION/DOCUMENTATION REQUIREMENTS AND EVALUATION CRITERIA

(This part of the annex is based on document MSC 85/WP.5/Add.1, annex 3, part B, which results from the changes made at MSC 85 to the verification process developed by the Pilot Panel (MSC 85/1/1, annex 1).)

INTRODUCTION

1 This part provides detailed information and documentation requirements and evaluation criteria to assist the rule submitter through the process of verifying that the rules comply with the Tier II functional requirements of the Standards, as outlined in part A. This will also be an essential document for the audit team during initial audit. It includes a statement of intent, information and documentation requirements, and evaluation criteria for each Tier II functional requirement.

2 The statement of intent links Tier II functional requirements to Tier III verification criteria by providing an overview of what the verification of the particular functional requirement should achieve.

3 The evaluation criteria outline the factors that should be considered, as a minimum, by the audit team when conducting the initial audit, concluding whether the submission is complete or not.

(Here should be inserted pages 9 to 30 of document MSC 85/WP.5/Add.1, annex 3, as is.)

Appendix 2, pages 31 to 33 in document MSC 85/WP.5/Add.1, annex 3, can be used for this approach with smaller corrections.

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ANNEX 2

EXAMPLE OF A RULE DEVELOPMENT PROCESS

1 The rule development is generally to follow a controlled process whereby the need is identified and approved prior to starting the development. Depending on the scope of the project, a detailed work plan which includes the schedule and manpower is to be developed.

2 The general steps in the rule development process can include the following:

.1 identification of the need for the new rules;

.2 definition of objective and scope;

.3 formulation or initial development of the rule (can be prescriptive, narrative, analytical, etc.);

.4 calibration and testing of the rule (can be based on trial application to known designs with good or bad service history);

.5 development of a background document which includes detailed information on the application, intent and impact of the rule;

.6 review of final rule by people outside of the original development team so that an independent check may be performed; and

.7 rule is submitted for publication and implementation.

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