**SDC 6 - 4 to 8 February 2019**

The 6th session of the Sub-Committee on Ship Design and Construction (SDC 6), was held at IMO Headquarters from 4 to 8 February 2019.

***Revised SOLAS Regulation II-1/3-8 and associated Guidelines (MSC.1/CIRC.1175) and new Guidelines for safe mooring operations for all ships***

SDC 5 re-established the Correspondence Group on Safe Mooring Operations. It was instructed to:

* further develop the draft new Guidelines on the design of mooring arrangements and the selection of appropriate mooring equipment and fittings for safe moor
* further develop the draft Guidelines for inspection and maintenance of mooring equipment including lines,
* further develop the draft Revised guidance on shipboard towing and mooring equipment (MSC.1/Circ.1175),
* further consider any consequential amendments to relevant IMO instruments.

SDC 6 had for its consideration the following main outstanding issues:

* application and inclusion of the human-centred design approach;
* requirement for load monitoring equipment;
* approval of ships' towing and mooring arrangement plans; and
* definitions for "Working Load Limit (WLL)" and "Line Design Break Force (LDBF)".

*Application and inclusion of the human-centred design approach*

The expression "applying a human-centred design approach" may not constitute a verifiable or objective standard. The term "human-centred design" is used in ISO standard 13407:1999 "Human-centred design processes for interactive systems", which was later replaced by ISO 9241-210:2010 "Ergonomics of human-system interaction – Part 210: Human-centred design for interactive systems".

It is a standard for the development of interactive systems. Only few provisions might be suitable for designing the arrangement of mechanical equipment. It requires participation of users in the design stage and, ideally, throughout equipment life.

The Correspondence Group on Safe Mooring Operations, established at SDC 5, did not consider the provisions related to "a human-centred design approach" in the draft Guidelines on the design of mooring arrangements and the selection of appropriate mooring equipment and fittings for safe mooring.

SDC 6 agreed not to include any reference on human-centred design in draft SOLAS Regulation II-1/3-8.7 or the Design Guidelines as it would not constitute a verifiable standard against which appraisal of mooring arrangement or calculation/approval of the mooring line strength could be carried out.

*Requirement for load monitoring equipment*

SDC 6 agreed not to include provisions requiring load monitoring equipment. It considered as doubtful, in the absence of relevant information from manufacturers and without the necessary tools which could be used consistently, that the measurement of mooring line loading patterns for the assessment of the reduction in the design life and strength of mooring lines could be achieved by ships' personnel.

Degradation of the lines is caused not only by the loads acting on the lines but by various factors, such as corrosion. Therefore, replacement of the lines, depending on their wear and tear state, is considered more effective than monitoring the loads acting on the lines to ensure safety of mooring operation. In other words, the essential issue is the implementation of the Inspection and maintenance Guidelines.

*Approval of ships' towing and mooring arrangement plans*

Some delegations raised the issue of whether or not the approach to be taken in devising new or amending instruments on mooring and towing arrangements would require ships' towing and mooring arrangement plans to be approved by the Administration. Such a requirement was not retained.

*Use and definitions for strength requirements of mooring lines and equipment*

Divergent views were expressed on the use and definitions for strength requirements of mooring lines and equipment, such as Ship Design Minimum Breaking Load (MBLSD), Working Load Limit (WLL), the relation between SWL and MBL and others.

In the MEG4, WLL is used in order to calculate the ship design MBL. When the ship design MBL is calculated using the WLL, WLL can be used as operational limit value. However, since WLL is determined based on environmental condition, the operational limit can be set by the environmental condition.

*Draft amendments to SOLAS Regulation II-1/3-8*

SDC 6 agreed to the draft amendments to SOLAS Regulation II-1/3-8, with a view to submission to MSC 101 for approval.

It is agreed:

* to refer to "occupational safety" in place of "human-centred design approach”;
* to insert the new requirement of "The design of mooring arrangements and rationale of selection of the mooring equipment including lines shall be documented and kept onboard" in SOLAS, but without specifying any type or details of such a document.

*Draft new Guidelines on the design of mooring arrangements*

SDC 6 agreed to the draft Guidelines on the design of mooring arrangements and the selection of appropriate mooring equipment and fittings for safe mooring and the associated draft MSC circular, with a view to submission to MSC for approval, in conjunction with the adoption of the draft amendments to SOLAS Regulation II-1/3-8

Noting that human element was one of the principal considerations in the development of the draft new Guidelines, one paragraph under section 1 regarding the application of principles of ergonomics and usability was included.

A new section for reference in the draft Guidelines takes into account principles for effective mooring arrangements included in appropriate industry guidance.

*Draft Guidelines for inspection and maintenance*

SDC 6 agreed to the draft Guidelines for inspection and maintenance of mooring equipment including lines and the associated draft MSC circular, with a view to submission to MSC for approval.

SDC 6 considered that familiarization and training related to safe use of mooring equipment and fittings would be more appropriately addressed by another IMO body.

SDC 6 decided to forward matters regarding familiarization and training to MSC for consideration and action, as appropriate, taking into account that such issues are out of the scope of the work of the current output.

*Draft revised guidance on shipboard towing and mooring equipment (MSC.1/Circ.1175)*

SDC 6 agreed to the draft Revised guidance on shipboard towing and mooring equipment and the associated draft MSC circular, i.e. MSC.1/Circ.1175/Rev.1, with a view to submission to MSC for approval, in conjunction with the adoption of the draft amendments to SOLAS Regulation II-1/3-8

It agreed to clarify that sections 2 and 3 of appendix A provide minimum value of ship design Minimum Breaking Load (MBLSD) and MBLSD should be determined by a ship designer.

The draft Revised guidance should be applicable to ships constructed on or after the date of entry into force of revised SOLAS Regulation II-1/3-8. Meanwhile, the Guidance on shipboard towing and mooring equipment (MSC.1/Circ.1175) will continue to be applicable to ships constructed on or after 1 January 2007 but before the aforementioned date of entry into force.

*Consequential amendments to relevant IMO instruments*

SDC 6 noted that there might be some more consequential amendments to other IMO instruments, and therefore requested the IMO Secretariat to take action, as appropriate.

The following three IMO instruments were identified as those which may be amended consequentially:

1. Survey Guidelines under the harmonized system of survey and certification (HSSC), 2015 (resolution A.1104(29));
2. List of certificates and documents required to be carried on board ships, 2013 (FAL.2/Circ.127-MEPC.1/Circ.817-MSC.1/Circ.1462);
3. List of codes, recommendations, Guidelines and other safety- and security-related non-mandatory instruments (MSC.1/Circ.1371 and addenda 1 and 2).

***Review SOLAS chapter II-1, parts B-2 TO B-4, to ensure consistency with parts B and B-1 with regard to watertight integrity***

Relying on the work made by the dedicated correspondence group set up by SDC 5, SDC 6 had for objective to:

* finalize the draft amendments to Regulation II-1/7-2.5.2;
* consider amendments to Regulation II-1/12.6.1 in relation to the location and operation of the collision bulkhead valve;
* consider the draft application criteria for the amendments;
* revise MSC.1/Circ.1464/Rev.1.

SDC 6 agreed to the draft Amendments to SOLAS chapter II-1, parts B-2 to B-4, and SOLAS Regulation 7-2 of part B-1, with a view to approval by MSC 101.

*Amendments to SOLAS Regulations*

SDC 6 considered SOLAS Regulations II-1/7-2.5 and II-1/17.1 and agreed there was a significant inconsistency regarding the treatment of openings in bulkheads that were considered watertight in the damage stability calculations and were located above the bulkhead deck.

Regulation II-1/7-2.5.2.1 only requires these doors to be watertight if immersed at the final equilibrium stage of flooding, but not at intermediate stages of flooding beyond the final equilibrium angle or in the residual range of stability. Regulation II-1/17.1, together with MSC/Circ.541, although generally considered legacy provisions, require these doors to be watertight in all stages of flooding but are somewhat unclear regarding the residual range of stability.

As SOLAS Regulation II-1/17 is only applicable to passenger ships and, therefore, the amendments to resolve the inconsistency should only apply to passenger ships.

Thus, SDC 6 agreed to revise SOLAS Regulation II-1/7-2.5 to require openings in locations immersed in the final and/or intermediate stages of flooding to be watertight for passenger ships. This was accomplished by making Regulation II-1/7-2.5.2.1 applicable only to cargo ships and duplicating the SOLAS Regulation II-1/7-2.5.2.1 text as a new SOLAS Regulation II-1/7-2.5.3.4 applicable only to passenger ships.

SDC 6 also agreed to an amendment to SOLAS Regulation II-1/7-2.5.5 to clarify that some of the listed openings were allowed to be opened during navigation in accordance with SOLAS Regulations II-1/22 to 24, and were not considered as openings in the damage stability calculations.

Taking into account the agreed amendments to SOLAS Regulation II-1/7-2.5, SDC 6 agreed to amend SOLAS Regulation II-1/17.1 to align with the internal watertight subdivision arrangements necessary for compliance with the stability requirements in parts B-1 and B-2.

A new SOLAS Regulation II-1/17.3 was added to address doors in internal watertight subdivision arrangements above the bulkhead deck that were immersed only in the required range of positive stability for any damage cases contributing to the attained subdivision index A. These doors, which may be hinged or sliding, shall be capable of preventing the passage of water. In addition, these doors may remain open provided they can be remotely closed from the navigation bridge and are always ready to be immediately closed.

During the process of harmonizing the probabilistic damage stability Regulations for both cargo and passenger ships, the SDS Working Group concluded that "the principles for watertight spaces and openings are similar for passenger ships and cargo ships and wherever possible the provisions should be harmonized in the revised Regulations". This has resulted in the current Regulation 12, which is now applicable to all ship types and which requires "screw-down" valves for all ships, but also makes a provision for other valve types, such as butterfly valves, only on cargo ships.

The deletion of prescriptive collision bulkhead valve type and location requirements in Regulation II-1/12.6.1 was supported by a large majority but there were mixed views on the new replacement text, i.e. "remotely controlled valve" or "valve with a positive means of closing from a position above the bulkhead deck of passenger ships and the freeboard deck of cargo ships".

SDC 6 agreed to the requirement for remotely controlled valves and to retain some of the existing restrictions regarding the location of the valves. The valve could be located on either the forward or aft side of the collision bulkhead, provided the space on the aft side was not a cargo space.

A provision was also included to ensure that the valve was either fail safe or capable of being closed manually from a position above the bulkhead deck of passenger ships and the freeboard deck of cargo ships if the remote control system should fail.

IACS proposed amendments to SOLAS Regulations II-1/13.5.1 and II-1/13.6, which currently limit the remote operating positions for all power-operated sliding doors to the navigation bridge and the location above the bulkhead deck where hand operation is provided. The proposal is to extend the remote operating positions to other locations in light of the requirement in SOLAS Regulation II-2/23.6 and the available computer technologies

The above Regulations might be interpreted so that the requirements prescribed therein refer to the mandatory remote control positions to operate the watertight doors in case of damage, but they do not prohibit the installation of additional remote controls associated with other safety systems. It is understood that systems associated with such remote controls do not impair the full functionality of the watertight doors' controls as required by SOLAS Regulations II-1/13.5.1 and II-1/13.6.

Moreover, it is noted that SOLAS Regulation II-2/23.6 "Control and monitoring of safety systems", which has been in force since 1 July 2010, requires watertight door controls to be placed in the safety center. The safety center may not be on the navigating bridge. The requirements of SOLAS Regulation II-1/13.6 interpreted as described in paragraph 2 above would prevent the controls from being placed in the safety center, which is not considered reasonable.

Amendments were accepted with the exception of the proposal to allow the potential fitting of additional watertight door remote operating positions.

SDC 6 agreed to amend Regulation II-1/22.6 which requires watertight hatches to be kept closed during navigation, with the option that allowed these hatches to be opened for limited access if permitted by the Master.

*Application of the draft amendments*

Draft amendments address a variety of issues and, accordingly, the new provisions will have a range of impacts. Some of the Regulation changes are more significant and will impact ship design arrangements whereas others are relatively minor text clarifications, corrections or in several cases removal of outdated requirements.

For the amendments that will potentially impact ship design arrangements, application is limited to new ships, i.e. ships built after the anticipated 1 January 2024 entry-into-force date of the draft amendments.

***Finalization of second generation intact stability criteria***

The development of the second generation intact stability criteria started at the SLF Sub-Committee in 2002, mainly with the following three objectives:

* First, to authorize sufficient intact stability of large cruise vessels which may not easily comply with the weather criterion;
* Second, facilitation for the use of state-of-the-art technologies such as time domain simulation tools as an alternative to prescriptive intact stability criteria;
* Third, prevention of a severe accident similar to that of a C11 class containership due to parametric rolling in head waves in 1998.

The IMO is trying to develop intact stability criteria for the following dynamic stability situations:

* Parametric rolling (excessive roll in head seas);
* Dead ship conditions (when large roll is possible when the stabilizing effects of speed are removed);
* Surf riding/broaching (typically in following seas);
* Excessive accelerations (resulting in sudden large angle roll motions);
* Pure loss of stability on a wave crest (ship loses buoyancy because it is effectively stationary on the crest and the water profile is different from design i.e. level waterline).

The aim of the IMO is to have some consistent criteria against which ships can be tested to identify whether they are susceptible to any of the above intact stability phenomena. A pass at the simplest level (level 1) will mean that there is no need to progress to the more complex calculation at level 2.

However, if level 2 is required and not passed then the vessel is subject to further complex studies such as direct stability assessment techniques or operational limitations and/or operator guidance.

SDC 6 had for its consideration:

* draft Guidelines for the specification of direct stability assessment;
* draft Guidelines for the preparation and approval of operational limitations and operational guidance;
* draft Guidelines on vulnerability criteria for the second generation of intact stability criteria.

*Draft interim Guidelines on the specification of direct stability assessment procedures*

Definition was given to "direct assessment procedures", "assumed situation" and "nominal ship forward speed", and re-defined "design situation". The "acceptance criteria" on maximum roll amplitude was re-drafted. The "design scenarios" and the "extrapolation procedures" in the form of a list were re-structured.

An important progress was achieved by the Expert Group, with a view to finalization at SDC 7, pending minor improvements, clarifications and edits that a new correspondence group may recommend.

*Draft interim Guidelines on the preparation of operational limitations and operational guidance*

Two new paragraphs were added under the section "General principles" establishing a connection with the draft interim Guidelines for direct stability assessment and highlighting the application of the draft Guidelines for any loading condition. A new paragraph was included, clarifying the cases where too many sailing conditions in too many sea states should be avoided for a certain loading condition under the section "Acceptance of operational measures". The text under the section "Probabilistic operational guidance" and modified the stability failure rate has been simplified.

The Plenary noted the progress made in developing the draft interim Guidelines for the preparation of operational limitations and operational guidance, in the view of finalization at SDC 7.

*Draft interim Guidelines on vulnerability criteria for the second generation of intact stability criteria*

The Expert group

* re-phrased the section "Application" under each of the failure modes for clarifying each condition of loading a ship that met neither of the standards contained in levels 1 and 2 vulnerability criteria;
* included a provision for a free surface correction for all relevant failure modes;
* provided an exception for ships with extended low weather decks and noted that similar exceptions were required in the draft interim Guidelines for direct stability assessment, and the draft interim Guidelines on the preparation of operational limitations and operational guidance.

The Expert Group further developed the draft interim Guidelines, and SDC 6 acknowledged the progress made with a view to finalization at SDC 7.

*Regulatory relationship between the current weather criterion and the draft dead ship condition criteria*

An alternative to the application of the weather criterion for the dead ship failure could currently only be addressed through either the equivalent provision in SOLAS or through MSC.1/Circ.1200 on Interim Guidelines for alternative assessment of the weather criterion.

A thorough discussion occurred as to the validity of dead ship condition, and the regulatory relationship between the existing weather criterion and the draft dead ship condition criteria.

Following the discussion, the vast majority agreed that the draft dead ship condition criteria should not be considered as an alternative for the existing weather criterion on the 2008 IS Code.

Therefore, a draft text has been included in the preamble/introductory section to be developed in order to highlight this.

*Structure of the draft Guidelines and consolidation of all three Guidelines as a single set*

SDC 6 agreed to the structure of the draft Guidelines and the consolidation of all three Guidelines under a single set of Guidelines, given the fact that they were all connected and cross-referencing to one another.

***Mandatory instrument and/or provisions addressing safety standards for the carriage of more than 12 industrial personnel on board vessels engaged on international voyages***

MSC 96 had agreed that:

1. a new chapter to SOLAS should be developed solely for the carriage of more than 12 industrial personnel;
2. the above new chapter should be supported by a new code, which could include elements of the 2008 SPS and 2000 HSC Codes, as appropriate;
3. the number of industrial personnel being transported should be the basis for applying the new SOLAS requirements.

MSC 97 had adopted the Interim recommendations on the safe carriage of more than 12 industrial personnel on board vessels engaged on international voyages (resolution MSC.418 (97)), and endorsed the view that the proposed definitions of industrial personnel and offshore industrial activities should be the basis for the development of the mandatory instrument.

MSC 99 agreed that:

1. the aggregated total maximum number of passengers, industrial personnel and special personnel which may be carried on board in order not to require compliance with the new code should be 12;
2. the application of the new SOLAS chapter [XV] and the new code should be limited to ships holding Cargo Ship Safety Certificates.

MSC 99 had noted the principles and decisions that had been considered by SDC 5 as the basis for the development of the draft new SOLAS chapter XV and the draft new code.

The main task of SDC 6 was to was instructed to further develop the draft IP Code, and, in particular, consider provisions in the draft Code addressing the carriage of dangerous goods and hazardous and noxious liquid substances.

*IP Code*

SDC 6 agreed that using an aggregated number of passengers, special personnel and industrial personnel to invoke the application of the IP Code had caused confusion and ambiguity. It was agreed that there must be consistency in the definitions used in SOLAS and the IP Code

The decision of MSC 99 that "the aggregated total maximum number of passengers, industrial personnel and special personnel which may be carried on board in order not to require compliance with the new code should be 12 was questioned by some members. In their view, prior discussions and work have been related to the carriage of more than 12 industrial personnel, not an aggregated number of persons, and this should not be changed.

SDC 6 agreed that there was a need for thresholds in some of the Regulations, and that the thresholds used in the SPS Code, carriage of not more than 60, more than 60 but not more than 240 and more than 240 persons on board should, whenever possible, be applied for the relevant Regulations in the draft Code. It was also agreed to align the provisions of the draft Code with those of the SPS Code.

For high-speed craft, these thresholds should be used to the extent possible.

Despite the hard work in the relevant Working group, it was not possible to finalize the IP Code during the given timeframe. This task has been forwarded to a new Correspondence group.

*Carriage of dangerous goods*

The draft of the goals, functional requirements and Regulations need to apply to all types of ships that are permitted to transport dangerous goods in accordance with the mandatory requirements in SOLAS Chapter VII and hazardous substances in accordance with non-mandatory requirements in Resolution A.1122(30) (OSV Chemical Code).

The carriage of IP on tankers, bulk and gas carriers is not a likely scenario. However, given that the scope of the IP Code is cargo ships of 500 GT and upwards, not excluding any cargo ship, draft goals, functional requirements and Regulations to ensure the safety of industrial personnel if carried on a tanker, bulk or gas carrier were developed.

SDC 6 decided to refer sections on dangerous goods to the CCC and PPR Sub-Committee for their advice.

*Application of SOLAS chapter XV and the IP Code to non-SOLAS ships*

It was proposed by some delegates to extend the application of the new draft IP Code to include non-propelled accommodation barges used in support of offshore units but that may or may not be engaged on international voyages

Following discussion, the Plenary agreed not to expand the application of the draft IP Code to non-SOLAS ships.

*Amendments to the 2011 ESP code*

SDC 4 authorized the IMO Secretariat and IACS to prepare a draft consolidated text of the ESP Code for consideration at SDC 6.

SDC 5 agreed to proceed with the development of the draft consolidated version of the ESP Code. SDC 5 confirmed the understanding that all substantive provisions currently contained in the footnotes of the 2011 ESP Code should be included in the main body of the new consolidated text.

SDC 5 agreed that the draft consolidated version of the ESP Code should be finalized at SDC 6, taking into account the related outcome of MSC 100, with a view to:

* preparing a draft Assembly resolution for adoption of the draft consolidated version of the ESP Code, revoking resolutions A.744(18) and A.1049(27);
* subsequent submission to MSC 101, for endorsement, and final adoption at A 31.

MSC 99 approved the draft amendments to the 2011 ESP Code, prepared by SDC 5.

MSC 100, after having considered the draft amendments to the 2011 ESP Code decided to:

* hold the adoption of the draft amendments to the 2011 ESP Code in abeyance and invited IACS to work together with the Secretariat intersessionaly to prepare a revised set of draft amendments to the Code, for submission to MSC 101 with a view to adoption;
* instruct the SDC 6 to ensure that the draft 2019 ESP Code, expected to be finalized by SDC 6 with a view to approval by MSC 101 and subsequent submission to A 31, includes the aforementioned revised draft amendments to the 2011 Code.

The consolidated version of the 2019 draft ESP Code was to be finalized by SDC 6 for approval at MSC 101, with a view to adoption by A 31 as the 2019 ESP Code, superseding the 2011 ESP Code, as amended.

An associated SOLAS amendment would be prepared by SDC 6 to make the 2019 ESP Code mandatory, for submission to MSC 101 for approval with a view to subsequent adoption at MSC 102, following the adoption of the 2019 ESP Code by A 31.

SDC 6 agreed to the draft consolidated text of the ESP Code, and the associated draft Assembly resolution, for submission to MSC 101 for approval and subsequent adoption by A 31.

The Drafting group made editorial amendments to ensure that "shall/should" instead of "is to/are to" were used throughout the draft consolidated version of the ESP Code, as appropriate.

SDC 5 had agreed to use the term "Administration" to refer to both the Administration and the organization recognized by the Administration. Accordingly, subsequent references to "Administration or organization recognized by the Administration" and "recognized organization" were replaced by "Administration".

Noting that Administrations did not have exclusive surveyors and therefore, as a consequence of the above, it was agreed to the deletion of the word "exclusive" from relevant paragraphs.

*Safety measures for non-SOLAS ships operating in polar waters*

Over one-third of vessels operating in the Arctic and over half the vessels operating in the Antarctic are ships not certified in accordance with SOLAS chapter I. As a consequence, the provisions of the Polar Code do not currently apply to these vessels. Furthermore, in the Arctic vessels not certified in accordance with SOLAS chapter I operate seven times more hours and cover 15 times greater distances than all categories of ships certified in accordance with SOLAS chapter I combined (based on 2015 AIS data).

MSC 98 had agreed to include the output "Safety measures for non-SOLAS ships operating in polar waters" on the provisional agenda of MSC 99, with a view to taking a policy decision regarding the scope of application of the second phase of work on the Polar Code, its mandatory or recommendatory status and types of vessels to be addressed.

MSC 99 agreed:

* that any safety measures for non-SOLAS vessels should, in principle, apply to both Arctic waters and the Antarctic area;
* when considering specific safety measures for each type of vessel, it was necessary to consider the area of application on a case-by-case basis, as there was a possibility that exemptions/exceptions may apply;
* that the types of vessels to be considered in the development of safety measures for non-SOLAS ships operating in polar waters were fishing vessels, pleasure yachts above 300 gross tonnage not engaged in trade, and cargo ships below 500 gross tonnage down to 300 gross tonnage.

MSC 99, had instructed SDC 6 to develop recommendatory safety measures for the following types of ships operating in polar waters:

* fishing vessels of 24 m in length and over, with a view to alignment with the 2012 Cape Town Agreement;
* pleasure yachts above 300 gross tonnage (GT) not engaged in trade.

MSC 100 had endorsed these tasks.

The proposed Guidelines are designed to align with the Cape Town Agreement on the Safety of Fishing Vessels (2012). The structure of the proposed Guidelines reflects that of the Cape Town Agreement, with an additional chapter (XI) which sets out recommendations for other safety measures that are beyond the scope of, or not provided for in, the Cape Town Agreement.

In response to the invitation of MSC 99, it was proposed to work out recommendatory Guidelines designed to improve the safety of pleasure yachts over 300 GT not engaged in trade operating in polar waters. The Guidelines are intended to supplement existing industry and/or national standards by providing additional guidance aimed at increasing safety standards for yachts and their personnel in order to take account of the additional risk arising from the climatic conditions of polar waters.

SDC 6 considered the Guidelines provided as a basis for initial discussion, with a view to their further development and detailed discussion at SDC 7.

SDC 6 established the Correspondence Group on Safety Measures for Non-SOLAS Ships Operating in Polar Waters to, as a high priority, with a view to finalization at SDC 7, further develop the draft Guidelines for safety measures for fishing vessels of 24 metres and over operating in polar waters, and to further develop the draft Guidelines for pleasure yachts of 300 GT and above not engaged in trade operating in polar waters,

***Unified interpretation to provisions of IMO safety, security, and environment-related conventions***

SDC 6 agreed to the draft amendments to the unified interpretations in MSC.1/Circ.1535, MSC.1/Circ.1537 and MSC.1/Circ.1539, for submission to MSC 101 for approval with a view to dissemination as MSC.1/Circ.1535/Rev.1, MSC.1/Circ.1537/Rev.1 and MSC.1/Circ.1539/Rev.1.

Continuous ventilation of closed ro-ro and vehicle spaces should ideally always be available regardless of weather conditions and that ventilation system openings should therefore be considered unprotected downflooding points in stability evaluations.

However, for ships where it may not be technically feasible to treat some closed ro-ro and vehicle space vent openings as unprotected openings, Administrations should be allowed to accept alternative arrangements that provide an equivalent level of safety.

Accordingly, the pertinent unified interpretations in MSC.1/Circ.1535/Corr.1, MSC.1/Circ.1537 and MSC.1/Circ.1539 should be amended by inserting the phrases "closed ro-ro and vehicle spaces" and "Where it is not technically feasible to treat some closed ro-ro and vehicle space ventilators as unprotected openings, Administrations may allow an alternative arrangement that provides an equivalent level of safety" where appropriate.

*Draft amendments to the unified interpretation of paragraph 3.4.2 of part B of the 2008 IS Code (MSC.1/Circ.1537)*

SDC 6 agreed to the draft amendments to the unified interpretations of the 2008 Intact Stability Code (MSC.1/Circ.1537), for submission to MSC 101 for approval with a view to dissemination as MSC.1/Circ.1537/Rev.1.

MSC 96 approved the Unified interpretations of the 2008 IS Code (MSC.1/Circ.1537), including the following unified interpretation of paragraph 3.4.2 of part B of the 2008 IS Code:

"For tankers assigned with a tropical load line, the ship should be assumed to be loaded to its tropical load line."

IACS has noted some inconsistency in the understanding of how the aforementioned unified interpretation should be followed by flag Administrations.

IACS members concluded that the following clarifications would assist in achieving consistency in application of the unified interpretation of paragraph 3.4.2 of part B of the 2008 IS Code:

1. the loading conditions should be with cargo homogeneously distributed throughout all cargo tanks;
2. a departure loading condition at the tropical load line and the corresponding arrival loading condition should be considered; and
3. sea water density of 1.025 t/m3 should be assumed.

*Doors in watertight bulkheads of cargo ships and passenger ships*

IACS Unified Interpretation (UI) SC156 pertains to doors located in way of the internal watertight subdivision boundaries and the external watertight boundaries that are necessary to ensure compliance with the relevant subdivision and damage stability Regulations. Subsequently, MSC 80 approved MSC/Circ.1176 on Interpretations of SOLAS chapters II-1 and XII, which included provisions as per IACS UI SC156.

MSC/Circ.1176 was superseded by MSC.1/Circ.1464, which was approved at MSC 92. However, the provisions related to doors in watertight bulkheads in MSC/Circ.1176 were kept unchanged in MSC.1/Circ.1464.

IACS members agreed it would be appropriate to review IACS UI SC156.

During the development of Rev.1 of UI SC156, IACS noted that there appears to be some inconsistencies between the requirements in the SOLAS and MARPOL Conventions and ICLL regarding doors in watertight bulkheads:

1. the requirements related to hinged watertight doors are only clearly specified in SOLAS; and
2. in SOLAS, the requirements for doors in watertight bulkheads vary according to the frequency of use of the doors, i.e. "Norm Closed", "Perm Closed", "Norm Open", "Used", etc. as shown in the table in the unified interpretation. However, the requirements in IMO instruments other than SOLAS are compatible with those in SOLAS for doors in watertight bulkheads to be used while at sea, which are described as "Used" in the table in the unified interpretation; and there are no requirements for doors, other than "Used" doors, in these other instruments.

SDC 6 agreed that, following IACS' recently updated Unified Interpretation (UI) SC156, consequential amendments to MSC.1/Circ.1464/Rev.1 were necessary but that the concrete actions to be taken would depend on the outcome of the SDS Working Group, which was instructed to review SOLAS chapter II-1, parts B-2 to B-4, to ensure consistency with parts B and B-1 with regard to watertight integrity, and any action to amend MSC.1/Circ.1464/Rev.1 would follow from thereon.

The proposal to remove the inconsistencies for requirements for doors in watertight bulkheads between SOLAS and other IMO instruments was supported in general, but would require consideration by MSC as a new output proposal. Thus, Plenary invited Member States to liaise with IACS and to submit a proposal for a new output to MSC 101.

*Proposed amendments to MSC.1/Circ.1535, MSC.1/Circ.1537 and MSC.1/Circ.1539*

USA proposed amendments to the unified interpretations in MSC.1/Circ.1535, MSC.1/Circ.1537 and MSC.1/Circ.1539 to include provisions on openings to ventilation systems for closed ro-ro and vehicle spaces that must run continuously whenever vehicles are on board.

*Safety risk related to openings to ventilation systems for closed ro-ro or vehicle spaces*

The matter of concern relates to openings to ventilation systems that must provide continuous ventilation to closed ro-ro or vehicle spaces and which might therefore be vulnerable to downflooding in heavy weather or a damage casualty.

The recent unified interpretations regarding stability evaluation of potential downflooding points only address openings to ventilation systems that must provide continuous air supply to engine-rooms and emergency generator rooms, and do not include openings to ventilation systems for closed ro-ro or vehicle spaces.

The proposed solution is to amend the relevant unified interpretations to include openings to ventilation systems for closed ro-ro and vehicle spaces.

*SOLAS and ICLL Regulations pertaining to ventilation system openings*

Regulation 19(4) of the International Convention on Load Lines, 1966 (ICLL) generally requires ventilator openings to be fitted with weathertight closures unless they are of sufficient height that closures can be safely omitted, as provided in Regulation 19(3), i.e. at least 4.5 m above deck in position 1 and 2.3 m above deck in position 2.

ICLL Regulation 17(3) stipulates that ventilators necessary to continuously supply air to machinery spaces and emergency generator rooms should meet the minimum heights of Regulation 19(3). Consequently, they would not need to be fitted with closures and can be left open regardless of weather conditions.

SOLAS Regulation II-1/7-2 provides the requirements for the calculation of the damage stability survivability factor si. Factor si accounts for downflooding in the definition of angle Èv, which includes the angle at which an opening incapable of being closed weathertight becomes submerged.

SOLAS Regulation II-1/35 requires category A machinery spaces, which include engine-rooms, to have adequate air supply to operate the machinery at full power and also ensure the safety and comfort of personnel in those spaces, even under heavy weather conditions.

SOLAS Regulation II-2/20.3 pertains to the ventilation of closed ro-ro and vehicle spaces. On passenger ships, it requires ventilation systems for those spaces to run continuously when vehicles are in those spaces. On cargo ships, it requires ventilation systems for those spaces to run continuously whenever vehicles are on board, unless impracticable, in which case the ventilation system should be run daily as weather permits.

*Unified interpretation MSC.1/Circ.1539*

It may not always be possible to arrange sufficiently high ventilators to meet the ICLL requirement for closures. In addition, even if a vent is fitted with a weathertight closure, the air supply to engine-rooms and emergency generators cannot be closed off without potentially compromising the ship's safety.

Recognizing this situation, MSC 96 approved Unified interpretations of SOLAS chapter II-1 (MSC.1/Circ.1539), which include the following provision regarding the downflooding angle Èv in SOLAS Regulation II-1/7-2.

MSC 96 approved similar interpretations for the ICLL Protocol (MSC.1/Circ.1535/Corr.1) and the 2008 Intact Stability Code (MSC.1/Circ.1537).

These unified interpretations assume that the engine-room and emergency generator room air supply vents will always be open, even if fitted with closures, and therefore require them to be evaluated as potential downflooding points.

However, although SOLAS Regulation II-2/20.3.1.2 also requires the continuous ventilation of closed ro-ro and vehicle spaces when vehicles are on board, those ventilation system openings are not included in the unified interpretations.

*Amendments*

Accordingly, annex to Unified interpretations relating to the Protocol of 1988 relating to the International Convention on Load Lines, 1966 (MSC.1/Circ.1535/Corr.1), is to be amended as follows:

Regulation 27(13)(e):

3 Unprotected openings include ventilators (complying with Regulation 19(4) of the International Convention on Load Lines, 1966) that for operational reasons have to remain open to supply air to spaces the engine room, or emergency generator room or closed ro-ro and vehicle spaces (if the same is considered buoyant in the stability calculation or protecting openings leading below) for the effective safe operation of the ship. Where it is not technically feasible to treat some closed ro-ro and vehicle space these ventilators as unprotected openings, Administrations may allow an alternative arrangement that provides an equivalent level of safety.

The annex to Unified interpretations of the 2008 IS Code (MSC.1/Circ.1537) and SOLAS Chapter II-1 (MSC.1/Circ.1539) will also require amendment in line with the above changes.

Unified interpretation of SOLAS Regulations II-1/22-1 and II-2/21.4.13 regarding safe return to port requirements for flooding detection systems

SDC 6 agreed with the draft MSC circular on Unified interpretation of SOLAS chapter II-2, for submission to MSC 101 for approval.

At SDC 5, IACS sought clarification as to whether liquid level monitoring systems serving tanks containing liquids, which are used as, or replace, flooding detection systems, should also meet the safe return to port requirements in SOLAS Regulation II-2/21.4.13.

SDC 5 agreed to the view of the majority of those that spoke that such systems should meet the safe return to port requirements and invited IACS to develop a unified interpretation, taking into account that there should be no retroactive application of the agreed understanding.

In considering the view expressed at SDC 5 that there should be no retroactive application, IACS proposes that this unified interpretation should be applied to ships contracted for construction on or after 1 July 2019, unless IACS members are provided with written instructions to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

*IACS Unified Interpretation (UI) SC123 machinery installations – service tank arrangements - Submitted by IACS*

IACS members have discussed and reviewed typical fuel oil service tank arrangements for vessels trading in Emission Control Areas (ECAs) that use both low Sulphur distillate and residual grade fuel oils. As a consequence, IACS has identified the need to revise its Unified Interpretation UI SC123.

Recognizing the underlying SOLAS safety objective of maintaining an appropriate amount and quality of fuel readily available for propulsion machinery and "vital systems", the existing definitions of equivalency in IACS UI SC123 needed to be revised to recognize the use of low Sulphur fuels.

During the revision of IACS UI SC123, the following issues have been considered:

1. typical fuel oil service tank arrangements for new and retrofitted vessels trading in ECAs that use low Sulphur and residual grade fuels oils;
2. the potential hazards resulting from the emergency changeover of fuel oil of one grade to another.

SDC 6 agreed that this matter required further consideration and forwarded it to MSC 101 with a request that it be considered under the Committee's new agenda item on "Development of measures to enhance the safety of ships relating to the use of fuel oil".