International Regulation News Update

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Maritime Safety Committee's

93rd Session

14 to 23 May 2014

(+ "ships" are all self propelled vessels)

IMO's Maritime Safety Committee (MSC) met at the Organization's London Headquarters for its 93rd session from 14 to 23 May 2014. A number of SOLAS revisions were adopted and interpretations issued, which affect new and existing ships.

ADOPTED REVISED IGC CODE

Entry Into Force Date

The Committee adopted resolution MSC.370(93) which contains a completely revised IGC Code which will enter into force on 1 January 2016. However, its provisions apply to gas ships constructed on/after 1 July 2016. The 6 months additional time period was a compromise between those who desired its application to be on the date of entry into force versus others who wanted a delayed time period to allow for the delivery under the earlier Code of the more than 25 gas ships reported to be under contract.

The following provides some insight as to the scope of revisions relative to the existing Code.

Design Loads

The Code allows for the development of designs of new or novel containment systems using a Limit State Design approach that segregates the loads into four categories (Permanent, Functional, Environmental and Accidental) in order to allow for consideration of different factors of safety for the different types of loads applied.

Specific fatigue criteria are required in areas according to the type of defect or crack development detection applied: continuous monitoring, periodic inspections and no detection. For membrane tanks, a fatigue analysis is required for internal structures (i.e., pump towers, and for parts of membrane and pump tower attachments, where failure development cannot be reliably detected by continuous monitoring).

For Type B tanks, a fatigue analysis is required for the tank shell along with crack propagation and leakage rate calculations to size the partial secondary barrier and where cracks could develop in internal structure which could grow undetected leading to potential loss of structural support without warning

Damage Stability and Subdivision

The Code mandates the carriage of approved stability software on new and existing gas ships that is capable of verifying compliance with the applicable intact and damage stability requirements for all loading conditions.

Existing ships, constructed before 1 July 2016, will need to comply at the first scheduled renewal survey after 1 July 2016 but not later than 1 July 2021. The flag Administration may give special dispensation from the provisions of a stability instrument in the following instances:

- gas ships where stability is remotely verified on shore by a means approved by the Administration;
- gas ships on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved;
- gas ships which are loaded within an approved range of loading conditions; and
- existing gas ships provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements

The minimum allowable proximity of cargo tanks to the ship's side (760 mm in the current Code) is now dependent on the volume of the cargo tank and ranges from 800 mm to a maximum of 2000 mm.

The standard of damage for G3 type gas ships has been extended down from ships having a length ≥ 125 m to ships having a length ≥ 80 m.

Operational Requirements

Loading/Unloading lines used for toxic products must not exceed a design pressure of 2.5 MPa.

Requirements for emergency shutdown, cargo sampling and cargo transfer systems including testing of these systems have been enhanced.

Cargo venting to maintain cargo tank pressure and temperature is now prohibited. Provisions have been included for thermal oxidation boil-off vapors for use as shipboard fuel or as a waste heat system.

The criteria for determining the maximum filling limit of cargo tanks to ensure that the vapor space has a minimum volume at reference temperature has been revised.

New requirements for a cargo operations manual and safety provisions for cargo sampling have been introduced. Guidance for handling gas ships periodically connected to a buoy and serving as FLNG or FSRU units has been added.

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Fire and Explosion Protection

Risks associated with ships intended to operate for periods at a fixed location (in a re-gasification and gas discharge mode or a gas receiving, processing, liquefaction and storage mode, are to be identified (e.g., fire/explosion, evacuation, extension of hazardous areas, pressurized gas discharge to shore, and process upset conditions) and addressed using principles of the Code as well as recognized standards.

New and revised definitions are introduced (e.g., interbarrier space). More significantly, the term "dangerous area" has been replaced by the term "hazardous area" which is expanded and modified in accordance with IEC 60092-502.

Cargo control systems and electrical generation and distribution systems must be capable to maintain cargo tanks' pressure and temperature within design range after single component failure.

New provisions have been introduced for the use of cargo vapor as fuel in systems such as boilers, inert gas generators, internal combustion engines, gas combustion units and gas turbines

Completely new requirements for automation systems used to provide the required instrumented control, monitoring/alarm or safety functions as well as safeguards and functional requirements for system integration have been provided.

Requirements for deckhouse and superstructure windows and sidescuttle construction relative to applicable fire classes have been added.

ADOPTED SOLAS REVISIONS

Several revisions of SOLAS and mandatory Codes were adopted during the 93rd Session and are scheduled to enter into force on 1 January 2016.

Intact and Damage Stability Instruments

The Committee adopted amendments (resolutions MSC.369(93) and MSC.376(93)) to the IBC and BCH Codes which will require chemical and gas tankers to be fitted with an approved stability instrument capable of verifying compliance with the applicable intact and damage stability requirements. Similar revisions for oil tankers under MARPOL Annex I have been adopted at MEPC 66 earlier this year (MEPC.248(66)).

New tankers will need to comply on delivery and existing tankers will need to comply at the first scheduled renewal survey after 1 January 2016 but not later than 1 January 2021.

A stability instrument is not required in the following instances:

- tankers where stability is remotely verified by a means approved by the Administration;
- tankers on a dedicated service, with a limited number of permutations of loading such that all anticipated conditions have been approved;
- tankers which are loaded within an approved range of loading conditions; and
- existing tankers provided with approved limiting KG/GM curves covering all applicable intact and damage stability requirements.

An approved stability instrument does not replace the requirement for an approved Stability Booklet to be onboard. Instruments installed on existing tankers do not need to be replaced provided they are capable of verifying compliance with intact and damage stability.

Vehicle and Ro-Ro space Fire Protection

A new SOLAS Regulation II-2/20-1 has been added to establish new safety measures for ventilation and gas detection for vehicle carriers with vehicle and ro-ro spaces intended for carriage, as cargo, of motor vehicles with compressed hydrogen or compressed natural gas in their tanks for their own propulsion.

All new and existing vehicle carriers which carry one or more such motor vehicles as cargo shall be provided with at least two portable gas detectors, suitable for the detection of the gas fuel, and of a certified safe type for use in an explosive gas and air mixture

Additionally, requirements for spaces intended to carry such motor vehicles as cargo that are applicable to new vehicle carriers (constructed on or after 1 January 2016) include:

- certified safe type electrical components for use in an explosive methane/air mixture (for CNG cargo) or hydrogen/air mixture (for CH cargo);
- ventilation fans designed to avoid the possibility of ignition of hydrogen and air mixtures; and
- prohibition of equipment providing a source of ignition of methane/air mixtures.

New MSC.1/Circ.1471 recommends application of the relevant safety provisions of the IMDG Code to existing vehicle carriers carrying motor vehicles with compressed hydrogen or natural gas in their tanks for their own propulsion as cargo.

Fixed Inert Gas Systems

SOLAS Regulation II-2/4 has been amended to now require new chemical and oil carriers ≥ 8,000 dwt which carry crude oil or petroleum products having a flashpoint not exceeding 60°C or products listed in the IBC or IGC Codes, to be fitted with a fixed IG system complying with the revision of Chapter 15 of the FSS Code (also adopted at this session of MSC). Equivalent arrangements or means of protection may be accepted in lieu of fixed systems on new chemical and oil carriers (20,000 > dwt ≥ 8,000) provided equivalent arrangements are:

- capable of preventing dangerous accumulations of explosive mixtures in cargo tanks during normal service throughout the ballast voyage and necessary in-tank operations; and
- designed to minimize the risk of ignition of system-generated static electricity (e.g., use of shore-side nitrogen).

Existing chemical and all gas carriers are not required to comply with the new provisions of Chapter 15 of the FSS Code when carrying:

- crude oil or petroleum products having a flashpoint not exceeding 60°C if fitted with an IG system approved based on Resolution A.567(14) – Regulation for inert gas systems on chemical tankers; or
- flammable cargoes other than crude oil or petroleum products (such as products listed in the IBC or IGC Codes), provided the capacity of individual cargo tanks used for their carriage does not exceed 3,000 m^3 and capacities for tank washing machines are within limits specified in the new regulation.

To facilitate tank inspection before loading, new operational requirements for new and existing chemical carriers allow cargo tanks to be inerted after the cargo tank has been loaded, provided the tank is inerted before unloading begins and remains inerted until the tank has been purged of all flammable vapors before gas-freeing. Only nitrogen may be accepted as an inert gas under this provision. The maximum oxygen content to be maintained in tanks has been reduced from 8% (still applicable for existing chemical and oil carriers) to 5% for new chemical and oil carriers.

Escape from Machinery Space Workshops

Amendments to SOLAS II-2/13 were approved which require, for new passenger and cargo ships, a means of escape from machinery spaces, main workshops and control rooms via a continuous fire shelter to a safe position outside the machinery space. Subject to approval at a later session of the MSC, it was tentatively agreed that:

- a continuous fire shelter is a route from a main workshop, or from an engine control room, which allows escape, without entering the machinery space, to a location outside the machinery space;
- a main workshop is a compartment enclosed on at least three sides by bulkheads or gratings, usually containing welding equipment, metalworking machinery and workbenches.

Additionally, all inclined open-tread ladders and stairways providing an escape route from machinery spaces which are not located within a protected enclosure are to be made of steel and fitted with a steel shield on their underside to provide escaping personnel protection against heat and flame from beneath.

Container Ship Fire Extinguishing

SOLAS Regulation II-2/10 was amended to now require that new ships designed to carry containers on/above the weather deck be fitted with at least one water mist lance consisting of a tube with a piercing nozzle which is capable of penetrating a container wall and producing water mist inside the container when connected to the fire main (see Figure 1). This is in addition to the required fixed fire-extinguishing systems and appliances.

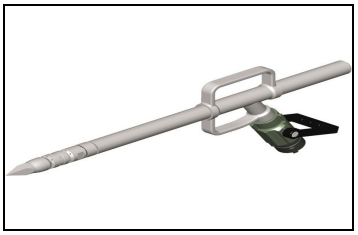

Figure 1 – Piercing Nozzle

Additionally, ships carrying five or more tiers of containers on the weather deck shall carry at least two mobile water monitors on ships with a breadth up to 30 m and at least four mobile water monitors on ships with breadth ≥ 30 m. Each mobile water monitor shall be tested to ensure that:

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- it can be securely fixed to the ship structure; and
- its water jet reaches the top tier of containers with all required monitors and water jets from fire hoses operated simultaneously.

Guidelines for the design, performance, testing and approval of such mobile water monitors are provided for in MSC.1/Circ.1472.

Ventilation System Arrangements

New ventilation duct construction and arrangement requirements were incorporated into SOLAS Regulation II-2/9.7 and address, for new ships, the following:

- automatic and remotely controlled fire dampers at the lower end of exhaust galley ducts on ships carrying <36 passengers and cargo ships; and
- means of closure for ducts in laundries on ships carrying ≥36 passengers and in ventilation rooms on all ship types serving category A machinery spaces containing internal combustion machinery.

Steering Gear Tests

Resolution MSC.365(93), adopted at this session, amends the testing requirements in SOLAS Regulation II-1/29 by providing alternative methods of testing the main and auxiliary steering gear during sea trials.

The methods apply where it is impractical to test the ship at its deepest seagoing draught and running ahead at *full test speed* (corresponding to the number of maximum continuous revolutions of the main engine and maximum design pitch of the propeller).

Two alternatives were agreed for the main steering gear:

- the test should be carried out at an ahead speed that results in a force and torque applied to the main steering gear which is at least equal to the results of a test carried out with the ship at its deepest seagoing draught and running at *full test speed*; or
- the rudder force and torque at the sea trial loading condition are reliably predicted and extrapolated to the full load condition at the *full test speed*.

Similar alternatives were agreed for the auxiliary steering gear, except that the *full test speed* is given as the maximum continuous revolutions of the main engine and maximum design pitch or 7 knots, whichever is greater.

Because the above provisions enter into force on 1 July 2016, the Committee approved MSC.1/Circ.1482 which allows for early implementation of these alternative tests.

MISCELLANEOUS

Container Weight Verification

The Committee approved amendments to SOLAS Chapter VII which, if adopted at MSC 94 in Nov 2014, will require the weight of containers (except those carried on a chassis or a trailer and driven on or off a ro-ro ship engaged in short international voyages – generally, not more than 200 miles from a port) to be verified by the shipper who shall then ensure that the verified gross mass is stated in the shipping document. If adopted, the regulation is expected to enter into force on 1 July 2016.

New MSC.1/Circ.1475 provides guidelines for implementing and enforcing the SOLAS requirements regarding the verification of the gross mass of packed containers prior to stowage onboard. The guidelines are intended to assist shippers of containerized shipments and other parties in the supply chain, including shipping companies and port terminal facilities.

Corrosion Resistant Steel

The Committee approved MSC.1/Circ.1478 containing unified interpretations on the application of the Performance Standard for alternative means of corrosion protection for cargo oil tanks of crude oil tankers (resolution MSC.289(87)). The Circular takes into account the need for compatibility of the provisions of MSC.289(87) with existing strength and toughness provisions for other steels used in ship construction and that there may be subtle chemical composition differences from one steel manufacturer to another. It also provides a common approach for the approval, method of manufacture, verification, certification and application of these corrosion resistant steels.

Ballast Tank Coatings

The Committee approved MSC.1/Circ.1479 containing unified interpretations on the application of the Performance Standard for protective coatings (PSPC) for cargo oil tanks of crude oil tankers (resolution MSC.288(87)).

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The circular modifies the definition of "GOOD condition", which is used to rate the coating, so as to be consistent with the rating used in MSC.1/Circ.1378 for application of the PSPC for dedicated sea water ballast tanks. The interpretations also address inspection of the surface preparation and the coating processes as well as the scope of the pre-qualification tests and the contents of the Type Approval Certificate.

Portable Atmosphere Testing Instrument

Guidelines for the selection of portable instruments used to test the atmosphere in an enclosed space, before entry and at appropriate intervals while within the space, are provided in new MSC.1/Circ.1477. It is recommended that the instrument should be capable of measuring and displaying concentrations of oxygen, flammable gases or vapours (% of LFL), carbon monoxide and hydrogen sulphide. These instruments are not the personal gas detector intended to be carried by an individual whilst inside the enclosed space.

BNWAS Operational Guidance

New MSC.1/Circ.1474 recommends that the automatic operational mode, if it is available on the bridge navigational watch alarm system (BNWAS), should not be used whenever the ship is underway at sea. This is an interim measure until the BNWAS Performance Standards (MSC.128(75)) are revised.

NEW POLAR CODE

General

The Committee approved the draft text of a new Chapter XIV of SOLAS – Safety Measures for Ships Operating in Polar Waters – for adoption at MSC 94 in November 2014. The Committee also approved, in principle, the safety related portions of the draft International Code for Ships Operating in Polar Waters (Polar Code), with a view to adoption in conjunction with the associated draft new SOLAS Chapter XIV. If adopted at MSC 94 in November 2014, the new Chapter XIV of SOLAS will make the Polar Code mandatory for all SOLAS-certified ships operating in Arctic waters and the Antarctic area.

The Committee agreed to an understanding that the Polar Code would apply to new and existing ships certificated under the SOLAS Convention, whether or not such ships were engaged on international voyages. Therefore, the application of the new Chapter XIV is limited to ships that are "certified in accordance with Chapter I" of SOLAS.

There will be a slight delay for existing ships constructed before the, yet to be determined, entry into force date. These existing ships will need to comply with relevant requirements by the first intermediate or renewal survey, whichever comes first, after one year after the entry into force date.

The Polar Code is structured in a similar manner to other international Codes, and consists of an Introduction and Part A (which is mandatory) and Part B (which is recommendatory). Parts A and B of the Polar Code will also be sub-divided according to safety related measures (Parts I-A and I-B) and pollution prevention measures (Parts II-A and II-B). The pollution prevention measures are being progressed in parallel by the MEPC, and are expected to be adopted at MEPC 68 in May 2015.

Both the safety related and pollution prevention provisions of the Polar Code are applied to three categories of ships (A, B and C) which are dependent on the ice conditions within which the ship is designed to operate.

All ships to which the new Chapter XIV applies shall be required to be surveyed and certificated in accordance with the Polar Code. The Committee agreed that the Polar Ship certificate and associated record of equipment should be similar in form to other SOLAS certificates, and should identify the ship's capabilities or operational limitations. IACS highlighted the need for consistency when implementing the Polar Code – particularly concerning limitations identified on the certificate. Guidance included in part I-B of the draft Polar Code needs further development in conjunction with section 1.5 of part I-A (which deals with the assessment to be undertaken for the purpose of determining operational limitations, as referenced in the PWOM).

Part I-A of the Code

Part I-A of the Code contains the mandatory safety measures which include:

- a Polar Waters Operation Manual (PWOM) containing ship-specific capabilities and limitations based on a method of assessment which is currently under development.

The PWOM shall also include specific procedures to be followed in normal operations, avoiding conditions that exceed the ship's capabilities, responding to incidents, and when using icebreaker assistance or escort operations, as applicable. While the PWOM will be mandatory under the Polar Code, the contents are of a recommendatory nature, and therefore the PWOM need not be approved;

- prescribed icing allowances for intact stability and means for minimizing ice accretion. Category A and B ships shall also be required to have residual damage stability following ice damage to withstand flooding resulting from hull penetration, based on the application of unique damage penetration extents;
- maintaining adequate weathertight and watertight integrity through additional measures, such as preventing freezing of closing appliances and ensuring operability in low air temperatures when personnel are wearing heavy winter clothing;
- protection of machinery, life-saving arrangements/appliances and firefighting equipment with regard to ice accretion, snow accumulation, ice ingestion from seawater, freezing/increased viscosity of liquids and seawater intake temperature. Ships intending to operate in low air temperatures and ice conditions shall be provided with additional measures to ensure operability in anticipated environmental conditions;
- advanced training for masters and chief mates (and basic training for officers in charge of a navigational watch) on ships operating in ice-covered waters. Specific training requirements are currently under development by the HTW Sub-Committee for inclusion under Chapter V of the STCW Convention and Code;
- safety of navigation and communication (which are still under development).

Part I-B of the Code

Part I-B of the Code contains non-mandatory recommendations on personal and group survival equipment, life-saving arrangements & appliances, safety of navigation, determining equivalency of ship structure, contents of the PWOM, navigation with icebreaker assistance, and assignment of limiting ice capabilities.

Additional Matters

Several other key issues emanating from MSC 93 in relation to the draft Polar Code and the new Chapter XIV of SOLAS include:

- *Temperature* – additional guidance was prepared and included in Part I-B to clarify how the Mean Daily Low Temperature (MDLT) is determined, which is then used to establish the polar service temperature (PST) for the ship and will constitute a key operational limitation. It was agreed that this is only determined for ships operating in low air temperatures (areas where the MDLT is below -10C). It was acknowledged, however, that this guidance requires further improvement.
- *Administrative Burden* – it was agreed that simplified solutions for administrative (paperwork) burdens should be further considered for instances where a ship makes a one-time or only occasional voyages into polar waters. It was agreed that in doing so, there should be no exemptions to the requirements of the Polar Code, as the same level of safety should be maintained, and solutions should be technically and legally sound. It was also agreed that the PWOM could be used for this purpose.
- *Ship Structure* – IACS and several Member States highlighted the potential for significant Administrative burden when implementing paragraph 3.3.2.4 of the draft Polar Code. This paragraph would require an Administration to make a determination in every case to decide if a Category C ship is not required to be Ice Strengthened, depending on its intended area of operation. IACS also noted that current definitions of categories B and C ships, with respect to ice types, are not consistent with the approach taken for ice strengthening of categories B and C ships in Chapters 3 and 6 of the draft Polar Code.
- *Training* –the matter of employing a qualified person(s) other than a member of the crew (i.e. ice navigator) to satisfy crew training requirements is still under discussion.
- *Safety of navigation & communication* - The Committee agreed to instruct its technical sub-committee to further consider whether the scope of application should also include different types and sizes of ships, noting that Chapters IV and V apply to ships other than those covered by Chapter I of SOLAS.

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