



IMO Carriage of Cargoes & Containers Ninth Session (CCC 9)

Agenda Preview

Executive Summary

Below are some of the topics expected to be discussed at CCC 9 and will have some impact on current practices. Additional details can be found under the relevant subject headings in the document.

CCC 9 will meet in London from 20 - 29 September. A lot of interest is currently centred around the development of various guidelines related to alternative fuels which will greatly help the industry in its decarbonisation objective.

Alternative fuels

- **Interim guidelines for the safety of ships using hydrogen as fuel**
These guidelines are expected to be finalised at this session if the expected outstanding work, which will take place in a working group, is completed.
- **Interim guidelines for the safety of ships using low flashpoint oil fuels**
These guidelines are expected to be finalised by 2024. Further development will take place at CCC 9 and it is expected that a Correspondence Group will continue the discussions and submit a report to CCC 10 (September 2024).
- **Interim guidelines for the safety of ships using ammonia**
Similarly to the *Interim guidelines for the safety of ships using low flashpoint oil fuels*, further discussion is expected at CCC 9, principally around the provisions related to the toxicity of ammonia which poses a high risk to human life. These guidelines are expected to be finalised by 2024.
- **Amendments to MSC.1/Circ.1647 - Interim Guidelines for the Safety of Ships Using Fuel Cell Power Installations**
CCC 9 will consider amendments the guidelines based on the experience gained by the industry.
- **MSC.1/Circ.1621 - Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel**
If time permits, CCC 9 will start to discuss the development of mandatory instruments regarding methyl/ethyl alcohols. Their development is expected to continue until late 2025 and they could enter into force by 2028.

Amendments to the IGC Code to include “Safety provisions for the safe use of LPG Cargo as fuel”

The amendments should be written in a non-prescriptive way by introducing requirements for a limited risk assessment. The aim is to submit a draft to MSC 108 for approval and consequent adoption at MSC 109. The entry into force is expected to be 1 January 2028 and, in order to speed up global adoption, voluntary early implementation could be permitted by 2024.

Revision of the *Interim recommendations for carriage of liquefied hydrogen in bulk*

As the size of the hydrogen containment system grows due to ships’ need for longer routes, the structural strength requirements of a vacuum vessel becomes a significant challenge. Hence, to facilitate the implementation of large-scale liquid hydrogen cargo enclosures aboard ships, novel containment system designs need to be explored. There are many technical and human centred challenges so it is expected to be a deep discussion around these amendments which could be finalised in 2024.

Introduction

CCC 9 will take place 20-29 September 2023. This report summarises the discussions which are significant to Lloyd's Register's (LR's) work with our customers.

Additional Information
LR's [Summary Report for CCC 8](#)

Decisions of other bodies

Additional Information
LR's Summary Reports for [MSC 106](#) , [MSC 107](#) , [MEPC 79](#) and [MEPC 80](#)

CCC notes the decisions taken by MSC, and MEPC.

Since CCC 8, other IMO Committees have made progress on a range of outputs associated with the work of CCC. The list below shows the status of relevant outputs.

Approval of:

- MSC.1/Circ.1666 on *Interim guidelines for the safety of ships using LPG fuels*.
- Draft amendments to the IGF Code, with a view to adoption at MSC 108 (May 2024), together with an MSC circular on the early implementation of the draft amendments to paragraphs 4.2.2 and 8.4.1 to 8.4.3 of the IGF Code.
- The establishment of a Correspondence Group on *Development of a Safety Regulatory Framework to Support the Reduction of GHG Emissions from Ships Using New Technologies and Alternative Fuels* which will be reporting to MSC 108 (May 2024).
- Amendments to the IMSBC Code - resolution MSC.539(107) – with an entry into force date of 1 January 2025.
- A new CCC 10 agenda item on amendments to the *Recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo holds* (MSC.1/Circ.1264).
- The development of a draft circular containing recommendations for the carriage of plastic pellets by sea in freight containers to reduce their pollution which will address packaging, notification, and stowage, and is expected to be approved by MEPC 81 in March 2024.

Recently published relevant ISO Standards:

- ISO 20519:2021 (ed.2) - *Ships and marine technology – Specification for bunkering of liquefied natural gas fuelled vessels*.
- ISO 21593:2019 (ed.1) - *Ships and marine technology – Technical requirements for dry-disconnect/connect couplings for bunkering liquefied natural gas*.
- ISO 22547:2021 (ed.1) - *Ships and marine technology – Performance test procedures for high-pressure pumps in LNG fuel gas supply systems (FGSS) for ships*.
- ISO 22548:2021 (ed.1) - *Ships and marine technology – Performance test procedures for LNG fuel gas supply systems (FGSS) for ships*.
- ISO 23430:2019 (ed.1) - *Ships and marine technology – Specification of high manganese austenitic steel thin strips used for LNG tanks on board ships*.

Amendments to the IGF Code and development of guidelines for low-flashpoint fuels and related technologies

CCC has been working on the next phase of development of the *International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels* (IGF Code). It is recognised that there is an urgent need to accelerate work on low-flashpoint fuels and to rapidly develop safety provisions for alternative fuels to further promote the decarbonisation of shipping.

Draft Interim guidelines for the safety of ships using hydrogen as fuel

The draft interim guidelines are under development and are intended to be read in conjunction with the IGF Code. They will apply to those ships to which SOLAS Chapter II-1, Part G – *Ships using low flashpoint fuels* applies.

A Correspondence Group has further developed these guidelines. In particular:

- Inclusion of functional requirements to address hazards occurring through the use of cryogenic liquids with a temperature below -182°C.
- New provisions around inerting for the use of compressed hydrogen, with the consequential reduction in oxygen levels.

The following topics are expected to be discussed at CCC 9:

- Whether machinery spaces should only allow gas safe machinery, or allow for Emergency Shut Down (ESD) protected machinery as well for the specific purpose of the interim guidelines. The general understanding is that gas safe machinery is safer but with the right risk assessment, an ESD machinery space could also be potentially accepted.
- A preliminary, non-exhaustive, list of issues which can be used when conducting a risk assessment for the entire fuel system.
- The provision for onboard crew training and safe operation of ships using hydrogen similar to part C-1 of the IGF code.

It is expected that these guidelines will be finalised at this session.

Safety provisions for ships using low-flashpoint oil fuels

In order to provide an international standard for ships using oil-based fossil fuels, synthetic fuels, or biofuels with a flashpoint between 52°C and 60°, the IMO is developing **Draft interim guidelines for the safety of ships using low flashpoint oil fuels**. They are applicable to ships which have to comply with SOLAS Chapter II-1 Part G and are to be read in conjunction with the IGF code. It is expected that this work will be completed by the end of 2024.

An intersessional correspondence group developed the guidelines further. New inclusions have addressed the increased fire and explosion hazards by introducing provisions on ambient air temperature control, setting the upper limit to 45 °C, and having ventilation available where the temperature exceeds the limit. This means that the ventilation rate will need to be increased to 30 air changes per hour.

It is expected that there will be further discussion around mitigating the risk of leakages of low flashpoint diesel fuels into conventional engine-rooms which will result in dangerous increased concentrations of ignitable fuel vapour (double barrier principle, cooling sea water etc.).

Draft Interim guidelines for ships using ammonia as fuel

The interim guidelines are applicable to ships which have to comply with SOLAS Chapter II-1 Part G and are to be read in conjunction with the IGF Code as they add specific hazards and fuel properties to it. It is expected that this work will be completed by the end of 2024.

The intersessional developments now include, for further consideration and subject to discussion:

- Provisions for risk assessment
- Requirements that machinery in machinery spaces should be gas safe
- Regulations for fuel preparation rooms which should be gastight and away from accommodation spaces
- Additional regulations for arrangement of entrances and other openings in enclosed spaces (tank connections, fuel storage hold spaces, void space, fuel tanks and other spaces classified as hazardous areas)
- Additional provisions for pressure relief systems for fuel tanks
- Regulations on atmospheric control within the fuel containment system
- Requirements for the release of ammonia gas into the atmosphere
- Provision for toxicity
- Provisions for corrosion
- Regulations for type C tanks of carbon and carbon-manganese steels
- Fuel sampling
- Non-exhaustive list of issues that should be considered in the risk assessment

Further discussion, principally around the provisions related to the toxicity of ammonia, is expected to take place at CCC 9.

Interim Guidelines for the Safety of Ships Using Fuel Cell Power Installations (MSC.1/Circ.1647)

These guidelines are applicable to ships which have to comply with SOLAS Chapter II-1 Part G. They were approved in 2022 but don't cover storage of reformed fuels. Fuels which are already covered by either the IGF Code part A or by their own specific Guidelines will need to have this circular applied additionally.

A member State collected comments based on the experience gained with the application of the interim guidelines and will present possible amendments to the sub-committee for their consideration:

- Clarification of terminology (e.g. Fuel cell module, Power conditioning system.)
- Further elaborating the requirements for an alternative design by introducing the need for a specific risk assessment of fuel cell power installations which will need to be carried out for each onboard installation.
- Provisions for *Fuel cell modules* already supplied in metallic enclosures.
- Better clarity around *Fuel cell spaces and arrangements* and addition of *Fire safety provisions*.
- Addition of a means for monitoring exhaust temperature and flammable gas detection.
- Provision for *Testing of the fuel cell power system*.
- Risks to persons and the environment should also be addressed.

Technical considerations when transposing the Interim guidelines for the safety of ships using methyl/ethyl alcohol as fuel (MSC.1/Circ.1621) into mandatory instruments under the IGF Code

These interim guidelines are applicable to ships which have to comply with SOLAS Chapter II-1 Part G. CCC 8 updated the work plan for the development of the IGF Code and safety provisions on alternative fuels and, if time permits, CCC 9 will start to discuss the development of mandatory instruments regarding methyl/ethyl alcohols.

Their development is expected to continue until late 2025 and they could enter into force by 2028.

Amendments to the IGF Code

The following amendments to the IGF Code have been proposed:

IGF Code paragraph(s)	Brief summary
part A-1 new 7.3.1.3bis	These amendments are necessary to align the omitted additional provisions on the relief valves' discharging line given in 5.2.2.4 of the IGC Code and add them in section 7.3 of the IGF Code.
part A-1 new 9.4.1bis	Paragraph 9.4.1 of the IGF Code requires all the inlet and outlet connections to the storage fuel tank to be equipped with ESD valves. As an alternative arrangement it is proposed to use non-return valves, as these are deemed to provide an equivalent level of protection in such installations and the requirements for means of emergency isolation of fuel tank PRVs, as per paragraph 6.7.2.6 of the IGF Code, apply to such installations.
part A-1 new 5.3.3.6 (existing 5.3.3.6 to be renumbered 5.3.3.7)	Clarification of the allowable depth of suction wells intruding into the ship's double bottom space in LNG fuel tanks. The proposal suggests using paragraph 2.4.3 from the IGC Code which allows small wells for liquefied gas cargo containment (i.e. h/4 or 350 mm).

The following amendments were discussed by a correspondence group and will be further discussed before finalisation.

IGF Code paragraph(s)	Brief summary
part A-1 new 2.2.34bis	Inclusion of a definition of <i>projected area</i> .
part A-1 new 2.2.38bis	Definitions of small volume of gas, low-capacity bunkering system, large volume of gas, high-capacity bunkering system.
part A-1 amendments to 11.3.1	For ships constructed on or after 1 January 2026, fuel preparation rooms may be located in the cargo area as defined in SOLAS regulation II-2/3.8.

part A-1 amendments to 11.3.3.1.2	For ships constructed on or after 1 January 2026, the minimum distance to the A-60 boundary is to be agreed.
part A-1 new 11.3.2	For ships constructed on or after 1 January 2026, clarification on which boundaries fall within the projected area are to be discussed.
part A-1 new 11.3.2.1	On oil tankers and chemical tankers constructed on or after 1 January 2026 if the fuel tank is located forward of the accommodation block in the cargo area, then the A-60 insulation, required by SOLAS regulation II-2/9.2.4.2.5, could be considered to meet the requirement for A-60 insulation.
part A-1 new 11.3.2.3	For ships constructed on or after 1 January 2026, when there is clearly no possibility of gas release from the fuel containment system, A-60 class shielding may not be required.
part A-1 new 12.5.2.3bis	Rewording of <i>Hazardous area zone 1</i> to further specify such areas.
part A-1 new 12.5.3.3	Hazardous area zone 2, for ships constructed on or after 1 January 2026, are spaces 4m beyond the cylinder and 4m beyond the sphere defined in 12.5.2.3bis.
part A-1 amended 13.3.5	Amendments to paragraph 13.3.5 about air inlets for non-hazardous enclosed spaces, for ships constructed on or after 1 January 2026.
part A-1 new 13.3.7bis	For ships constructed on or after 1 January 2026, new requirements for the ventilation ducts serving non-hazardous spaces which pass through a more hazardous space will need to be gas-tight and have over-pressure (relative to the more hazardous space) and the ventilation ducts serving hazardous spaces passing through less hazardous spaces should also be gas-tight and have under-pressure (relative to the less hazardous space).

Review of the IGC Code

Safety provisions for the safe use of LPG Cargo as fuel

It is recognised that there are numerous LPG carriers being currently designed and constructed and there are a lack of requirements around the use of LPG cargo as fuel. The intersessional correspondence group discussed this as a priority and indicated a preference for amending Chapter 16 of the IGC Code. Amendments to it will include the additional LPG specific requirements rather than developing a new set of Guidelines. The amendments are to be drafted in a non-prescriptive, i.e. goal based, way by introducing requirements for a limited risk assessment. The aim is to submit a draft to MSC 108 for approval and consequent adoption at MSC 109. This will mean that the entry into force will be 1 January 2028 and in order to speed the global adoption, a voluntary early implementation could be issued by 2024.

The other IGC related amendment which was discussed intersessionally was the clarification and simplification of *Table 18-1 ESD functional arrangements*.

The following topics will require further consideration at CCC 9 before being finalised:

- Definition of gastight.

- Requirements for vessels operating in fixed locations.
- ESD systems requirements should be applied regardless of the tank maximum allowable relief valve setting (MARVS).
- The requirements from UI CG 7 Rev.1 – *Carriage of products not covered by the code* and UI CG 8 Rev.1 – *Permissible stresses in way of supports of type C cargo tanks* could be added as amendments to the IGC code.
- Amendments for gas detection requirements on Otto cycle engines.
- The situations under which the ESD system can be inhibited.
- Carbon Dioxide should be treated as both an asphyxiant and toxicant in Chapter 19: *Summary of Minimum Requirements*, but there is no agreement on which requirements could be waived for carbon dioxide as a toxic product.
- A proposal for a safety factor of two on the allowable dynamic stresses in Type C Independent Tanks.
- Whether or not the removable spool piece is a practical means of isolation.
- In those cases where failed ventilation systems don't have redundancies but have spare parts in lieu, operations should stop until ventilation is restored.
- Amendments to provisions that currently prohibit the use of toxic cargoes as fuels will be considered (ammonia ethylene oxide and methyl bromide) if found to meet equal safety as the non-toxic products.
- Tests show that high manganese austenitic steel could be suitable for ammonia service and therefore the following two circulars could be amended MSC.1/Circ.1599/Rev.2 and MSC.1/Circ.1622.
- Amendments to Chapter 8 of the IGC Code concerning the isolation of PRVs.
- Proposal to amend CO₂ special requirements and classification in the IGC Code.

Amendments to the IMSBC Code

The IMSBC Code is regularly reviewed to take into account new requirements for existing substances or new substances.

The 07-23 amendments will enter into force on 1 January 2025, and are available for voluntary application by flag Administrations from 1 January 2024.

The amendments include but are not limited to:

- Cargo information: the shipper shall provide the master or their representative with appropriate information on the cargo. Such information (refer to MSC/Circ.663) shall be confirmed in writing.
- Deletion of the individual schedule for "fish meal (fish scrap), stabilized UN 2216 Anti-oxidant treated".
- A new bulk cargo Shipping Name "CELESTINE CONCENTRATE".
- New individual schedules:
 - Baryte, flotation chemical grade
 - Brown fused alumina
 - Crushed granodiorite fines
 - Direct reduced iron (d)
 - Dunite
 - Dunite fines
 - Electric arc furnace dust, pelletized
 - Fish meal (fish scrap), stabilized
 - Ground granulated blast furnace slag powder
 - Magnesite fines
 - Potassium nitrate
 - Sodium nitrate

- Sodium nitrate and potassium nitrate mixture

CCC 9 will consider the following proposals:

- new individual schedule for **untreated incinerator bottom ash (U-IBA)** as a group A and B cargo
- new individual schedule for **iron ore briquettes** for inclusion in the IMSBC Code as a group C cargo
- new individual schedule for **asphalt granulates** as group C cargo
- new individual schedule for **pea protein concentrate pellets** (non-hazardous) as a group C cargo
- new individual schedule for **petroleum coke (calcined or uncalcined)** as a group C cargo
- new individual schedule for wheat gluten pellets as a group C cargo

Additional amendments could include:

- Deletion of additional requirements for self-contained breathing apparatuses (SCBAs) from some individual schedules:
 - **Aluminium ferrosilicon powder** UN 1395 & **aluminium silicon powder**, uncoated UN 1398
 - **Aluminium smelting by-products or aluminium remelting by-products** UN 3170
 - **Ferrosilicon**
- Reclassifying schedules for **castor beans** or **castor meal** or **castor pomace** or **castor flake** UN 2969 as MHB (TX and/or CR) according to its inherent toxicological properties and to delete hazard class 9. Furthermore, amend their BCSN to **castor beans** since the IMSBC Code permits the transport of unprocessed castor beans in bulk only.
- The cargo information which has to be provided by the shipper and the sample cargo declaration form to be changed to include – if applicable:
 - The subsidiary hazard
 - The notational reference for each MHB hazard of the cargo

Amendments to the IMDG Code

This is a standard agenda item for CCC as the IMDG Code is regularly reviewed to take into account new requirements for existing substances, or add new substances. The Editorial & Technical (E&T) Group meets intersessionally to review proposed amendments to the Code and reports to CCC.

CCC 8 continued the development of the Code for the next set of draft amendments (42-24) intersessionally.

E&T 38, prepared the draft amendment 42-24 to the IMDG Code and worked on the identification of any editorial mistakes in amendment 41-22 which will enter into force on 1 January 2024.

The 42-24 proposed amendments include but are not limited to:

- Harmonisation with the amendments to the UN [Recommendations on the transport of dangerous goods \(22nd edition\)](#).
- The requirement to remove batteries from damaged articles.
- Amendments to the list of currently assigned organic peroxides in packaging (2.5.3.2.4).
- The following new entries or amendments to them: UN 3551, UN 3552, UN 3553, UN 3554, UN 3555, UN 3556, UN 3557, UN 3558, UN 3559, UN 3560, SP310, SP363, SP972, SP400.
- Draft amendments to 5.5.4 *Devices containing dangerous goods, which are in use or intended for use during transport* of the IMDG Code.
- Clarification of the application of paragraph 2.10.2.7 which refers to marine pollutants packaged in single or combination packaging.
- Amendment to paragraph 7.3.3.14 which refers to cargo transport units and the need for their cargo to be uniformly distributed.

- Amendments to provision 7.6.2.8.4 where the requirement for opening the cargo space hatches applies to the weather deck and tween deck hatches (if any).
- Inclusion of SW11 in column 16a for UN 2956.
- Harmonisation of SP388 with the UN Model Regulations and further consequential amendments to SP961.1 and SP962.4.
- Further development of amendments to **carbon's** special provisions.
- New paragraph 5.4.4.2 to the IMDG Code, reading "A certificate exempting a substance, material or article from the provisions of the IMDG Code and referred to in a special provision assigned to an individual entry in the Dangerous Goods List shall be submitted together with the cargo information required by SOLAS regulation VI/2".
- Special provisions for **seed cake** will be discussed at CCC 9.
- Considerations on the terminology "recognized authority" and "a person recognized by the competent authority" will be discussed at CCC 9.
- Amendments concerning basic documentation requirements for goods not subject to the IMDG Code, competent authorities and provision 5.4.4 of the IMDG Code will be discussed at CCC 9.
- Amendments to the stowage category from E to D in the Dangerous Goods List for UN 3129, UN 3130 and UN 3148, and to require "stowage protected from sources of ignition" will be discussed at CCC 9.
- Amendments to SP386 to increase visibility into cargo transported at a temperature higher than ambient will be discussed at CCC 9.
- Amendment to SP964.
- Amendment to UN 2303.
- Amendments to MSC.1/Circ.1588/Rev.2. *Revised Emergency Response Procedures for Ships Carrying Dangerous Goods* (EmS Guide)
- Deletion of MSC/Circ.506/Rev.1 *Container packing certificates/vehicle packing declarations*.
- Revision of IAEA's SSR-6 (Rev.1) regulations for the safe transport of radioactive material
- Additional requirements of a new special provision (provisionally named SP9xa).
- For some substances, replace TP1 with TP2 in column 14 of chapter 3.2 of the Dangerous Goods List
- Changes to special provision UN 1362.
- Amendments to paragraph 7.2.6.1 of the IMDG Code to make it clearer that substances of the same class may be stowed together.
- Amendment to paragraph 5.4.3.1 of the IMDG Code to make it clear that stowage plans should identify by primary and subsidiary hazards classes.
- Amendments to chapter 7.4 and chapter 7.6 of the IMDG Code on stowage and segregation of lithium battery energy storage cabinets.
- Amendments to the shipping conditions of **seed cakes** in the IMDG Code.

Review of Transport Provisions for Vehicles

To address the hazards arising from the shipment of vehicles in the provisions of the IMDG Code, a correspondence group has been established which is reviewing the provisions for transport of vehicles.

CCC 9 will further discuss the topic and the current status of the development:

- It is proposed that there should be different requirements for **new vehicles** transported using Ro-Ro ships and those transported inside CTUs. SOLAS II-2 Reg.19 and Reg.20 already covers the different requirements around fires.
- For **new vehicles**, colours or symbols identifying the type of fuel could be beneficial for firefighting, but the practicality of implementation would be more challenging.

- The CG agreed that current regulations were sufficient for protecting the batteries of **new vehicles** from short-circuit and that new vehicle batteries are designed with short-circuit protection.
- A system may be necessary to detect faulty batteries on **new vehicles**.
- Limit of charge for **new vehicles** might be discussed in the future after more research is conducted.
- No new requirements are deemed necessary for **new hybrid vehicles** at this stage.
- There was no agreement on what a “damaged vehicle” definition should be.
- Agreement that there should be different requirements for **damaged vehicles** transported inside a CTU and those transported via Ro-Ro, but the difference is likely “limited”.
- Provisions for **damaged vehicles** having flammable fluids contained within them should include completely draining the fluid and disconnecting batteries, with no difference between different flashpoint fuels.
- There is consensus that the fuel tanks of **damaged vehicles** should be empty (i.e. the gauge reads zero), and that the other provisions that are developed for flammable liquids should apply for flammable gas-powered vehicles.
- For **damaged vehicles**, there is consensus that batteries should all be removed, or at the very least disconnected, and additional precautions added to the battery storage areas where, for example, extra isolation between batteries could be considered.

Revision of the Interim recommendations for carriage of liquefied hydrogen in bulk (MSC.420(97))

With the rapid development of the global hydrogen industry, there is a promising outlook for the carriage of liquid hydrogen. The interim recommendations for the transportation of liquefied hydrogen in bulk (MSC.420(97)), have been developed for the research into and demonstration of safe long-distance overseas carriage of liquefied hydrogen in bulk. Currently the recommendations stipulate the use of vacuum insulation within the liquid hydrogen containment system. However, as the size of the containment system grows, the structural strength requirements of a vacuum vessel becomes a significant challenge. Hence, to facilitate the implementation of large-scale liquid hydrogen cargo enclosures aboard ships, a proposal introduces a novel containment system design without the use of vacuum insulation.

In general, a cargo containment system for liquid hydrogen will be designed to have an inner shell to hold the cryogenic cargo, enclosed within an outer shell. The inner insulation space (i.e., the annular space) is generally equipped with vacuum insulation. The outer shell may also be externally insulated with materials such as polyurethane foam for additional insulation. In the novel containment system proposed, the inner insulation space is proposed to be insulated with materials such as polyurethane foam and filled with hydrogen gas to prevent condensation on the inner shell. The outer vessel will also be equipped with external insulation using polyurethane foam to prevent condensation of air around the outer shell.

The proposed revision to the Interim Recommendations specifies the safety requirements for such new types of cargo containment systems. For clarity and flexibility for future expansion of the scope, the interim recommendations are proposed to be revised into the following format:

- Part A: General (applicable to ships with any type of cargo containment system);
- Part B: Ships with cargo containment systems of independent cargo tanks using vacuum insulation; and
- Part C: Ships with cargo containment systems of independent cargo tanks using insulation materials and hydrogen gas in the inner insulation spaces.

It is expected that finalisation of the revision of these recommendations could be completed in 2024.

Revision of the Revised recommendations for entering enclosed spaces aboard ships (resolution A.1050(27))

It has been observed that accidents and hazards related to enclosed spaces remain an issue within the industry and that the majority of these accidents happen in the vicinity of the openings. After an accident, there is a high probability not only those individuals involved will lose their lives but also the ones that will come to the rescue without taking the necessary precautions might too.

CCC 9 will look at a comprehensive revision of Resolution A.1050(27) - *Revised Recommendations for Entering Enclosed Spaces Aboard Ships* with a target end date of 2024 and:

- Where entry is required, provide guidance on how enclosed spaces are identified, classified, and managed;
- Consider the human element factors of ship design and construction of enclosed spaces and instigate a human centric design process;
- Thoroughly consider those scenarios where numerous third parties are involved in the ship's cargo operations; and
- Further consider the need for a protocol and additional guidelines.

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

The following Unified Interpretations are proposed for consideration:

- An UI for the **IMSBC Code** that states that standard IEC 60092-506:2003 should be applied to:
 - MHB cargoes capable of creating explosive gas and/or a dust atmosphere
 - and/or for cargoes which are sensitive to heat
- A UI for the **IGC Code** that offers interpretations of:
 - "any envisaged leakage of liquid cargo" found in paragraph 4.6.2.1 of the IGC Code and paragraphs 4.7.1 and 4.7.4.1 of the 1983 IGC Code which should be interpreted as a leakage, which may have resulted from a failure of the primary barrier in normal operation, resulting in filling of the inter-barrier space until a static equilibrium state is reached between the tank space and the inter-barrier space.
 - "capable of being periodically checked" found in paragraph 4.6.2.4 of the IGC Code and paragraph 4.7.7 of the 1983 IGC Code means that the design arrangement of the containment system and the secondary barrier should be such that the effectiveness of the secondary barrier may be reliably confirmed during operation by a suitable test and/or inspection programme specified in the approved "inspection and survey plan".
 - "full secondary liquid-tight barrier" found in paragraph 4.4.1 of the IGC Code should be interpreted as a secondary barrier forming a liquid tight secondary containment capable of containing any envisaged leakage from the tank through its primary barrier.
 - "Complete secondary barrier" found in table 4.5 of the IGC Code and paragraph 4.7.3 of the 1983 IGC Code should also be interpreted as a secondary barrier forming a liquid tight secondary containment capable of containing any envisaged leakage from the tank through its primary barrier.

- "effectiveness" found in paragraph 4.6.2.4 of the IGC Code and paragraph 4.7.7 of the 1983 IGC Code should mean the ability of the barrier to prevent passage of cargo in ways and quantities likely to cause unsafe cold spots to the ship structure. The effectiveness of the secondary barrier should be verified by an approved method described in the "inspection/survey plan".
- An additional UI for the **IGC Code** that offers interpretations:
 - of paragraphs 5.2.2.1 and 9.4.4 of the IGC Code clarifying interconnections between inert gas and nitrogen systems and cargo or gas fuel systems containing product liquid or vapours
 - of paragraphs 8.1 and 16.3.4 of the IGC Code regarding separation between fuel gas and cargo containment vent systems
 - of paragraphs 17.1 and 17.4 of the IGC Code regarding refrigeration systems for the carriage of certain products
 - of paragraph 4.23.3.1 of the IGC Code which provides the permissible stresses in way of supports and stiffener rings of type C cargo tanks as well as other highly loaded locations not fully covered by prescriptive requirements.
 - of "finite element analysis of type C cargo tanks" of paragraph 4.23.3.1 of the IGC Code which also applies to the stiffening rings of the type C tanks.
 - of paragraph 4.23.3.2 of the IGC Code on "buckling assessment of type C cargo tanks"
 - of paragraphs 4.23.1.1, 4.23.1.2, 4.23.2.5 and 4.23.4 of the IGC Code concerning safety factors and the maximum allowable cumulative fatigue damage ratio on the fatigue assessment of a type C tank needs further clarification.
 - of paragraph 5.12.4 of the IGC Code regarding corrosion of cargo piping in the presence of a salt-laden atmosphere on an exposed deck.
- and
 - Draft amendments to MSC.1/Circ.1625 on unified interpretation of paragraph 5.12.3.1 of the IGC Code where external thermal insulation to protect personnel could be removed in those cases where permanent walkways - "flying passage" or "catwalk" – guarantee a safe distance between the pipes and the personnel. Additionally, it is clarified that the term "cargo piping systems", in paragraph 5.12.3.1 of the IGC Code, includes process pressure vessels.
- An additional UI for paragraph 2.4 of the **IGC code** offers the following interpretations:
 - "Where a ship, other than a gas carrier, is fitted with a LCO₂ storage tank as a component of shipboard carbon capture and storage, such LCO₂ storage tanks, regardless of whether being stored in a packaged form or in bulk, should be safely located in accordance with Type 3G requirements in paragraph 2.4 of the IGC Code to ensure an appropriate protective distance from external damage."
- A UI for regulation 10.2.4 of the **IGF code** would specify equivalent designs which can be considered when applying the regulation.

Any other business

Estimate of containers lost at sea – 2023 update

Every year, updated estimates around the number of containers lost at sea are released.

According to the presented research, “in 2022, 661 containers were lost at sea. This represents less than one thousandth of 1% (0.00048%) of the roughly 250 million packed and empty containers currently shipped each year, with cargo transported valued at more than \$7 trillion”. Over a 15 year period, “on average a total of 1,566 containers are lost at sea each year. The average losses for the last three years were 2,301 containers per year”.

A number of initiatives are currently being developed to increase safety even further:

- MARIN Top Tier Study
- Revision of IMO's Guidelines for the implementation of inspection programmes for cargo transport units, including containers. (This was approved at MSC 105)
- Mandatory reporting of containers lost at sea

Update on the Boxtech global container database

The Global Container Database (BoxTech) was conceived to improve safety in the container supply chain, after recent developments and deployment progress, notable improvements are:

- Smart container flags: indicating the level of safety certification of the device, particularly helpful for carriers operating LNG-powered vessels.
- Containers can now be marked sold, lost or scrapped.
- Introduction of additional tank container characteristics which help terminals and planners.
- Automatic data upload now possible through API and Secure File Transfer Protocol (SFTP).

Report on activities related to the Global ACEP Database

Prior to the creation of the Global ACEP Database, authorities and industry stakeholders had no means to check the validity of an Approved Continuous Examination Programme (ACEP) and no way of knowing whether the container owner/operator to whom it was initially delivered continued to meet the requirements of the programme. This lack of transparency gave rise to safety and compliance concerns that the Global ACEP Database helps overcome.

It is noticed that Administrations are still underutilising this service which is free of charge and extremely useful.

Regulatory Affairs

Lloyd's Register Global Technology Centre,
Hampshire House
Hampshire Corporate Park, Southampton
SO53 3RY, UK

Lloyd's Register EMEA

e: RegulatoryAffairs@lr.org

w: www.lr.org/imo

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