Interpretations of the

IGF Code

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GF1 Test for gas fuel tank's high level alarm

(Jan 2017)
(Rev.1 July 2017 Withdrawn)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95)., at paragraph 15.4.2.3 states:

The position of the sensors in the liquefied gas fuel tank shall be capable of being verified before commissioning. At the first occasion of full loading after delivery and after each dry-docking, testing of high level alarms shall be conducted by raising the fuel liquid level in the liquefied gas fuel tank to the alarm point.

Interpretation

The expression "each dry docking" refers to:

- the survey of the outside of the ship's bottom required for the renewal of the Cargo Ship Safety Construction Certificate and or the Cargo Ship Safety Certificate, for cargo ships.

- the survey of the outside of the ship's bottom to be carried out every 60 months according to IMO Resolution A.1104(29, paragraphs 5.10.1 and 5.10.2), for passenger ships.

Ref.

SOLAS Reg. I/10.
IMO Res. A.1104(29)

End of Document

Note:

1. This UI is to be applied by IACS Members from 1 January 2018.

2. Rev.1 of this UI was withdrawn prior to coming into force on 1 July 2018.

GF2 Ship Steel Protection against Liquefied Gas Fuel (Part A-1, paragraph 6.3.10)

(Sep 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 6.3.10 of Part A-1 states:

If liquefied gas fuel storage tanks are located on open deck the ship steel shall be protected from potential leakages from tank connections and other sources of leakage by use of ***drip trays****. (...)*

Interpretation

Whether a drip tray is needed or not is to be in accordance with the following:

1. When the tank is located on the open deck, drip trays are to be provided to protect the deck from leakages from tank connections and other sources of leakage.

2. When the tank is located below the open deck but the tank connections are on the open deck, drip trays are to be provided to protect the deck from leakages from tank connections and other sources of leakage.

3. When the tank and the tank connections are located below the deck, all tank connections are to be located in a tank connection space. Drip trays in this case are not required.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2019.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF3 Tank connection space for tanks on open deck and tank connection space equipment

(Dec 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 2.2.15.3 states:

Tank connection space is a space surrounding all tank connections and tank valves that is required for tanks with such connections in enclosed spaces.

Interpretation

1 A tank connection space may be required also for tanks on open deck. This may apply for ships where restriction of hazardous areas is safety critical. A tank connection space may also be necessary in order to provide environmental protection for essential safety equipment related to the gas fuel system like tank valves, safety valves and instrumentation.

2 A tank connection space may also contain equipment such as vaporizers or heat exchangers. Such equipment is considered to only contain potential sources of release, but not sources of ignition

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF4 Fuel preparation room

(Dec 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 2.2.17 states:

Fuel preparation room means any space containing pumps, compressors and/or vaporizers for fuel preparation purposes.

Interpretation

A tank connection space which has equipment such as vaporizers or heat exchangers installed inside is not regarded as a fuel preparation room. Such equipment is considered to only contain potential sources of release, but not sources of ignition.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF5 (Dec 2017) Appropriate location of premixed engines using fuel gas mixed with air before the turbocharger

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 5.4.1 states:

In order to minimize the probability of a gas explosion in a machinery space with gas-fuelled machinery one of these two alternative concepts may be applied:

.1 Gas safe machinery spaces: Arrangements in machinery spaces are such that the spaces are considered gas safe under all conditions, normal as well as abnormal conditions, i.e. inherently gas safe.
In a gas safe machinery space a single failure cannot lead to release of fuel gas into the machinery space.

.2 ESD-protected machinery spaces: Arrangements in machinery spaces are such that the spaces are considered non-hazardous under normal conditions, but under certain abnormal conditions may have the potential to become hazardous. In the event of abnormal conditions involving gas hazards, emergency shutdown (ESD) of non-safe equipment (ignition sources) and machinery shall be automatically executed while equipment or machinery in use or active during these conditions shall be of a certified safe type.
In an ESD protected machinery space a single failure may result in a gas release into the space. Venting is designed to accommodate a probable maximum leakage scenario due to technical failures.
Failures leading to dangerous gas concentrations, e.g. gas pipe ruptures or blow out of gaskets are covered by explosion pressure relief devices and ESD arrangements.

Interpretation

Premixed engines using fuel gas mixed with air before the turbocharger shall be located in ESD protected machinery spaces.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF6 (Dec 2017) Protection against cryogenic leakage and control of hazardous zones in fuel preparation rooms on open deck

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95);

Paragraph 6.2.1.1 states:

the fuel containment system shall be so designed that a leak from the tank or its connections does not endanger the ship, persons on board or the environment. Potential dangers to be avoided include:
.1 exposure of ship materials to temperatures below acceptable limits;

Paragraph 5.8 states:

Fuel preparation rooms shall be located on an open deck, unless those rooms are arranged and fitted in accordance with the regulations of this Code for tank connection spaces.

Interpretation

1 Fuel preparation rooms, regardless of location, shall be arranged to safely contain cryogenic leakages.

2 The material of the boundaries of the fuel preparation room shall have a design temperature corresponding with the lowest temperature it can be subjected to in a probable maximum leakage scenario unless the boundaries of the space, i.e. bulkheads and decks, are provided with suitable thermal protection.

3 The fuel preparation room shall be arranged to prevent surrounding hull structure from being exposed to unacceptable cooling, in case of leakage of cryogenic liquids.

4 The fuel preparation room shall be designed to withstand the maximum pressure build up during such a leakage. Alternatively, pressure relief venting to a safe location (mast) can be provided.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF7 (Dec 2017) External surface area of the tank for determining sizing of pressure relief valve

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), paragraph 6.7.3.1.1.2 and figure 6.7.1;

Paragraph 6.7.3.1.1.2 states:

vapours generated under fire exposure computed using the following formula:

$Q = FGA^{0.82}$ *(m^3/s),*

where:

Q = minimum required rate of discharge of air at standard conditions of 273.15 Kelvin (K) and 0.1013 MPa.

F = fire exposure factor for different liquefied gas fuel types:

F = 1.0 for tanks without insulation located on deck;

F = 0.5 for tanks above the deck when insulation is approved by the Administration. (Approval will be based on the use of a fireproofing material, the thermal conductance of insulation and its stability under fire exposure);

F = 0.5 for uninsulated independent tanks installed in holds;

F = 0.2 for insulated independent tanks in holds (or uninsulated independent tanks in insulated holds);

F = 0.1 for insulated independent tanks in inerted holds (or uninsulated independent tanks in inerted, insulated holds); and

F = 0.1 for membrane tanks.
For independent tanks partly protruding through the weather decks, the fire exposure factor shall be determined on the basis of the surface areas above and below deck.

G = gas factor according to formula:

$$G = \frac{12.4}{LD}\sqrt{\frac{ZT}{M}}$$

-

where:

GF7
(Cont)

T = temperature in Kelvin at relieving conditions, i.e. 120% of the pressure at which the pressure relief valve is set;

L = latent heat of the material being vaporized at relieving conditions, in kJ/kg;

D = a constant based on relation of specific heats k and is calculated as follows:

$$D = \sqrt{k\left(\frac{2}{k+1}\right)^{\frac{k+1}{k-1}}}$$

where:

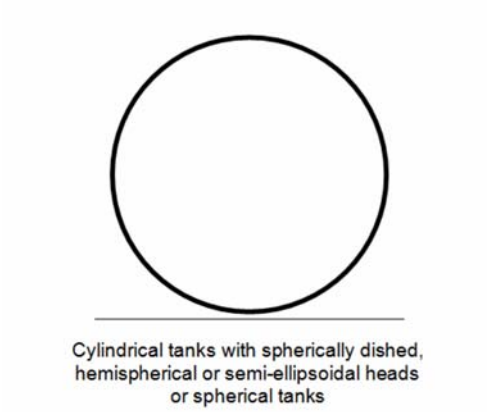
k = ratio of specific heats at relieving conditions, and the value of which is between 1.0 and 2.2. If k is not known, D = 0.606 shall be used;

Z = compressibility factor of the gas at relieving conditions; if not known, Z = 1.0 shall be used;

M = molecular mass of the product.

The gas factor of each liquefied gas fuel to be carried is to be determined and the highest value shall be used for PRV sizing.

A = external surface area of the tank (m^2), as for different tank types, as shown in figure 6.7.1.



GF7
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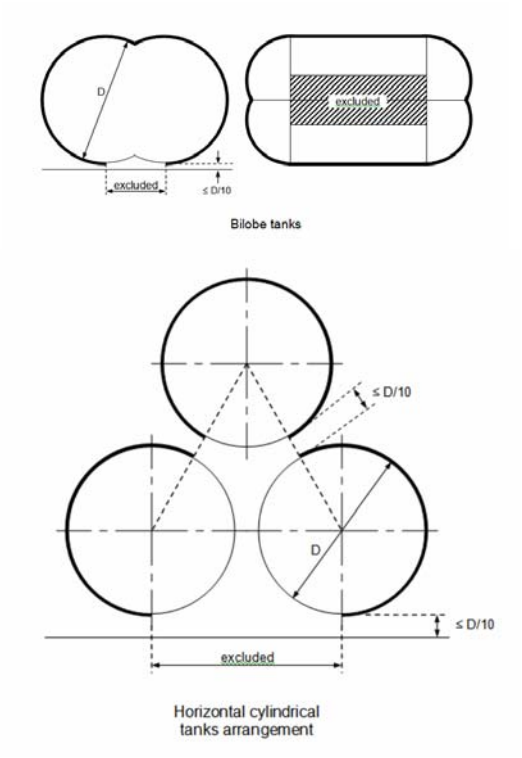

Figure 6.7.1

Interpretation

For prismatic tanks

1 L_{min}, for non-tapered tanks, is the smaller of the horizontal dimensions of the flat bottom of the tank. For tapered tanks, as would be used for the forward tank, L_{min} is the smaller of the length and the average width.

2 For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is equal to or less than $L_{min}/10$:

A = external surface area minus flat bottom surface area.

3 For prismatic tanks whose distance between the flat bottom of the tank and bottom of the hold space is greater than $L_{min}/10$:

A = external surface area.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF8 (Dec 2017) Control and maintenance of pressure and temperature of liquefied gas fuel tanks after the activation of the safety system

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95);

Paragraph 6.9.1.1 states:

With the exception of liquefied gas fuel tanks designed to withstand the full gauge vapour pressure of the fuel under conditions of the upper ambient design temperature, liquefied gas fuel tanks' pressure and temperature shall be maintained at all times within their design range by means acceptable to the Administration, e.g. by one of the following methods:

.1 reliquefaction of vapours;
.2 thermal oxidation of vapours;
.3 pressure accumulation; or
.4 liquefied gas fuel cooling.

The method chosen shall be capable of maintaining tank pressure below the set pressure of the tank pressure relief valves for a period of 15 days assuming full tank at normal service pressure and the ship in idle condition, i.e. only power for domestic load is generated.

Paragraph 6.9.1.2 states:

Venting of fuel vapour for control of the tank pressure is not acceptable except in emergency situations.

Interpretation

Liquefied gas fuel tanks' pressure and temperature shall be controlled and maintained within the design range at all times including after activation of the safety system required in 15.2.2 for a period of minimum 15 days. The activation of the safety system alone is not deemed as an emergency situation.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF9 (Dec 2017) Special consideration within the risk assessment of closed or semi-enclosed bunkering stations

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 8.3.1.1 states:

The bunkering station shall be located on open deck so that sufficient natural ventilation is provided. Closed or semi-enclosed bunkering stations shall be subject to special consideration within the risk assessment.

Interpretation

The special consideration shall as a minimum include, but not be restricted to, the following design features:

- segregation towards other areas on the ship
- hazardous area plans for the ship
- requirements for forced ventilation
- requirements for leakage detection (e.g. gas detection and low temperature detection)
- safety actions related to leakage detection (e.g. gas detection and low temperature detection)
- access to bunkering station from non-hazardous areas through airlocks
- monitoring of bunkering station by direct line of sight or by CCTV.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF10 Ventilation of machinery spaces

(Dec 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 13.5.1 states:

The ventilation system for machinery spaces containing gas-fuelled consumers shall be independent of all other ventilation systems.

Interpretation

Spaces enclosed in the boundaries of machinery spaces (such as purifier's room, engine-room workshops and stores) are considered an integral part of machinery spaces containing gas-fuelled consumers and, therefore, their ventilation system does not need to be independent of the one of machinery spaces.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF11 Ventilation of double piping and gas valve unit spaces in gas safe engine-rooms

(Dec 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 13.8.2 states:

The ventilation system for double piping and for gas valve unit spaces in gas safe engine-rooms shall be independent of all other ventilation systems.

Interpretation

Double piping and gas valve unit spaces in gas safe engine-rooms are considered an integral part of the fuel supply systems and, therefore, their ventilation system does not need to be independent of other fuel supply ventilation systems provided such fuel supply systems contain only gaseous fuel.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF12 Ventilation inlet for double wall piping or duct

(Dec 2017)

The International Code of Safety for Ships Using Gases or Other Low-Flashpoint Fuels (IGF Code), MSC Res.391(95), at paragraph 13.8.3 states:

The ventilation inlet for the double wall piping or duct shall always be located in a non-hazardous area away from ignition sources. The inlet opening shall be fitted with a suitable wire mesh guard and protected from ingress of water.

Interpretation

The ventilation inlet for the double wall piping or duct shall always be located in a non-hazardous area in open air away from ignition sources.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2018.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF13 Fire protection of spaces containing equipment for the fuel preparation

(July 2018)

IGF Code Part A-1, Section 11.3.1 reads:

11.3 Regulations for fire protection

11.3.1 Any space containing equipment for the fuel preparation such as pumps, compressors, heat exchangers, vaporizers and pressure vessels shall be regarded as a machinery space of category A for fire protection purposes.

Interpretation

1. Fire protection in 11.3.1 means structural fire protection, not including means of escape.

2. Enclosed spaces containing equipment for fuel preparation such as pumps or compressors or other potential ignition sources are to be provided with a fixed fire-extinguishing system complying with the provisions of SOLAS II-2/10.4.1.1 and the FSS Code and taking into account the necessary concentrations / application rate required for extinguishing gas fires.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on:

   i) ships contracted for construction on or after 1 July 2019;

   ii) ships which commence conversion to using low-flashpoint fuels on or after 1 July 2019;

   iii) ships, using low-flashpoint fuels, which commence, on or after 1 July 2019, undertaking to use low-flashpoint fuels different from those which it was originally approved to use before 1 July 2019.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

3. The “commence conversion” date means the date on which the contract is placed for the conversion or in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

4. The “commence undertaking to use” date is the date of the document accepted by the Classification Society as request for approval for the use of a new fuel.

End of Document

GF14 Hazardous area classification of fuel storage hold spaces

(July 2018)

IGF Code Part A-1, Section 12.5.2.1 and footnote 23 reads:

12.5.2 Hazardous area zone 1 [22]

This zone includes, but is not limited to:

.1 tank connection spaces, fuel storage hold spaces [23] and interbarrier spaces;

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[23] Fuel storage hold spaces for type C tanks are normally not considered as zone 1.

Interpretation

For the purposes of hazardous area classification, fuel storage hold spaces containing Type C tanks with all potential leakage sources in a tank connection space and having no access to any hazardous area, shall be considered non-hazardous.

Where the fuel storage hold spaces include potential leak sources, e.g. tank connections, they shall be considered hazardous area zone 1.

Where the fuel storage hold spaces include bolted access to the tank connection space, they shall be considered hazardous area zone 2.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on:

   i) ships contracted for construction on or after 1 July 2019;

   ii) ships which commence conversion to using low-flashpoint fuels on or after 1 July 2019;

   iii) ships, using low-flashpoint fuels, which commence, on or after 1 July 2019, undertaking to use low-flashpoint fuels different from those which it was originally approved to use before 1 July 2019.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

3. The “commence conversion” date means the date on which the contract is placed for the conversion or in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

4. The “commence undertaking to use” date is the date of the document accepted by the Classification Society as request for approval for the use of a new fuel.

End of Document

GF15 Alarms for loss of ventilation capacity

(July 2018)

IGF Code Part A-1, Section 15.10.1 reads:

15.10 Regulations for ventilation

15.10.1 Any loss of the required ventilating capacity shall give an audible and visual alarm on the navigation bridge or in a continuously manned central control station or safety centre.

Interpretation

Acceptable means to confirm that the ventilation system has the “required ventilating capacity” in operation are, but not limited to:

- Monitoring of the ventilation electric motor or fan operation combined with underpressure indication ; or
- Monitoring of the ventilation electric motor or fan operation combined with ventilation flow indication ; or
- Monitoring of ventilation flow rate to indicate that the required air flow rate is established.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on:

   i) ships contracted for construction on or after 1 July 2019;

   ii) ships which commence conversion to using low-flashpoint fuels on or after 1 July 2019;

   iii) ships, using low-flashpoint fuels, which commence, on or after 1 July 2019, undertaking to use low-flashpoint fuels different from those which it was originally approved to use before 1 July 2019.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

3. The “commence conversion” date means the date on which the contract is placed for the conversion or in the absence of a contract, the date on which the work identifiable with the specific conversion begins.

4. The “commence undertaking to use” date is the date of the document accepted by the Classification Society as request for approval for the use of a new fuel.

End of Document

GF16 Liquefied gas fuel tank loading limit higher than calculated using the reference temperature

(Dec 2018)

IGF Code Part A, Section 6.8.2 reads:

6.8.2 In cases where the tank insulation and tank location make the probability very small for the tank contents to be heated up due to an external fire, special considerations may be made to allow a higher loading limit than calculated using the reference temperature, but never above 95%. This also applies in cases where a second system for pressure maintenance is installed, (refer to 6.9). However, if the pressure can only be maintained / controlled by fuel consumers, the loading limit as calculated in 6.8.1 shall be used.

Interpretation

The alternative loading limit option given under 6.8.2 is understood to be an alternative to 6.8.1 and should only be applicable when the calculated loading limit using the formulae in 6.8.1 gives a lower value than 95%.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2020.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document

GF17 Other rooms with high fire risk

(Dec 2018)

IGF Code Part A, Section 11.3.3 reads:

11.3.3 The space containing fuel containment system shall be separated from the machinery spaces of category A or other rooms with high fire risks. The separation shall be done by a cofferdam of at least 900 mm with insulation of A-60 class. When determining the insulation of the space containing fuel containment system from other spaces with lower fire risks, the fuel containment system shall be considered as a machinery space of category A, in accordance with SOLAS regulation II-2/9. The boundary between spaces containing fuel containment systems shall be either a cofferdam of at least 900 mm or A-60 class division. For type C tanks, the fuel storage hold space may be considered as a cofferdam.

Interpretation

The following "other rooms with high fire risk" should as a minimum be considered, but not be restricted to:

1. cargo spaces except cargo tanks for liquids with flashpoint above 60°C and except cargo spaces exempted in accordance with SOLAS regulations II-2/10.7.1.2 or II-2/10.7.1.4;

2. vehicle, ro-ro and special category spaces;

3. service spaces (high risk): galleys, pantries containing cooking appliances, saunas, paint lockers and store-rooms having areas of 4 m^2 or more, spaces for the storage of flammable liquids and workshops other than those forming part of the machinery space, as provided in SOLAS regulations II-2/9.2.2.4, II-2/9.2.3.3 and II-2/9.2.4; and

4. accommodation spaces of greater fire risk: saunas, sale shops, barber shops and beauty parlours and public spaces containing furniture and furnishing of other than restricted fire risk and having deck area of 50 m^2 or more, as provided in SOLAS regulation II-2/9.2.2.3.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2020.

2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

End of Document