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UNIFIED INTERPRETATION OF PROVISIONS OF IMO SAFETY, SECURITY, ENVIRONMENT, FACILITATION, LIABILITY AND COMPENSATION-RELATED CONVENTIONS

IACS unified interpretation SC 307 of SOLAS regulation II-2/4.5.10 regarding protection of cargo pump-rooms

Submitted by IACS

SUMMARY

Executive summary:	This document presents IACS unified interpretation SC 307 of SOLAS regulation II-2/4.5.10 regarding the protection of cargo pump-rooms.
Strategic direction, if applicable:	7
Output:	7.1
Action to be taken:	Paragraph 12
Related documents:	SSE 6/12/12, SSE 6/18; SSE 10/19/4; MSC 104/15/1 and MSC 105/20

Background

1 SOLAS regulation II-2/4.5.10 states the following in respect of the protection of cargo pump-rooms:

"**5.10 Protection of cargo pump-rooms**

5.10.1 In tankers:

…

.3 a system for continuous monitoring of the concentration of hydrocarbon gases shall be fitted. Sampling points or detector heads shall be located in suitable positions in order that potentially dangerous leakages are readily detected. When the hydrocarbon gas concentration reaches a pre-set level which shall not be higher than 10% of the lower flammable limit, a continuous audible and

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visual alarm signal shall be automatically effected in the pump-room, engine control room, cargo control room and navigation bridge to alert personnel to the potential hazard; and

.4 all pump-rooms shall be provided with bilge level monitoring devices together with appropriately located alarms."

2 That regulation contains vague expressions "suitable positions", "potentially dangerous leakages," "readily detected" and "appropriately located alarms." The regulation does not provide detailed explanations where the detectors should be fitted and where the bilge high-level alarms are to be provided permitting detection at the very early stage of any leakage or explosive atmospheric condition. This creates ambiguity and substantial room for system design and construction on board, causing confusion and disagreement.

3 *Guidelines for measures to prevent fires in engine-rooms and cargo pump-rooms* (MSC.1/Circ.1321) provide some recommended arrangements for hydrocarbon gas detectors, as follows:

"**2 Gas detection systems**

2.1 Design requirements

…

.7 a hydrocarbon gas detector is recommended to be installed in the following places:

.7.1 (perpendicular) upper part of the main cargo pump or between two cargo pumps;

.7.2 one detector within 30 cm above the lowest part of the cargo pump-room bottom floor; and

.7.3 one detector every 10 m length or width of the cargo pump-room."

4 Additionally, *Unified interpretations of SOLAS chapter II-2, the FSS Code, the FTP Code and related fire test procedures* (MSC/Circ.1120) provide the following interpretation of SOLAS regulation II-2/4.5.10.1.3:

"2 Detection positions are the zones where air circulation is reduced (e.g. recessed corners)."

5 Even following the requirements of SOLAS regulation II-2/4.5.10 and recommendations in MSC.1/Circ.1321, the fixed gas detection system was not effectively activated on board the ship **Valtamed** in February 2020, as evidenced by the finding in the investigation report which states "the pump-room's fixed gas detection system alarms did not activate at any point."

6 In 2015, there was an explosion in the cargo pump-room of the FPSO **Cidade de São Mateus**. The National Agency for Petroleum, Natural Gas and Bilfuels (ANP), Rio de Janeiro, Brazil, described the accident, as follows:

"The first team was sent to the pump-room to investigate the source of gas detection, eighteen minutes after the alarm was sounded. Indeed, they identified the leakage, removing any doubt over the validity of the alarm. Afterwards, the team leader went

to the control room to describe what they had seen on-site to the emergency command. The scene was reported as a black liquid leak from a flange four floors below the main deck, which by that time had low flow (in the form of thread) and was forming a small pool on-site despite the large volume that had leaked to the floors below the pump-room."

7 IACS considers that an early and proper high bilge alarm could have helped to eliminate the development of an explosive atmosphere at an early stage when leakage happened.

8 Taking into consideration those accidents, together with their investigation reports, requirements in SOLAS regulation II-2/4.5.10 and recommendations in MSC.1/Circ.1321, document SSE 10/19/4 (IACS) proposed amendments to MSC.1/Circ.1321 concerning arrangement of hydrocarbon gas detectors and bilge high-level alarms in the cargo pump-rooms, with the purpose of promptly and effectively detecting the leakage and the presence of explosive conditions and ultimately to improve the safe condition for the personnel accessing or working in the cargo pump-room.

9 SSE 10 noted the view that the proposed amendment entailed substantial changes to the arrangement of ship equipment, and, thus, this should be considered under a new output together with sufficient justification (SSE 10/20, paragraph 19.23).

Discussion

10 After SSE 10, IACS set about developing a new output proposal to initiate the work at IMO to introduce changes to MSC.1/Circ.1321. However, noting that it would take an unknown time for the output to be considered, the revision to be developed and approved, all the while the risk to safety of life of seafarers being present, IACS adopted its unified interpretation SC 307 of SOLAS regulation II-2/4.5.10, which is presented in the annex for information.

11 Member States are invited to note that the unified interpretation will be applied by IACS members from 1 July 2025 to ships contracted for construction on or after 1 January 2026, unless advised otherwise by the flag States in writing.

Action requested of the Sub-Committee

12 The Sub-Committee is invited to note the IACS UI SC 307 and take action, as appropriate.

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ANNEX

IACS UNIFIED INTERPRETATION SC 307 OF SOLAS REGULATION II-2/4.5.10

"**5.10 Protection of cargo pump-rooms**

5.10.1 In tankers:

…

.3 a system for continuous monitoring of the concentration of hydrocarbon gases shall be fitted. Sampling points or detector heads shall be located in suitable positions in order that potentially dangerous leakages are readily detected. When the hydrocarbon gas concentration reaches a pre-set level which shall not be higher than 10% of the lower flammable limit, a continuous audible and visual alarm signal shall be automatically effected in the pump-room, engine control room, cargo control room and navigation bridge to alert personnel to the potential hazard; and

.4 all pump-rooms shall be provided with bilge level monitoring devices together with appropriately located alarms."

Interpretation

1 Characteristics of the cargoes and their vapours (flammability, density, etc.) are to be taken into consideration to determine the type and arrangement of detectors.

2 Suitable numbers of detectors or sampling heads are to be provided in the cargo pump-room at upper and lower positions, at least covering the following places:

.1 (perpendicular) upper part of each cargo pump or between two cargo pumps;

.2 within 30 cm above the lowest part of the cargo pump-room bottom floor;

.3 not more than 1 m below the cargo pump-room ceiling/head deck;

.4 one detector every 10 m in length or width of the cargo pump-room; and

.5 areas where the air circulation is reduced (e.g. recessed corners).

3 A high level of liquid in the pump-room is to activate a continuous audible and visual alarm signal in the pump-room, cargo control room, engine control room and on the navigation bridge.

Notes:

1. This UI is to be uniformly implemented by IACS Societies on ships contracted for construction on or after 1 January 2026.

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 PR 29.