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**UNITED INTERPRETATION OF PROVISIONS OF IMO SAFETY, SECURITY, AND
ENVIRONMENT-RELATED CONVENTIONS**

**Fire integrity of the bulkheads between engine rooms and spaces, in which urea or
sodium hydroxide solution tanks are installed**

Submitted by IACS

SUMMARY

Executive summary: The annex to this document provides a draft unified interpretation of SOLAS regulations II-2/3.30, II-2/9.2.2.3.2.2, II-2/9.2.2.4.2.2, II-2/9.2.3.3.2.2 and II-2/9.2.4.2.2.2 in order to clarify the required fire integrity of bulkheads between engine rooms and spaces, in which urea or sodium hydroxide solution tanks are installed

Strategic direction, if applicable: 6

Output: 6.1

Action to be taken: Paragraph 9

Related documents: None

Background

1 Recently, there have been an increasing number of ships installing selective catalytic reduction (SCR) systems, exhaust gas recirculation (EGR) systems or exhaust gas cleaning systems (EGCS), so that ships can comply with the NO_x and SO_x emission limits in accordance with the provisions of the MARPOL Convention.

2 Urea or sodium hydroxide solutions are used as reducing agents in SCR systems, EGR systems and EGCS, and the storage tanks for them are often installed within the main engine room or in a space that is adjacent to the main engine room.

3 However, in determining the fire integrity of divisions, SOLAS regulation II-2/9 does not identify a category for such a storage space. Therefore, there is a possibility that inconsistencies may arise due to different understandings/interpretations.

4 In this regard, IACS considers that a unified interpretation (UI) is needed in order to facilitate the global and consistent implementation of the SOLAS requirements relating to the fire integrity of divisions.

Discussion

5 Similar to workshops, converter rooms, etc. within engine rooms, such storage tanks that are located within the engine room are considered as being part of the main engine room.

6 On the other hand, although categories of the storage tanks installed in a separate compartment shall be determined in accordance with SOLAS regulations II-2/9.2.2.3.2.2, II-2/9.2.2.4.2.2, II-2/9.2.3.3.2.2 or II-2/9.2.4.2.2, there is no definition for such compartments in these regulations. Hence, the most appropriate categories for these compartments can be assigned considering the fire properties of what is stored in them.

7 The chemical properties of urea and sodium hydroxide solutions mean that they can be regarded as non-flammable liquids having a flash point exceeding 60 degrees and which do not present an explosion risk. Based on this understanding, IACS has reached the conclusion that "other machinery spaces" for passenger ships carrying not more than 36 passengers and cargo ships; and "tanks, voids and auxiliary machinery spaces having little or no fire risk" for ships carrying more than 36 passengers are the most appropriate categories for spaces in which urea and sodium hydroxide solutions are stored.

Proposal

8 Based on the comments and analysis provided above, IACS has prepared the draft UI, as set out in the annex to this document.

Action requested of the Sub-Committee

9 The Sub-Committee is invited to consider the foregoing and the proposed draft UI provided in the annex and take action, as appropriate.

ANNEX

DRAFT UNIFIED INTERPRETATION OF SOLAS REGULATION SOLAS REGULATIONS II-2/3.30, II-2/9.2.2.3.2.2, II-2/9.2.2.4.2.2, II-2/9.2.3.3.2.2 and II-2/9.2.4.2.2.2

Fire integrity of the bulkheads between engine room and spaces, in which urea or sodium hydroxide solution tanks are installed

SOLAS regulation II-2/3.30 (definitions) states:

"30 *Machinery spaces* are machinery spaces of category A and other spaces containing propulsion machinery, boilers, oil fuel units, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air conditioning machinery, and similar spaces, and trunks to such spaces."

SOLAS regulation II-2/9.2.2.3.2.2 (ships carrying more than 36 passengers) states:

"(10) *Tanks, voids and auxiliary machinery spaces having little or no fire risk*

Water tanks forming part of the ship's structure.

Voids and cofferdams.

Auxiliary machinery spaces which do not contain machinery having a pressure lubrication system and where storage of combustibles is prohibited, such as:

ventilation and air-conditioning rooms; windlass room; steering gear room; stabilizer equipment room; electrical propulsion motor room; rooms containing section switchboards and purely electrical equipment other than oil-filled electrical transformers (above 10 kVA); shaft alleys and pipe tunnels; spaces for pumps and refrigeration machinery (not handling or using flammable liquids).

Closed trunks serving the spaces listed above.

Other closed trunks such as pipe and cable trunks."

SOLAS regulation chapter II-2/9.2.2.4.2.2 (ships carrying not more than 36 passengers) states:

"(7) *Other machinery spaces*

Electrical equipment rooms (auto-telephone exchange, air-conditioning duct spaces).

Spaces as defined in regulation 3.30 excluding machinery spaces of category A."

SOLAS regulation II-2/9.2.3.3.2.2 (cargo ships except tankers) states:

- "(7) *Other machinery spaces*
Electrical equipment rooms (auto-telephone exchange, air-conditioning duct spaces).

Spaces as defined in regulation 3.30 excluding machinery spaces of category A."

SOLAS regulation II-2/9.2.4.2.2.2 (tankers) states:

- "(7) *Other machinery spaces*
Electrical equipment rooms (auto-telephone exchange and air-conditioning duct spaces).

Spaces as defined in regulation 3.30 excluding machinery spaces of category A."

Interpretation

In cases where urea or sodium hydroxide solution tanks for selective catalytic reduction (SCR) systems, exhaust gas recirculation (EGR) systems or exhaust gas cleaning systems (EGCS) are installed in a space separated from the engine room, in determining fire integrity of divisions, the solution tank space should be considered as "similar spaces" in the definition of "*machinery spaces*" and should be categorized as:

- "(10) *Tanks, voids and auxiliary machinery spaces having little or no fire risk*" for ships carrying more than 36 passengers; or
"(7) *Other machinery spaces*" for ships carrying not more than 36 passengers and cargo ships.

The bulkhead between the engine room and the solution tank space should have a fire integrity of at least "A-0" class.
