

SUB-COMMITTEE ON SHIP SYSTEMS AND  
EQUIPMENT  
6th session  
Agenda item 12

SSE 6/12/10  
21 December 2018  
Original: ENGLISH

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

**Carriage of dangerous goods – Required air changes  
(SOLAS regulations II-2/19.3.4.1 and II-2/19.3.5.4)**

**Submitted by IACS**

**SUMMARY**

*Executive summary:* The annex to this document provides a copy of IACS Unified Interpretation SC288 on "Carriage of dangerous goods – Required air changes", which has been developed to facilitate the global and consistent implementation of SOLAS regulations II-2/19.3.4.1 and II-2/19.3.5.4

*Strategic direction, if applicable:* 6

*Output:* 6.1

*Action to be taken:* Paragraph 11

*Related documents:* None

**Background**

1 SOLAS regulation II-2/19.3.4.1 states:

**"3.4 Ventilation arrangement**

3.4.1 Adequate power ventilation shall be provided in enclosed cargo spaces. The arrangement shall be such as to provide for at least six air changes per hour in the cargo space, based on an empty cargo space, and for removal of vapours from the upper or lower parts of the cargo space, as appropriate."

2 SOLAS regulation II-2/19.3.5.4 states:

### "3.5 Bilge Pumping

...

3.5.4 Enclosed spaces outside machinery spaces containing bilge pumps serving cargo spaces intended for carriage of flammable or toxic liquids shall be fitted with separate mechanical ventilation giving at least six air changes per hour. If the space has access from another enclosed space, the door shall be self-closing."

3 Note 1 of table 19.1 of SOLAS regulation II-2/19 states:

"For classes 4 and 5.1 solids not applicable to closed freight containers. For classes 2, 3, 6.1 and 8 when carried in closed freight containers, the ventilation rate may be reduced to not less than two air changes per hour. For classes 4 and 5.1 liquids when carried in closed freight containers, the ventilation rate may be reduced to not less than two air changes per hour. For the purpose of this requirement, a portable tank is a closed freight container."

### Discussion

4 This document discusses the need for the ventilation of the dangerous goods cargo holds containing bilge pumps, in cases where note 1 of table 19.1, as per paragraph 3 above, is applicable.

5 It is noted that it is quite common that the bilge pump for the bilge system dedicated to the cargo spaces used for the carriage of dangerous goods (as per SOLAS regulation II-2/19.3.5) is located inside the cargo spaces themselves.

6 When dangerous goods are carried in closed freight containers in a cargo space that contains the bilge pump dedicated to the dangerous goods cargo space, SOLAS regulation II-2/19.3.4.1 requires six air changes per hour in enclosed cargo spaces; though as per note 1 of table 19.1, this ventilation rate may be reduced to two air changes per hour when carrying dangerous goods of classes 2, 3, 4 liquids, 5.1 liquids, 6.1 and 8 in closed freight containers. However, SOLAS regulation II-2/19.3.5.4 requires 6 air changes per hour in the space containing the bilge pump serving the dangerous goods cargo spaces.

7 In case the bilge pump serves only the cargo space in which it is installed, the understanding of IACS is that, considering that note 1 of table 19.1 is applicable (i.e. only dangerous goods of classes 2, 3, 4 liquids, 5.1 liquids, 6.1 and 8 in closed freight containers are carried in the concerned cargo holds); and taking into account that the pump is adequate for use in this space (e.g. diaphragm-type pump), only two air changes per hour are needed in the container cargo hold, notwithstanding SOLAS regulation II-2/19.3.5.4. It is considered that the bilge pump will not introduce any additional leakage hazards in the container cargo hold; since the cargo carried in the hold is the actual source of any potential leakage.

8 In cases where the bilge pump serves several cargo spaces, the same principle, as explained in paragraph 7 above, may be applied. Hazardous cargo leakage in any one cargo space may lead to hazardous cargo in the bilge system, possibly leaking from the pump itself. Therefore, the ventilation rate in the cargo space containing the pump is to be at least the ventilation rate required in any one of the cargo spaces served by the bilge system.

9 To clarify the above issues, IACS has developed a unified interpretation (UI) (IACS UI SC288), a copy of which is provided in the annex to this document.

10 The Sub-Committee is invited to note that IACS Members will uniformly implement UI SC288 on ships contracted for construction on or after 1 January 2020, unless they are provided with written instructions to apply a different interpretation by the Administration on whose behalf they are authorized to act as a recognized organization.

**Action requested of the Sub-Committee**

11 The Sub-Committee is invited to consider the analysis and discussion provided above and the copy of IACS UI SC288, as set out in the annex, and take action, as appropriate.

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ANNEX

# SC Carriage of Dangerous Goods – Required Air 288 Changes

(Dec  
2018)

**SOLAS Reg. II-2/19.3.4.1 reads:**

## **3.4 Ventilation**

*3.4.1 Adequate power ventilation shall be provided in enclosed cargo spaces. The arrangement shall be such as to provide for at least six air changes per hour in the cargo space, based on an empty cargo space, and for removal of vapours from the upper or lower parts of the cargo space, as appropriate.*

**SOLAS Reg. II-2/19.3.5.4 reads:**

## **3.5 Bilge Pumping**

*3.5.4 Enclosed spaces outside machinery spaces containing bilge pumps serving cargo spaces intended for carriage of flammable or toxic liquids shall be fitted with separate mechanical ventilation giving at least six air changes per hour. If the space has access from another enclosed space, the door shall be self-closing.*

**SOLAS Table 19.1 reads:**

*Note 1 for container cargo spaces:*

*...For classes 2, 3, 6.1 and 8 when carried in closed freight containers, the ventilation rate may be reduced to not less than two air changes per hour. For classes 4 and 5.1 liquids when carried in closed freight containers, the ventilation rate may be reduced to not less than two air changes per hour...*

## **Interpretation**

1. The reduced air changes per hour as per Note 1 of Table 19.1 apply equally to the ventilation air change requirements in SOLAS Reg. II-2/19.3.4.1 and in SOLAS Reg. II 2/19.3.5.4, when the bilge pump is located directly inside a container cargo space.

2. In such a case, where several container cargo spaces are served by the same bilge pump, the bilge pump is to be installed in the container cargo space with the highest ventilation rate, compared to the other container cargo spaces.

Note:

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1. This UI 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.