

SUB-COMMITTEE ON SHIP SYSTEMS AND  
EQUIPMENT  
4th session  
Agenda item 12

SSE 4/12/3  
16 December 2016  
Original: ENGLISH

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

**Unified interpretations of provisions relating to inert gas systems on tankers**

**Submitted by IACS**

**SUMMARY**

*Executive summary:* IACS has identified the need to clarify requirements of the FSS Code related to inert gas systems on tankers. This document provides the rationale behind, and copies of, draft unified interpretations of paragraphs 15.2.2.2.2, 15.2.2.3.2.2, 15.2.2.4.1 and 15.2.2.4.5 of chapter 15 of the FSS Code, which have been developed by IACS to facilitate the global and consistent implementation of these requirements

*Strategic direction:* 1.1

*High-level action:* 1.1.2

*Output:* 1.1.2.3

*Action to be taken:* Paragraph 8

*Related documents:* None

**Introduction**

1 IACS considers that certain aspects of chapter 15 of the FSS Code, as amended by resolution MSC.367(93), require further clarification in order to facilitate their global and consistent implementation. In particular, IACS considers that paragraphs 15.2.2.2.2, 15.2.2.3.2.2, 15.2.2.4.1, and 15.2.2.4.5 of the Code would benefit from further explanation as discussed in the paragraphs below.

**Discussion**

2 Four draft unified interpretations relating to chapter 15 of the FSS Code are provided in the annexes to this document. Technical backgrounds relevant to the individual annexes are provided in the following paragraphs.

3 Annex 1 – paragraph 15.2.2.2.2 of the FSS Code

The revised FSS Code has transformed the previous prescriptive shutdown requirements to a general requirement referring to all alarm criteria in the FSS Code (i.e. paragraphs 15.2.2.4 (Requirements for all systems – Indicators and alarms), 15.2.3.2 (Requirements for flue gas and inert gas generator systems – Indicators and alarms) and 15.2.4.2 (Requirements for nitrogen generator systems – Indicators and alarms). It is considered important to provide an interpretation as to what should trigger an automatic shutdown of the inert gas system and its components, while not increasing the criteria beyond those that exist today.

4 Annex 2 – paragraph 15.2.2.3.2.2 of the FSS Code

Under the previous version of the FSS Code it was common practice that the required locking arrangement for valves was an acceptable manual control system. The new FSS Code specifies that the control system shall provide unambiguous information about the operational status of such valves to at least the control panel, as required by paragraph 15.2.2.4 of the Code. This is understood to mean that such valves, even though required to be provided with a locking arrangement under the control of a responsible officer, have to be provided with position indicators with signal feed to a control panel.

5 Annex 3 – paragraph 15.2.2.4.1 of the FSS Code

The operational status of the inert gas system relates to whether inert gas is delivered to the cargo deck or not. As a suitable indicator, the position of the gas regulating valve and pressure/flow of the inert gas mains forward of the non-return devices is proposed.

6 Annex 4 – paragraph 15.2.2.4.5 of the FSS Code

As required by paragraph 15.2.2.4.5 of the FSS Code, the term "alarm system independent" implies that the low-low pressure alarm is required to be a pressure transmitter which is independent of the pressure transmitter that is required for the low and high pressure alarms and the pressure recording device, except when the shutdown option is selected. In the event that an automatic shutdown is provided, the reason for shutdown should be alarmed. Also, the shutdown cannot prevent the operation of ballast pumps and bilge drainage of cargo pump rooms.

7 Based on the above understandings, IACS has developed draft unified interpretations of paragraphs 15.2.2.2.2, 15.2.2.3.2.2, 15.2.2.4.1 and 15.2.2.4.5 of chapter 15 of the FSS Code, copies of which are provided in the annexes to this document.

**Action requested of the Sub-Committee**

8 The Sub-Committee is invited to consider the foregoing, and the copies of the draft unified interpretations provided in the annexes, and take action as appropriate.

\*\*\*

## ANNEX 1

### DRAFT UNIFIED INTERPRETATION OF PARAGRAPH 15.2.2.2.2 OF CHAPTER 15 OF THE FSS CODE

#### Automatic shutdown of the inert gas system and its components parts

Paragraph 15.2.2.2.2 of the FSS Code, as amended by resolution MSC.367(93), states:

"Automatic shutdown of the inert gas system and its components parts shall be arranged on predetermined limits being reached, taking into account the provisions of paragraphs 2.2.4, 2.3.2 and 2.4.2."

#### Interpretation

Paragraph 15.2.2.2.2 of the FSS Code is interpreted to imply that automatic shutdown of the inert gas system and its components should involve the following:

- .1 shutdown of fans and closing of regulating valve for the following:
  - .1 high water level in scrubber (not applicable for N<sub>2</sub>);
  - .2 low pressure/flow to scrubber (not applicable for N<sub>2</sub>); and
  - .3 high-high temperature of inert gas supply.
- .2 closing of regulating valve as follows:
  - .1 high oxygen content (in excess of 5% by volume);
  - .2 failure of blowers/fans or N<sub>2</sub> compressors.
- .3 activation of double-block and bleed arrangement upon:
  - .1 loss of inert gas supply (for ships with double block and bleed replacing water seal); and
  - .2 loss of power.

\*\*\*



## ANNEX 2

### DRAFT UNIFIED INTERPRETATION OF PARAGRAPH 15.2.2.3.2.2 OF CHAPTER 15 OF THE FSS CODE

#### Operational status of valves to cargo tanks

Paragraph 15.2.2.3.2.2 of the FSS Code, as amended by resolution MSC.367(93), states:

"The inert gas main shall be fitted with branch piping leading to the cargo tank. Branch piping for inert gas shall be fitted with either stop valves or equivalent means of control for isolating each tank. Where stop valves are fitted, they shall be provided with locking arrangements. The control system shall provide unambiguous information of the operational status of such valves to at least the control panel required in paragraph 2.2.4."

#### Interpretation

Paragraph 15.2.2.3.2.2 of the FSS Code is interpreted to mean that stop valves in branch piping leading from the inert gas main to cargo tanks should be provided with locking arrangements and position indicators providing open/intermediate/closed status information in the control panel required in paragraph 15.2.2.4 of the FSS Code. Limit switches should be used to positively indicate both open and closed positions. Intermediate position status should be indicated when the valve is in neither open nor closed position.

\*\*\*



### ANNEX 3

#### UNIFIED INTERPRETATION OF PARAGRAPH 15.2.2.4.1 OF CHAPTER 15 OF THE FSS CODE

##### **Operational status of the inert gas system**

Paragraph 15.2.2.4.1 of the FSS Code, as amended by resolution MSC.367(93), states:

"The operation status of the inert gas system shall be indicated in a control panel."

##### **Interpretation**

The requirement in paragraph 15.2.2.4.1 of the FSS Code for indication of the operational status of the inert gas system should be based on whether inert gas is supplied to the cargo deck area or not. The indication should be based on the operational status of the gas regulating valve and on the pressure or flow of the inert gas mains forward of the non-return devices. However, the operational status of the inert gas system as required in paragraph 15.2.2.4.1 of the FSS Code should not be considered to require additional indicators and alarms other than those specified in paragraphs 15.2.2.4, and 15.2.3.2 or 15.2.4.2, as appropriate, of the FSS Code.

\*\*\*





## ANNEX 4

### UNIFIED INTERPRETATION OF PARAGRAPH 15.2.2.4.5 OF CHAPTER 15 OF THE FSS CODE

#### Low pressure audible alarm system

Paragraph 15.2.2.4.5 of the FSS Code, as amended by resolution MSC.367(93), states:

"2.2.4.5 *Audible and visual alarms*

2.2.4.5.1 Audible and visual alarms shall be provided, based on the system designed, to indicate:

- .1 oxygen content in excess of 5% by volume;
- .2 failure of the power supply to the indicating devices as referred to in paragraph 2.2.4.2;
- .3 gas pressure less than 100 mm water gauge. The alarm arrangement shall be such as to ensure that the pressure in slop tanks in combination carriers can be monitored at all times;
- .4 high-gas pressure; and
- .5 failure of the power supply to the automatic control system.

2.2.4.5.2 The alarms required in paragraphs 2.2.4.5.1.1, 2.2.4.5.1.3 and 2.2.4.5.1.5 shall be fitted in the machinery space and cargo control room, where provided, but in each case in such a position that they are immediately received by responsible members of the crew.

2.2.4.5.3 An audible alarm system independent of that required in paragraph 2.2.4.5.1.3 or automatic shutdown of cargo pumps shall be provided to operate on predetermined limits of low pressure in the inert gas main being reached.

2.2.4.5.4 Two oxygen sensors shall be positioned at appropriate locations in the space or spaces containing the inert gas system. If the oxygen level falls below 19%, these sensors shall trigger alarms, which shall be both visible and audible inside and outside the space or spaces and shall be placed in such a position that they are immediately received by responsible members of the crew."

#### Interpretation

The term independent alarm system as specified in paragraph 15.2.2.4.5 of the FSS Code implies that a second pressure sensor, independent of the sensor serving the alarms for low pressure, high pressure and pressure indicator/recorder should be provided. A common PLC should however be accepted for the alarms in the control system. The independent sensor is not required if the system is arranged for the shutdown of cargo pumps. If a system for shutdown of cargo pumps is arranged, an automatic system shutting down all cargo pumps shall be provided. The shutdown should be alarmed at the control station. The shutdown should not prevent the operation of ballast pumps or pumps used for bilge drainage of a cargo pump room.