

SUB-COMMITTEE ON CARRIAGE OF
CARGOES AND CONTAINERS
6th session
Agenda item 8

CCC 6/8/4
3 July 2019
Original: ENGLISH
Pre-session public release:

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

Draft unified interpretation of paragraph 9.3.1 of part A-1 of the IGF Code

Submitted by IACS

SUMMARY

Executive summary: The annex to this document provides a copy of a draft IACS' unified interpretation (UI) to facilitate the consistent and global implementation of paragraph 9.3.1 of the IGF Code

Strategic direction, if applicable: 6

Output: 6.1

Action to be taken: Paragraph 16

Related documents: None

Introduction

1 The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code), which was adopted by resolution MSC.391(95), provides an international standard for ships using low-flashpoint fuel, other than ships covered by the International Code for the Construction and Equipment of ships Carrying Liquefied Gases in Bulk (IGC Code). Part A-1 of the IGF Code addresses specific requirements for ships using natural gas as fuel.

2 IACS members, acting as recognized organizations, have discussed how to implement the requirements of the IGF Code and have found some requirements that need further clarification in order to facilitate their global and uniform implementation.

Discussion

IGF Code, part A-1, paragraph 9.3.1

3 Paragraph 9.3.1 of the IGF Code states:

"For single fuel installations the fuel supply system shall be arranged with full redundancy and segregation all the way from the fuel tanks to the consumer, so that a leakage in one system does not lead to an unacceptable loss of power."

4 Paragraph 2.2.40 of the IGF Code defines unacceptable loss of power as:

"*Unacceptable loss of power* means that it is not possible to sustain or restore normal operation of the propulsion machinery in the event of one of the essential auxiliaries becoming inoperative, in accordance with SOLAS regulation II-1/26.3."

5 SOLAS regulation II-1/26.3 requires that means shall be provided whereby normal operation of propulsion machinery can be sustained or restored even though one of the essential auxiliaries becomes inoperative. Special consideration shall be given to the malfunctioning of fuel supply systems. However, the Administration, having regard to overall safety considerations, may accept a partial reduction in propulsion capability from normal operation.

6 Malfunction of the fuel supply system has additional challenges when gas is used as fuel compared to oil fuel, since automatic shutdown of the gas fuel supply is a required safety action. This means that two independent gas fuel supplies (or other equivalent means) are required to prevent unacceptable loss of power after a gas system safety action, e.g. automatic shutdown of the fuel supply at gas detection. Therefore, another fuel supply, or other equivalent means, shall be available after a gas fuel supply safety shutdown.

7 The above detailed concept is clarified in the functional requirement in paragraph 5.2.1.5 of the IGF Code for the ship propulsion and fuel supply system:

"the propulsion and fuel supply system shall be so designed that safety actions after any gas leakage do not lead to an unacceptable loss of power;"

8 The IGF Code provides further clarifications in paragraph 9.3.1 regarding the redundancy of fuel supplies. However, this specifically refers to single fuel installations, i.e. gas only installations; and specifically requires the arrangement of redundant fuel supplies.

9 An automatic fuel supply safety action may occur during normal operation and should not bring the ship into an emergency situation. Paragraph 6 of MSC.1/Circ.1558 has already provided the following interpretation:

"the activation of the safety system alone is not deemed as an emergency situation".

10 For dual fuel engines running on either gas or oil, two independent fuel supplies are provided all the way from the fuel tanks to the engine. Oil fuel supply is available after a safety action leading to automatic shutdown of the gas fuel supply. Hence, 100% of the normal propulsion power is sustained after a safety action. Dual, or multi, fuel installations by design have inherent fuel redundancy; and so therefore meet the requirements for "unacceptable loss of power" with the arrangement of a single gas fuel supply system.

11 None of the single fuel engines running on gas only, which are currently available on the market, are provided with two independent fuel supply systems on the engine. Hence, they need to meet this requirement by other means, either by multi-engine arrangements with independent and separate fuel supplies for each engine or group of engines, or by the use of secondary propulsion arrangements such as Power Take In (PTI) with independent fuel supplies.

12 A single fuel installation with two single fuel engines of equal size, each with independent fuel supply all the way from the fuel tank to the engine is a possible arrangement. If there is leakage in one fuel supply system requiring automatic shutdown, there is another fuel supply system available. Hence, 50% of the engine availability can be sustained after a safety action.

13 IACS understands that the arrangements detailed under paragraph 12 above are acceptable alternative means for meeting the required fuel redundancy for single fuel installations; and do not necessarily require "full redundancy and segregation all the way from the fuel tanks to the consumer" of the gas fuel supply, as required by paragraph 9.3.1 of the IGF Code.

14 The acceptable partial reduction in propulsion power as per SOLAS regulation II-1/26.3 would be a "case specific" consideration depending on the ship type and installed machinery power to be made in agreement with the Administration.

15 On the basis of the above analysis, IACS has developed a draft unified interpretation of paragraph 9.3.1 of the IGF Code, a copy of which is provided in the annex to this document.

Action requested of the Sub-Committee

16 The Sub-Committee is invited to consider the foregoing and, in particular, the draft unified interpretation provided in the annex to this document.

ANNEX

REDUNDANCY OF FUEL SUPPLY FOR SINGLE FUEL INSTALLATIONS

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

Paragraph 9.3.1 states:

9.3 Regulations on redundancy of fuel supply

9.3.1 *For single fuel installations the fuel supply system shall be arranged with full redundancy and segregation all the way from the fuel tanks to the consumer, so that a leakage in one system does not lead to an unacceptable loss of power.*

Interpretation

1 Acceptable means to meet this redundancy of fuel supply requirement for single fuel installations are, but not limited to:

- .1 multi engine installations arranged with at least two segregated gas fuel supply systems such that each fuel supply serves one, or more, engines; or
- .2 single direct drive main engine installations arranged with at least a single gas fuel supply and a secondary means of propulsion drive, such as a Power Take In (PTI) connected to the main engine drive line. The auxiliary engine(s) used for the secondary means of propulsion shall be from an independent fuel supply.

2 In accordance with SOLAS regulation II-1/26.3, the Administration, having regard to overall safety considerations, may accept a partial reduction in propulsion capability from normal operation.