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**AMENDMENTS TO THE IGF CODE AND DEVELOPMENT OF GUIDELINES FOR
ALTERNATIVE FUELS AND RELATED TECHNOLOGIES**

Proposed amendments to paragraph 9.6 of the IGF Code

Submitted by IACS

SUMMARY

Executive summary: This document proposes an amendment to paragraph 9.6 of the IGF Code to provide technical requirements for gas fuel vent pipes with single-walled construction in machinery spaces.

*Strategic direction,
if applicable:* 2

Output: 2.3

Action to be taken: Paragraph 7

Related documents: None

Introduction

1 The International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (the IGF Code) 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 (the IGC Code).

2 IACS members, acting as recognized organizations, identified requirements of the IGF Code in need of further clarification to facilitate their universal and uniform implementation.

Discussion

3 Paragraph 9.6.1 of the IGF Code states:

"9.6.1 Fuel piping in gas-safe machinery spaces shall be completely enclosed by a double pipe or duct fulfilling one of the following conditions:

.1 the gas piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the

gas fuel pressure. Suitable alarms shall be provided to indicate a loss of inert gas pressure between the pipes. When the inner pipe contains high pressure gas, the system shall be so arranged that the pipe between the master gas valve and the engine is automatically purged with inert gas when the master gas valve is closed; or

- .2 the gas fuel piping shall be installed within a ventilated pipe or duct. The air space between the gas fuel piping and the wall of the outer pipe or duct shall be equipped with mechanical underpressure ventilation having a capacity of at least 30 air changes per hour. This ventilation capacity may be reduced to 10 air changes per hour provided automatic filling of the duct with nitrogen upon detection of gas is arranged for. The fan motors shall comply with the required explosion protection in the installation area. The ventilation outlet shall be covered by a protection screen and placed in a position where no flammable gas-air mixture may be ignited; or
- .3 other solutions providing an equivalent safety level may also be accepted by the Administration."

4 The IGF Code does not specify whether the vent piping for gas fuel is included in the fuel piping. However, from the requirements of paragraph 9.5.2 of the IGF Code below, it is understood that the vent piping is subject to the requirements for fuel piping, with an exception granted from paragraph 9.5.1 of the IGF Code:

"The requirement in 9.5.1 need not be applied for fully welded fuel gas vent pipes led through mechanically ventilated spaces."

5 On the other hand, over several years of application of the IGF Code, engine manufacturers have been proposing single-walled vent piping which was widely accepted.

Proposal

6 Considering the present situation and noting that specific technical requirements for vent pipes are currently not addressed in the IGF Code, IACS considers that the minimum requirements for such vent piping are necessary for the purpose of ensuring safe distribution of fuel to the consumers. Therefore, IACS proposes an amendment to paragraph 9.6 of the IGF Code by inserting new paragraph 9.6.2*bis*, which was developed to address the containment of gas fuel and ventilation. The draft amendment is set out in the annex to this document for consideration by the Sub-Committee.

Action requested of the Sub-Committee

7 The Sub-Committee is invited to consider the proposal in paragraph 6 and take action, as appropriate.

ANNEX

DRAFT AMENDMENT OF PARAGRAPH 9.6 OF THE IGF CODE ON REGULATIONS FOR FUEL SUPPLY TO CONSUMERS IN GAS-SAFE MACHINERY SPACES

New paragraph 9.6.2*bis* is proposed to be inserted as follows:*

"9.6.1 Fuel piping in gas-safe machinery spaces shall be completely enclosed by a double pipe or duct fulfilling one of the following conditions:

- .1 the gas piping shall be a double wall piping system with the gas fuel contained in the inner pipe. The space between the concentric pipes shall be pressurized with inert gas at a pressure greater than the gas fuel pressure. Suitable alarms shall be provided to indicate a loss of inert gas pressure between the pipes. When the inner pipe contains high pressure gas, the system shall be so arranged that the pipe between the master gas valve and the engine is automatically purged with inert gas when the master gas valve is closed; or
- .2 the gas fuel piping shall be installed within a ventilated pipe or duct. The air space between the gas fuel piping and the wall of the outer pipe or duct shall be equipped with mechanical underpressure ventilation having a capacity of at least 30 air changes per hour. This ventilation capacity may be reduced to 10 air changes per hour provided automatic filling of the duct with nitrogen upon detection of gas is arranged for. The fan motors shall comply with the required explosion protection in the installation area. The ventilation outlet shall be covered by a protection screen and placed in a position where no flammable gas-air mixture may be ignited; or
- .3 other solutions providing an equivalent safety level may also be accepted by the Administration.

9.6.2 The connecting of gas piping and ducting to the gas injection valves shall be completely covered by the ducting. The arrangement shall facilitate replacement and/or overhaul of injection valves and cylinder covers. The double ducting is also required for all gas pipes on the engine itself, until gas is injected into the chamber.

9.6.2*bis* Vent piping of internal combustion engines shall be of double-walled construction unless single-walled construction is justified in the safety concept of the engine. The requirement in 9.6.1 need not be applied for fully welded fuel gas vent pipes led through gas-safe machinery spaces, under the following conditions:

- .1 the vent pipe shall originate from a gas fuel piping system having a design pressure not greater than 1.0 MPa or the maximum built-up back pressure in the vent piping shall be calculated not to exceed 0.5 MPa;
- .2 the connection to the consumer, if not connected by welding, as well as any flexible elements, shall comply with paragraph 9.6.1;

* Tracked changes here and in annex are indicated using "strikeout" for deleted text and "grey shading" to highlight all modifications and new insertions, including deleted text.

- .3 the vent pipes shall be open-ended;
 - .4 the vent pipes shall not contain fuel gas or a gas fuel/air mixture, except for the sole purpose of safely purging, venting and bleeding the gas fuel and/or gas fuel/air mixture when isolating gas fuel to consumers; and
 - .5 the gas-safe machinery space (the spaces in which gas consumers are located) shall be permanently mechanically ventilated."
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