

Definitions of the Ducts of Gas Fuel Systems Specified in the IGC Code

Amended Guidance

Guidance for the Survey and Construction of Steel Ships Part N

Reasons for Amendment

The IMO comprehensively amended and adopted a revised version of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (hereinafter referred to as the “revised IGC Code”) as Resolution MSC.370(93) in May 2014; this revised version has already been incorporated into the ClassNK Rules.

In response, IACS prepared an interpretation clarifying that the enclosures of gas valve units should be treated as an outer duct required for gas fuel system in accordance with the revised IGC Code. This interpretation was accepted as a draft MSC Circular (with some amendments) by the IMO Sub-committee on Carriage of Cargoes and Containers at its 7th session (CCC7) held in September 2021, and the draft circular was approved by the IMO as MSC.1/Circ.1651 at the 105th session of its Maritime Safety Committee (MSC105) held in April 2022.

Accordingly, relevant requirements are amended based on the MSC.1/Circ.1651.

Outline of Amendment

The main details of the amendment are as follows:

- (1) Specifies that the definition for a duct of a gas fuel system also includes the enclosures of gas valve units and ducts forming parts of structures such as hull structures, etc.
- (2) Specifies that it should be documented by suitable calculations that gas valve unit rooms are able to withstand maximum built-up pressures in cases where gas fuel pipes rupture.

“Guidance for the survey and construction of steel ships” has been partly amended as follows:

Part N SHIPS CARRYING LIQUEFIED GASES IN BULK

N5 PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE PIPING SYSTEMS

N5.4 Design Pressure

Paragraph N5.4.4 has been amended as follows.

N5.4.4 Outer Ducts in Gas Fuel Piping Systems

1 The term “duct” specified in **5.4.4, Part N of the Rules** includes the equipment enclosures required by **16.4.3, Part N of the Rules** as well as structural pipe ducts intended to contain any release of gas from inner pipes or equipment. The term “structural pipe duct” means an outer duct forming part of a structure such as hull structures, superstructures or deck houses, where permitted, other than gas valve unit rooms.

2 The “gas valve unit rooms” specified in -1 above are to be in accordance with the following (1) to (3):

- (1) be gastight toward other enclosed spaces;
- (2) be equipped with mechanical exhaust ventilation having a capacity of at least 30 air changes per hour and arranged to maintain a pressure less than atmospheric pressure; and
- (3) be able to withstand the maximum built-up pressure arising in the room in the case of a gas pipe rupture, as documented by suitable calculations taking into account the ventilation arrangements.

3 The wording “design pressure of the outer pipe or duct” specified in **5.4.4, Part N of the Rules** means one of the following:

- (1) The maximum pressure that can act upon the outer pipe or equipment enclosure after an inner pipe rupture. This pressure is to be documented by suitable calculations taking into account the venting arrangements; or
- (2) For gas fuel systems with an inner pipe working pressure greater than 1 *MPa*, the maximum built-up pressure arising in the annular space after an inner pipe rupture. This pressure is to be calculated in accordance with **9.8.2, Part GF of the Rules**.

N5.13 Testing Requirements

Paragraph N5.13.2 has been amended as follows.

N5.13.2 System Testing Requirements

1 For the purpose of **5.13.2-3, Part N of the Rules**, the leak test of piping systems are to be conducted at a pressure which are 90 % of the design pressure of the piping. Test pressures, however, may be modified when the test is conducted using a liquid which has high leak detecting ability.

2 The wording “maximum pressure at gas pipe rupture” specified in **5.13.2-4, Part N of the Rules** is the maximum pressure to which the outer pipe or duct is subjected after the inner pipe rupture. For testing purposes, it is the same as the design pressure specified in **5.4.4, Part N of the Rules**.

3 The term “duct” specified in **5.13.2-4, Part N of the Rules** means that specified in **N5.4.4-1**.

~~**34**~~ For the purpose of **5.13.2-5, Part N of the Rules**, tests are to be conducted according to the

requirements in **N4.20.3-4** to **-7**.