RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part N Ships Carrying Liquefied Gases in Bulk

Rules for the Survey and Construction of Steel Ships
Part N 2012 AMENDMENT NO.1
Guidance for the Survey and Construction of Steel Ships
Part N 2012 AMENDMENT NO.1

Rule No.29 / Notice No.43 15th June 2012
Resolved by Technical Committee on 10th February 2012
Approved by Board of Directors on 6th March 2012

ClassNK
NIPPON KAIJI KYOKAI

RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part N Ships Carrying Liquefied Gases in Bulk

2012 AMENDMENT NO.1

Rule No.29 15th June 2012

Resolved by Technical Committee on 10th February 2012

Approved by Board of Directors on 6th March 2012

Rule No.29 15th June 2012
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Rules for the survey and construction of steel ships" has been partly amended as follows:

Part N SHIPS CARRYING LIQUEFIED GASES IN BULK

Chapter 5 PROCESS PRESSURE VESSELS AND LIQUID, VAPOUR, AND PRESSURE PIPING SYSTEMS

5.4 Piping Fabrication and Joining Details (*IGC Code* 5.4)

Paragraph 5.4.2 has been amended as follows.

5.4.2 Connection of Pipes without Flanges

The following direct connection of pipe lengths, without flanges, may be considered:

(1) Butt welded joints with complete penetration at the root may be used in all applications. For design temperatures below -10℃, butt welds are to be either double welded or equivalent to a double welded butt joint. This may be accomplished by use of a backing ring, consumable insert or inert gas back-up on the first pass. For design pressures in excess of 1MPa and design temperatures of -10℃ or lower, backing rings are to be removed.

(2) Slip-on welded joints with sleeves and related welding, having dimensions satisfactory to the Society, are only to be used for open-ended lines with external diameter of 50mm or less and design temperatures not lower than -55℃.

(3) Screwed couplings acceptable to the Society are only to be used for accessory lines and instrumentation lines with external diameters of 25mm or less. However, they are not to be used for the connections of the gas sampling points specified in **9.1.2** except as deemed appropriate by the Society.

5.6 Cargo System Valving Requirements (*IGC Code* 5.6)

Paragraph 5.6.4 has been amended as follows.

5.6.4 Emergency Shutdown Valves

1 The control system for all required emergency shutdown valves is to be so arranged that all such valves may be operated by single controls situated in at least two remote locations on the ship. One of these locations is to be the control position required by **13.1.3** or cargo control room. The control system is also to be provided with fusible elements designed to melt at temperatures between 98°C and 104°C which will cause the emergency shutdown valves to close in the event of fire. Locations for such fusible elements are to include the tank domes and loading stations. Emergency shutdown valves are to be of the fail-closed (closed on loss of power) type and be capable of local manual closing operation. Emergency shutdown valves in liquid piping are to fully close under all service conditions within 30*s* of actuation. Information about the closing time of the valves and their operating characteristics is to be available on board and the closing time is to be

verifiable and reproducible. Such valves are to close smoothly.
2 Emergency shutdown valves are to be fitted with an indicator which clearly shows whether they are open or closed.

Paragraph 5.6.5 has been amended as follows.

5.6.5 Additional Requirement of Emergency Shutdown Valves

The closure time of 30*s* for the emergency shutdown valves referred to in **5.6.4-1** is to be measured from the time of manual or automatic initiation to final closure. This is called the total shutdown time and is made up of a signal response time and a valve closure time. The valve closure time is to be such as to avoid surge pressure in pipelines. Such valves are to close in such a manner as to cut off the flows smoothly.

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 15 December 2012.

2. Notwithstanding the amendments to the Rules, the current requirements may apply to ships for which the date of contract for construction is before the effective date.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part N Ships Carrying Liquefied Gases in Bulk

2012 AMENDMENT NO.1

Notice No.43 15th June 2012

Resolved by Technical Committee on 10th February 2012

Notice No.43 15th June 2012
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"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 Piping Fabrication and Joining Details

Paragraph N5.4.2 has been amended as follows.

N5.4.2 Connection of Pipes without Flanges

1 The "screwed couplings" referred to in the requirements in **5.4.2(3), Part N of the Rules** are to conform to the requirements of *JIS B* 0203 or equivalent.

2 The "as deemed appropriate by the Society" referred to in the requirements in **5.4.2(3), Part N of the Rules** means those cases where a positive means to prevent couplings from rotating is provided.

N5.6 Cargo System Valving Requirements

Paragraph N5.6.4 has been amended as follows.

N5.6.4 Emergency Shutdown Valves

1 The emergency shutdown valves specified in **5.6.4-1, Part N of the Rules** are to be in accordance with the following requirements **(1)** to **(5)**:

(1) In case where there is no cargo control room and no remote control of cargo operation is carried out, one of the remote control locations of the emergency shutdown valves is to be in the wheelhouse.

(2) The "fail-closed type" referred to in the requirement of the Rules is, for example, one of given in the following **(a)** and **(b)**:

(a) The type in which the hydraulic or pneumatic pressure is solely used in valve opening motion, and the valve closing motion including the case of fail-closure is effected by spring or weight.

(b) Where valve diameter is so large that both opening and closing motions of the valve are hydraulically or pneumatically effected, the operating oil or air in the fail-closure operation is to be supplied from a specially provided accumulator and the system setup is to comply with the following requirements **i)** to **iii)**:

i) The valve operating cylinder may be used for both ordinary motion and fail-closure motion, but the hydraulic or pneumatic line from the special accumulator for fail-closure operation to the valve operating cylinder is not to serve commonly with those for ordinary valve operation. Further, no stop valve is to be provided on the hydraulic or pneumatic line for fail-closure.

ii) The capacity of a special accumulator for fail-closure operation is to be sufficient to operate, at least, twice all the emergency shutdown valves. However, when a special accumulator is connected to the emergency shutdown valves of the same type provided on both sides of the ship, it may be made in such a way that the emergency shutdown valves on one side is operated twice.

iii) Alarm is to be given in the event of loss of hydraulic or pneumatic pressure for ordinary valve motion and activation of fail-closure operation.

(3) To "be capable of local manual closing operation" referred to in the requirements of the Rules means the one which can be directly manually closed, and in addition those shutdown by manual release of hydraulic pressure or pneumatic pressure or shutdown by manual pump.

(4) The requirement of "fully close under all service conditions within 30 *sec* of actuation" referred to in the requirements of the Rules may not apply to the manual emergency shutdown valves given in the preceding **(3)**.

(5) No stop valve is to be provided on the hydraulic or pneumatic line for closing the emergency shutdown valve.

2 The confirmation of whether emergency shutdown valves are open or closed by valve handle position is not regarded to be an indicator complying with **5.6.4-2, Part N of the Rules.**

N9 ENVIRONMENTAL CONTROL

N9.1 Environmental Control within Cargo Tanks and Cargo Piping Systems

Paragraph N9.1.2 has been amended as follows.

N9.1.2 Monitoring of Purging and Gas-freeing

Gas sampling systems referred to ~~For the purpose of the requirements~~ in **9.1.2, Part N of the Rules**~~, the arrangement of gas sampling points in cargo tanks are to be determined according to the cargo properties, cargo tank construction and capacity and the abilities of gas freeing and purging systems, and where appropriate, the adequacy of the arrangement of gas sampling points is to be verified by the performance test. The locations of gas sampling points are, as standard, to be at the upper, middle and lower space of the cargo tank.~~ are to be in accordance with the following requirements:

1 The arrangement of gas sampling points in cargo tanks is to be determined according to cargo properties, cargo tank construction and capacity as well as the abilities of gas freeing and purging systems; moreover, in cases where appropriate, the adequacy of the arrangement of gas sampling points is to be verified by performance tests. The locations of gas sampling points are, as standard, to be at the upper, middle and lower spaces of the cargo tank.

2 At least two valves are to be used to isolate a gas sampling point. However, in cases where only gas (not liquid) is sampled at the sampling points, just a single valve may be acceptable.

3 In cases where gas sampling systems are connected to cargo transfer lines and where two valves are provided in accordance with 2 above, the relief valves specified in **5.2.1-6, Part N of the Rules** are to be provided. However, in the cases where measures are taken to prevent the retention of cargo liquid between such valves and where the following is complied with, the fitting of relief valves may be omitted.

(1) Caution plates that show the procedures for gas sampling including how to operate both valves are to be provided at the operation position for gas sampling.

(2) Confirmation whether both valves are open or closed are to be taken at the operation position for gas sampling.

4 For ships which **Column *f* of Table N19.1, Part N of the Rules** is applied according to the type of products to be carried and which are required to install toxic vapour detectors, the gas sampling system is to be of a closed-loop design to prevent cargo vapour from venting to the atmosphere.

5 The closed-loop designed gas sampling systems specified in **-4** above is to be provided with two valves respectively on both the sample inlet side and return side.

N18 OPERATING REQUIREMENT

N18.1 Operation Manual

Paragraph N18.1.1 has been amended as follows.

N18.1.1 General

In the Operation Manual specified in the requirements in **18.1.1, Part N of the Rules**, at least, the following items **(1)** through **(11)** are to be included, and the detailed contents are to be guided by the requirements in **Chapter 18** of the *IGC Codes* with the contents as specified in **18.2, Part N of the Rules**. These detailed contents may be covered under separate booklets, but in such a case, it is to be expressly shown in the specific operation manual that reference is to be made to separate booklet.

(1) Cargo information
  (a) a full description of the physical and chemical properties necessary for the safe containment of the cargo;
  (b) action to be taken in the event of spills or leaks;
  (c) counter-measures against accidental personal contact;
  (d) fire-fighting procedures and fire-fighting media;
  (e) procedures for cargo transfer, gas-freeing, gas sampling, ballasting, tank cleaning and changing cargoes;
  (f) special equipment needed for the safe handling of the particular cargo;
  (g) minimum allowable inner hull steel temperatures; and
  (h) emergency procedures.
  (i) action to be taken for inhibition

(2) Cargo stowage information
  (a) Hull strength and strength of cargo containment system
  (b) Stability (intact and damage)

(3) Personal training
  (a) Emergency measures
  (b) Assignment of work duty (cargo handling, fire-fighting, etc.)
  (c) Use of protective clothing and first-aiding

(4) Access to gas-dangerous spaces
  (a) Entering after gas-free or entering wearing protective clothing under the supervision of the duty officer
  (b) Exclusion of source of ignition
  (c) Special measures in the case of internally insulated tanks

(5) Carriage of low temperature cargoes

(a) use of heating arrangement
(b) Procedures of cooling down

(6) Handling of protective equipment and their storage areas

(7) Cargo transfer system and control
(a) Tests and inspection of control
(b) Tests and inspection of alarms and emergency shutdown system

(8) Cargo transfer operation
(a) Discussion between ship personnel and the persons responsible at the shore facility at time of cargo discharge
(b) Emergency procedures
(c) Cargo stowage plan

(9) Cargo handling operation (including an instruction manual for emergency shutdown valves)

(10) Information on national rules and regulations

(11) The provisions in each Chapter of the *IGC Code* prescribing the working restrictions which are also specified in the following requirements of **Part N of the Rules**:
1.1.4(27), **1.2**, **3.8.3(3)**, **3.9**, **4.10.14**, **7.3.2**, **8.6**, **9.1**, **9.2**, **9.4.2**, **9.4.5**, **12.1.1**, **12.1.10**, **12.2**, **13.7**, **14.2.4**, **14.2.5**, **14.5**, **15.1**, **15.2**, **16.2.2**, **16.3.2**, **17.4.2**, **17.6**, **17.7**, **17.8**, **17.10**, **17.12**, **17.14**, **17.15**, **17.16**, **17.17**, **17.18**, **17.19**, **17.20**, **17.21** and **17.22**.

EFFECTIVE DATE AND APPLICATION

1. The effective date of the amendments is 15 December 2012.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships for which the date of contract for construction is before the effective date.