



RUSSIAN MARITIME REGISTER OF SHIPPING
HEAD OFFICE

CIRCULAR LETTER

No. 313-08-908c

dated *21.06.2016*

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2012, ND No. 2-020101-068-E and 2016, ND No. 2-020101-093-E in connection with coming into force of the provisions of IACS Unified Interpretation (UI) GC 11 (Rev. 1 Feb 2016)

Item of technical supervision:

ships under construction and in service

from the date of publication 01.07.2016

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dated -

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Appendices: amendments to the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk, 2012, ND No. 2-020101-068-E and 2016, ND No. 2-020101-093-E

Technical Director - Head of Classification Directorate Vladimir I. Evenko

Amends Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk, 2012, ND No. 2-020101-068-E and 2016, ND No. 2-020101-093-E

We hereby inform that in connection with coming into force of IACS UI GC 11 (Rev.1 Feb 2016) on 01.07.2016, Section 3, Part VI "Systems and Piping" of the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk, 2016, ND No. 2-020101-093-E shall be amended as specified in Appendix 1 to the Circular Letter. The IACS UI GC 11 (Rev. 1 Feb 2016) in English is posted on the RS internal website in the Section "External Normative Documents", 02 "IACS Documents", 0216 SC. These amendments shall be implemented to ships the keel of which is laid on 01 July 2016 or after this date.

For ships the keels of which were laid prior to 01 July 2016, the requirements specified in Appendix 2 may apply instead of the requirements specified in Chapter 3.7 "Filling limits for cargo tanks" of the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk, 2012, ND No. 2-020101-068-E.

It is necessary to do the following:

1. Apply the above amendments during review and approval of technical documentation on ships.
2. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.

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DMS "THESIS"

No.:

No.145766

**RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SHIPS
CARRYING LIQUEFIED GASES IN BULK, 2016, ND No. 2-020101-093-E**

PART VI. Systems and Piping.

Annotation shall be amended to read:

"**Section 3:** Chapter 3.20 has been amended in connection with coming into force of IACS UI GC 11 (Rev. 1 Feb 2016);".

Section 3. Cargo System

Chapter 3.20 shall be amended to read:

"**3.20** The maximum filling limit of cargo tanks.

3.20.1 The maximum filling limit of cargo tanks shall be so determined that the vapour space has a minimum volume at reference temperature allowing for:

- .1 tolerance of instrumentation such as level and temperature gauges;
- .2 volumetric expansion of the cargo between the set pressure of pressure relief valves (PRV) and the maximum allowable rise stated in 3.16.1;
- .3 an operational margin to account for liquid drained back to cargo tanks after completion of loading, operator reaction time and closing time of valves, refer to 3.15.4.1.

The default value for the filling limit (FL) of cargo tanks is 98 per cent at the reference temperature specified in 3.20.4. Exceptions to this value shall meet the requirements of 3.20.2.

3.20.2 A filling limit greater than the limit of 98 per cent may be permitted under the trim and list conditions specified in 3.16.11, providing:

- .1 no isolated vapour pockets are created within the cargo tank;
- .2 the PRV inlet arrangement shall remain in the vapour space;
- .3 allowances need to be provided for volumetric expansion of the liquid cargo due to the pressure increase from the maximum allowable relief pressure setting (MARVS) to full flow relieving pressure in accordance with 3.17.2;
- .4 an operational margin of minimum 0,1 per cent of tank volume;
- .5 tolerances of instrumentation such as level and temperature gauges are considered;
- .6 despite the compliance with 3.20.2.1 to 3.20.2.5, in no case shall a filling limit exceeding 99,5 per cent at reference temperature be permitted.

3.20.3 The maximum loading limit (LL) to which a cargo tank may be loaded shall be determined by the following formula

$$LL = FL \frac{\rho_R}{\rho_L} , \quad (3.20.3)$$

where:

LL - loading limit expressed in percent which means the maximum allowable liquid volume relative to the tank volume to which the tank may be loaded;

FL - filling limit expressed in percent equal to the maximum liquid volume in a cargo tank relative to the total tank volume when the liquid cargo has reached the reference temperature specified in 3.20.4;

ρ_R - relative density of cargo at the reference temperature; and

ρ_L - relative density of cargo at the loading temperature and pressure.

3.20.4 For the purposes of this Chapter only, the reference temperature means:

.1 when no cargo vapour pressure/temperature control, as referred to in Section 4, is provided, the temperature corresponding to the vapour pressure of the cargo at the set pressure of the PRVs;

.2 when a cargo vapour pressure/temperature control, as referred to in Section 4, is provided, the temperature of the cargo upon termination of loading, during transport or at unloading, whichever is the greatest. When such temperature is obtained in the cargo tank at its complete loading prior to the cargo will reach the temperature the temperature corresponding to the vapour pressure of the cargo at the set pressure of the PRVs, as given in 3.16, an additional PRV system shall be installed in compliance with the requirements of 3.17;

3.20.5 The Register may allow type C tanks to be loaded according to the formula in 3.20.3, with ρ_R relative density of cargo at the highest temperature that the cargo may reach upon termination of loading, during transport, or at unloading, under the ambient design temperature conditions described in 4.1.3. This paragraph does not apply to products requiring a type **1G** ship.

3.20.6 A document shall be provided to the ship, specifying the maximum allowable loading limits for each cargo tank and product, at each applicable loading temperature and maximum reference temperature. Pressures at which the PRVs have been set shall also be stated in the list, including those required by 3.17. The list shall be approved by the Register and shall be permanently kept on board. "

**RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SHIPS
CARRYING LIQUEFIED GASES IN BULK, 2012, ND No. 2-020101-068-E**

PART VI. Systems and Piping.

The **Annotation** has been supplemented with the following text:

"Section 3: Para 3.7 has been amended in connection with coming into force of IACS UI GC 11 (Rev. 1 Feb 2016).".

Section 3. Cargo System

Chapter 3.7 shall be amended to read:

"3.7 The maximum filling limit of cargo tanks.

3.7.1 The maximum filling limit of cargo tanks shall be so determined that the vapour space has a minimum volume at reference temperature allowing for:

- .1 tolerance of instrumentation such as level and temperature gauges;
- .2 volumetric expansion of the cargo between the set pressure of pressure relief valves and the maximum allowable rise stated in 3.3;
- .3 an operational margin to account for liquid drained back to cargo tanks after completion of loading, operator reaction time and closing time of valves, refer to 3.2.4.1.

The default value for the filling limit (FL) of cargo tanks is 98 per cent at the reference temperature specified in 3.7.4. Exceptions to this value shall meet the requirements of 3.7.2.

3.7.2 A filling limit greater than the limit of 98 per cent may be permitted under the trim and list conditions specified in 3.3.11, providing:

- .1 no isolated vapour pockets are created within the cargo tank;
- .2 the PRV inlet arrangement shall remain in the vapour space;
- .3 allowances need to be provided for volumetric expansion of the liquid cargo due to the pressure increase from the maximum allowable relief pressure setting (MARVS) to full flow relieving pressure in accordance with 3.6.1;
- .4 an operational margin of minimum 0,1 per cent of tank volume;
- .5 tolerances of instrumentation such as level and temperature gauges are considered;

.6 despite the compliance with 3.7.2.1 to 3.7.2.5, in no case shall a filling limit exceeding 99,5 per cent at reference temperature be permitted.

3.7.3 The maximum loading limit (LL) to which a cargo tank may be loaded shall be determined by the following formula

$$LL = FL \frac{\rho_R}{\rho_L} , \quad (3.7.3)$$

where:

LL - loading limit expressed in per cent which means the maximum allowable liquid volume relative to the tank volume to which the tank may be loaded;

FL - filling limit expressed in per cent equal to the maximum liquid volume in a cargo tank relative to the total tank volume when the liquid cargo has reached the reference temperature specified in 3.7.4;

ρ_R - relative density of cargo at the reference temperature; and

ρ_L - relative density of cargo at the loading temperature and pressure.

3.7.4 For the purposes of this Chapter only, the reference temperature means:

.1 when no cargo vapour pressure/temperature control, as referred to in Section 4, is provided, the temperature corresponding to the vapour pressure of the cargo at the set pressure of the PRVs;

.2 when a cargo vapour pressure/temperature control, as referred to in Section 4, is provided, the temperature of the cargo upon termination of loading, during transport or at unloading, whichever is the greatest. When such temperature is obtained in the cargo tank at its complete loading prior to the cargo will reach the temperature the temperature corresponding to the vapour pressure of the cargo at the set pressure of the PRVs, as given in 3.16, an additional PRV system shall be installed in compliance with the requirements of 3.4;

3.7.5 The Register may allow type C tanks to be loaded according to the formula in 3.7.3, with ρ_R relative density of cargo at the highest temperature that the cargo may reach upon termination of loading, during transport, or at unloading, under the ambient design temperature conditions described in 4.1.3. This paragraph shall not apply to products requiring a type **1G** ship.

3.7.6 A document shall be provided to the ship, specifying the maximum allowable loading limits for each cargo tank and product, at each applicable loading temperature and maximum reference temperature. Pressures at which the PRVs have been set shall also be stated in the list, including those required by 3.4. The list shall be approved by the Register and shall be permanently kept on board. "