РОССИЙСКИЙ МОРСКОЙ РЕГИСТР СУДОХОДСТВА

HEAD OFFICE

CIRCULAR LETTER **No.** 314-26-794c dated 30.12.2014

Re:

On coming into force of a new revision of IACS Unified Requirement (UR) S17 (Rev. 9, Apr. 2014) "Longitudinal Strength of Hull Girder in Flooded Condition for Non-CSR Bulk Carriers"

Item of technical supervision:

Bulk carriers under construction

Implementation	upon receipt
Valid: till	-
Validity period extended till	-
Cancels / Amends/ Supplements Circular Letter No.	- dated -
Number of pages:	1+4
Appendices:	Amendments to Chapter 2.2, Part I "Classification" and Chapter 3.3, Part II "Hull" of the Rules for the Classification and Construction of Sea-Going Ships (hereinafter, the Rules) on 4 pages

Technical Director – Head of Classification Directorate Vladimir I. Evenko

Amends Rules for the Classification and Construction of Sea-Going Ships, 2014 – ND No. 2-020101-077 and 2015 – ND No. 2-020101-085

We hereby inform you that in connection with application in the RS activity of a new revision of IACS UR S17 (Rev. 9, Apr. 2014) "Longitudinal Strength of Hull Girder in Flooded Condition for Non-CSR Bulk Carriers", the amendments given in the Appendix to the Circular Letter shall be introduced into Chapter 2.2, Part I "Classification" and Chapter 3.3, Part II "Hull" of the Rules.

The control copy of IACS UR (in English) is posted on the RS internal website in the Section "External Normative Documents/ND No. 1-0212-017-E".

The amendments will be introduced into a new edition of the Rules.

It is necessary to do the following:

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

Person in charge:	O.A. Grigorieva	Department 314	+7 (812) 312-85-72
DMS "THESIS" No.	в/д 276547 от 19.11.2014		

Appendix to Circular Letter

No. 314-26-794c of 30.12.2014

Amendments

to the Rules for the Classification and Construction of Sea-Going Ships, 2014 – ND No. 2-020101-077 and 2015 – ND No. 2-020101-085

PART I. CLASSIFICATION

2.2 CLASS NOTATION OF A SHIP

Para. 2.2.28. The text starting from the words "When adding the descriptive notation **Bulk carrier** to the character of classification for ships 150 m long and over" shall be amended to read:

"When adding the descriptive notation **Bulk carrier** to the character of classification for ships 150 m long and over with the relevant requirements in 3.3 Part II "Hull" or Part XIX "Common Structural Rules for Bulk Carriers", as applicable, one of the following distinguishing marks is added to the descriptive notation:", the rest remaining as it stands.

Para 2.3.3. The text in brackets "(refer to 3.1.3, Section 1, Chapter 1, Part XIX "Common Structural Rules for Bulk Carriers")" shall be replaced with the following text:

"(refer to 3.3, Part II "Hull" or 3.1.3, Section 1, Chapter 1, Part XIX "Common Structural Rules for Bulk Carriers", as applicable)".

PART II. HULL

3.3 BULK CARRIERS AND OIL OR BULK DRY CARGO CARRIERS

Para. 3.3.1.1 shall be amended to read:

"**3.3.1.1** The requirements of this Chapter apply to ships designed for the carriage of bulk dry cargoes and to ships designed both for the carriage of bulk dry cargoes and crude oil (oil products) in bulk not subject to the requirements of Part XIX "Common Structural Rules for Bulk Carriers"."

Para 3.3.5.2 shall be renumbered 3.3.5.4.

A **new para 3.3.5.2** shall be introduced:

"**3.3.5.2** All the bulk carriers and combination carriers of 150 m and above length contracted for construction on or after 1 July 2003 shall comply with the following requirements:

.1 the longitudinal strength shall be verified for departure and arrival of the ship for loading conditions specified in 1.4 and also for the following:

Given the **BC-A**, **BC-B** or **BC-C** marks in the class notation:

all cargo holds, including hatchways, being 100 per cent full by a homogeneous cargo at maximum summer draught with all ballast tanks empty;

given **BC-A** or **BC-B** marks in the class notation:

all cargo holds are equally loaded with cargo density 3,0 t/m^3 at maximum summer draught with all ballast tanks empty;

given **BC-A** mark in the class notation:

one loading condition as a minimum when one or more cargo holds empty, and other holds are equally loaded by bulk cargo with cargo density 3.0 t/m3 at maximum summer draught with all ballast tanks empty;

the ship in ballast (no cargo), when the ballast tanks may be full, partially full or empty, at least one cargo hold or holds adapted for carriage of water ballast at sea shall be full, the trim is to be by the stern and is not to exceed $0{,}015L$, where L is the length between perpendiculars of the ship, the propeller is fully immersed;

the ship in ballast (no cargo), when the ballast tanks are 100 per cent full, other conditions – refer to the previous case;

the ship in ballast (no cargo), when the ballast tanks may be full, partially full or empty, at least one cargo hold adapted for carriage of water ballast at sea, is full, and the trim by the stern is not to exceed 1,5 per cent or 8 m, whichever is the smaller, the propeller immersion I/D is at least 60 per cent;

the ship in ballast (no cargo), when the ballast tanks are 100 per cent full, other conditions – refer to the previous case;

At departure condition 100 per cent of ship's consumables except fuel oil shall be loaded: with bunker tanks not less than 95 per cent full and at arrival condition: with 10 per cent of consumables;

.2 the bottom in the fore part shall comply with 2.8;

.3 for calculation of local strength of double bottom (vertical keel, bottom stringers and floors) the following definitions and notations shall be introduced:

the actual bulk cargo mass in a cargo hold corresponding to a homogeneously loaded condition (all cargo holds are full) at maximum draught - M_H;

the bulk cargo mass in a cargo hold corresponding to cargo with virtual density filled to the top of the hatch coaming - M_{full} (homogeneous mass/hold cubic capacity, minimum 1,0 t/m^3), and M_{full} shall in no case be less than M_H.

the maximum bulk cargo mass allowed to be carried in a cargo hold (in non-homogeneously loaded condition) with specified holds empty at maximum draft;

.4 local strength of double bottom in each cargo hold shall be verified, inter alia, for the following cases of load on double bottom due to cargo in the holds, fuel oil and water ballast in double bottom tanks, as well as sea water pressure along the hold in question;

Main load cases for all ships:

cargo mass M_{full} fuel oil tank being 100 per cent full, ballast tanks empty, the maximum draught;

cargo mass 50 per cent M_H, fuel oil tanks and ballast tanks empty, the maximum draught;

cargo holds, fuel oil tanks and ballast tanks empty, maximum draught in all cases when the ship is in ballast, except the cases with ballast in cargo hold;

except the ships when notation **no MP** is assigned:

cargo mass M_{full}, 100 per cent of fuel oil, no ballast, 67 per cent of the maximum draught;

cargo holds, fuel oil tanks and ballast tanks empty, 83 per cent of the maximum draught;

cargo mass M_{full} in each of two adjacent holds, fuel oil tanks 100 per cent full, ballast tanks empty, 67 per cent of maximum draught. Applicable also in case when the adjacent hold is filled with ballast;

two adjacent cargo holds are empty, fuel oil tanks and ballast tanks are empty, 75 per cent of the maximum draught;

applicable only for ships with **BC-A** mark in the class notation:

cargo holds are intended to be empty at the maximum draught and fuel oil tanks and ballast tanks are also empty;

cargo mass $M_{HD} + 0{,}1M_H$ in cargo holds intended to be loaded with high density cargo with fuel oil tanks being 100 per cent full and ballast water tanks being empty at the maximum draught. In the ship's documents maximum permitted cargo mass in the cargo holds shall be limited to M_{HD};

cargo mass 10 per cent M_H in each of two adjacent cargo holds being empty, with fuel tanks being

100 per cent full and ballast water tanks being empty, at the maximum draught;

Only for holds capable of water ballast carrying;

Water ballast in the hold up to coaming, fuel oil tanks and ballast tanks are 100 per cent full, draught for the ship with ballast in cargo hold;

for loading/unloading in the port only:

maximum allowable cargo mass, 67 per cent of the maximum draught;

cargo mass M_{Full} in each of two adjacent holds, fuel oil tanks are 100 per cent full, ballast tanks are empty, 67 per cent of the maximum draught;

at reduced draught during loading and unloading of 85 per cent allowable cargo mass in harbour, but not exceeding the allowable cargo mass at the maximum draught in sea-going condition.

A **new para 3.3.5.3** shall be introduced:

"**3.3.5.3** The longitudinal strength of hull for non-SCR bulk carriers of:

single side skin construction,

double side skin construction in which any part of longitudinal bulkhead is located within $B/5$ or 11,5 m, whichever is less, inboard from the ship's side at right angle to the centreline at the assigned summer load line;

applicable for ships with **BC-A or BC-B** marks in the class notation;

which were contracted for construction on or after 1 July 2006,

shall be checked for flooded conditions in each cargo hold for each of loading conditions defined in 1.4.3.1 and 3.3.5.2, except that harbour conditions, docking condition afloat, loading and unloading transitory conditions in port and loading conditions encountered during ballast water exchange.

The actual hull girder bending stress σ_{fld}, in MPa, is determined by the formula

$$\sigma_{fld} = \frac{M_{sw}^{fld} + 0.8M_W}{W_Z} \cdot 10^3 \qquad (3.3.5.3\text{-}1)$$

where M_{sw}^{fld} = still water bending moment, in kNm, in the flooded conditions for the section under consideration as per 1.4.4.1;

M_w = wave bending moment, in kNm, as given in 1.4.4.1 for the section under consideration;

W = section modulus, in cm^3, for the corresponding location in the hull girder.

The actual hull girder shear stress τ_{fld} , in MPa, is determined by the formula

$$\tau_{fld} = \frac{N_{sw}^{fld} + 0.8N_wS}{2SI} \cdot 10^3, \qquad (3.3.5.3\text{-}2)$$

where N_{sw}^{fld} = still water shear force, in kN, in flooded condition for the section under consideration;
N_w = wave shear force, in kN, in accordance with 1.4.4.2 for the section under consideration;
I, S = as defined in 1.4.2;
s = thickness of plating, in mm.

The ship strength analysis in damaged condition shall demonstrate that the actual hull girder bending stresses do not exceed 175/ η, in MPa, and the actual shear stresses do not exceed 110/ η, in MPa.
To carry out an analysis of damaged ship strength, the following assumptions shall be made:
the damaged structure is assumed to remain fully effective in resisting the applied loading;
each cargo hold shall be considered individually flooded up to the equilibrium waterline. Position of the waterline and the volume of ingressed water are determined on the basis of damaged trim calculations which shall be made in accordance with a program approved by the Register;
"permeability" for solid bulk cargo means the ratio of the floodable volume between the articles, granules or any larger pieces of the cargo, to the gross volume of the bulk cargo;
the permeability of empty cargo spaces and volume left in loaded cargo spaces above any cargo shall be taken as 0,95;
appropriate permeabilities and bulk densities shall be used for any cargo carried. For iron ore, a minimum permeability of 0,3 with a corresponding bulk density of 3,0 t/m^3 shall be used. For cement, a minimum permeability of 0,3 with a corresponding bulk density of 1,3 t/m^3 shall be used;
for packed cargo conditions (such as steel mill products), the actual density of the cargo shall be used with a permeability of zero.".

Para. 3.3.6.1 shall be amended to read:

"**3.3.6.1** Bulk carriers, ore carriers and combination carriers of 150 m length and more shall be provided with an approved Loading Manual and the Register-approved loading instrument of an approved type.".