RUSSIAN MARITIME REEGISTER OF SHIPPING

HEAD OFFICE

CIRCULAR LETTER	No. 314-44-*909c*	dated *21.06.2016*

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2016, ND No. 2-020201-087-E, in connection with coming into force of the provisions of IACS Unified Requirements (UR) S21A (May 2011) (Corr.1 Oct 2011) (Rev.1 May 2015)

Item of technical supervision:

Ships under construction

Implementation	01.07.2016
Valid: till	-
Validity period extended till	-
Cancels / Amends/ Supplements Circular Letter No.	- dated -

Number of pages:	1+8
Appendices:	amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2016, ND No. 2-020201-087-E

Technical Director - Head of Classification Directorate   Vladimir I. Evenko

Amends   Rules for the Classification and Construction of Sea-Going Ships, 2016, ND No. 2-020201-087-E

We hereby inform that in connection with coming into force of the provisions of IACS UR S21A (May 2011) (Corr.1 Oct 2011) (Rev.1 May 2015) Chapter 7.10, Part III "Equipment, arrangements and outfit" of the Rules for the Classification and Construction of Sea-Going Ships, 2016,ND No. 2-020201-087-E shall be amended as specified in the Appendix to the Circular Letter.

Text of IACS UR S21A (May 2011) (Corr.1 Oct 2011) (Rev.1 May 2015) in English is posted on the RS internal website in the Section "External Normative Documents", 02 "Documents of IACS", 0212 S. These amendments shall be implemented on ships contracted on or after 1 February 2016. The date of "contract for construction" of a ship is the date on which the contract to build the ship is signed between the prospective owner and the shipbuilder (in compliance with IACS Procedural Requirement (PR) No. 29).

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.

Person in charge:	D.V. Kalinkin	Dept.314	+7 (812) 314-07-34
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RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2016, ND 2-020201-087

PART III. EQUIPMENT, ARRANGEMENTS AND OUTFIT

Annotation shall be supplemented with the following text:

"**Para 7.10**: has been supplemented with the text in compliance with the requirements of IACS UR S21A (May 2011) (Corr.1 Oct 2011) (Rev.1 May 2015)".

7.10 HATCHWAYS OF DRY CARGO HOLDS

Para 7.10.3.1. The text "hatch covers" shall be amended to read "top plate, bottom plate and primary supporting members";

Para 7.10.6.5. The text "T_{fb} – draught ...." shall be amended to read "D_{min} – the least moulded depth, in m, as defined in 1.2.1 of the Load Line Rules for Sea-Going Ships ";

Para 7.10.6.8 after Table 7.10.6.8 shall be supplemented with the following text:

"N o t e. The horizontal weather design load need not be included in the direct strength calculation of the hatch cover, unless it is utilized for the design of substructures of horizontal support according to 7.10.6.51.";

Para 7.10.6.9. First sentence shall be amended to read:

"**7.10.6.9** The load on hatch covers due to distributed cargo loads P_L, in kN/m², resulting from heave and pitch (i.e. ship in upright condition) shall be determined according to the following Formula...";

In the explication to the Formula "a_v" the text "acceleration addition" shall be amended

to read "vertical acceleration addition";

Para 7.10.6.10. The first sentence shall be amended reading as follows:

"**7.10.6.10** The load P, in kN, due to a concentrated force P_s, in kN, except for container load, resulting from heave and pitch (i.e. ship in upright condition) shall be determined as follows:... ", the rest remaining as it stands;

"P_s – single force in Kn" shall be deleted;

Para 7.10.6.11 shall be amended reading as follows:

"**7.10.6.11** The loads defined in 7.10.6.11.1 shall be applied where containers are stowed on the hatch cover.

7.10.6.11.1 The load P in kN, applied at each corner of a container stack, and resulting from heave and pitch (i.e. ship in upright condition) shall be determined as follows:

$$P = 9,81 \cdot M/4 \cdot (1+a_v) \qquad (7.10.6.11.1-1)$$

where:

a_v = acceleration addition according to 7.10.6.9;

M = maximum designed mass of container stack in t.

7.10.6.11.2 The loads, in kN, applied at each corner of a container stack, and resulting from heave, pitch, and the ship's rolling motion (i.e. ship in heel condition) shall be determined as follows, (refer also to Fig. 7.10.6.11): "

numbers of Formulae "(7.10.6.11-1)", "(7.10.6.11-2)", "(7.10.6.11-3)" shall be amended to read: "(7.10.6.11.2-1)", "(7.10.6.11.2-2)", "(7.10.6.11.2-3)" accordingly;

in the explications to the above Formulae the following notations shall be amended to read:

"h_m = designed height of centre of gravity of stack above hatch cover top in m, may be calculated as weighted mean value of the stack, where the centre of gravity of each tier is assumed to be located at the centre of each container;

$h_m = \Sigma(z_i \cdot W_i) / M$;

z_i = distance from hatch cover top to the centre of ith container in m;

W_i = weight of i th container in t;

b = distance between midpoints of foot points in m (refer to Fig. 7.10.6.11);", the rest remaining as it stands";

Note shall be amended reading as follows:

"N o t e. When strength of the hatch cover structure is assessed by grillage analysis according to 7.10.6.21, h_m and z_i need to be taken above the hatch cover supports (refer to Fig.7.10.6.11). Forces B_y does not need to be considered in this case.

Values of A_z and B_z applied for the assessment of hatch cover strength are to be shown in the drawings of the hatch covers.

N o t e. It is recommended that container loads as calculated above are considered as limit for foot point loads of container stacks in the calculations of cargo securing (container lashing).
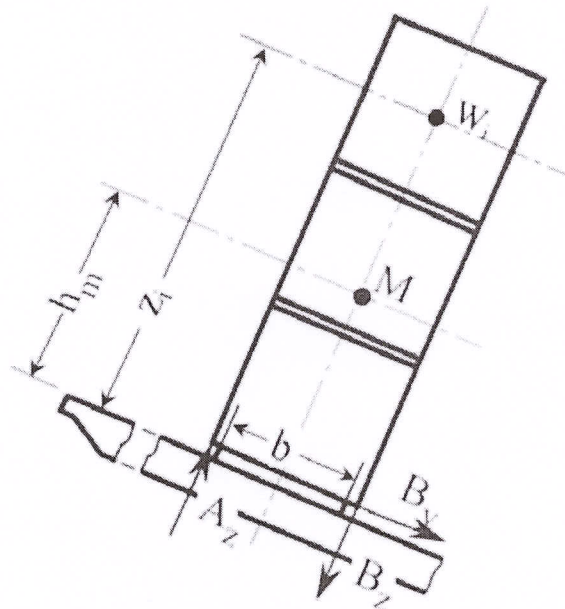

Fig 7.10.6.11 Forces due to container loads";

Para 7.10.6.12 shall be amended reading as follows:

"**7.10.6.12** The load cases defined in 7.10.6.11.1 and 7.10.6.11.2 shall also be considered for partial non homogeneous loading which may occur in practice, e.g. where specified container stack places are empty. For each hatch cover, the heel directions, as shown in Table 7.10.6.12, shall be considered.

The load case partial loading of container hatch covers can be evaluated using a simplified approach, where the hatch cover is loaded without the outermost stacks that are located completely on the hatch cover. If there are additional stacks that are supported partially by the hatch cover and partially by container stanchions then the loads from these stacks are also to be neglected (refer to Table 7.10.6.12.).

In addition, the case where only the stack places supported partially by the hatch cover and partially by container stanchions are left empty is to be assessed in order to consider the maximum loads in the vertical hatch cover supports.

It may be necessary to also consider partial load cases where more or different container stack places are left empty. Therefore, a classification society may require that additional partial load cases be considered.

In the case of mixed stowage (20'+40' container combined stack), the foot point forces at the fore and aft end of the hatch cover are not to be higher th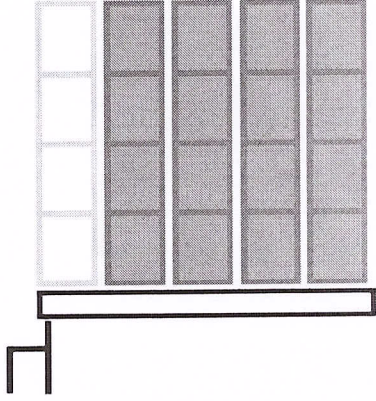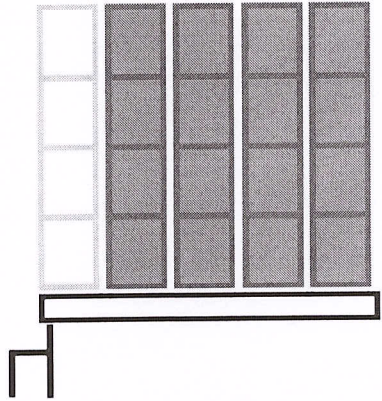an resulting from the design stack weight for 40' containers, and the foot point forces at the middle of the cover are not to be higher than resulting from the design stack weight for 20' containers.
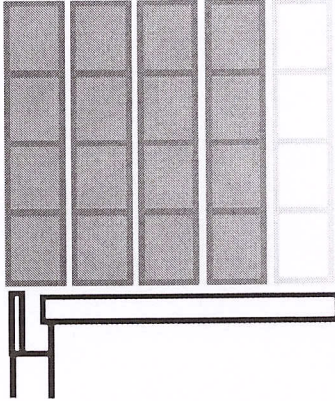
Table 7.10.6.12
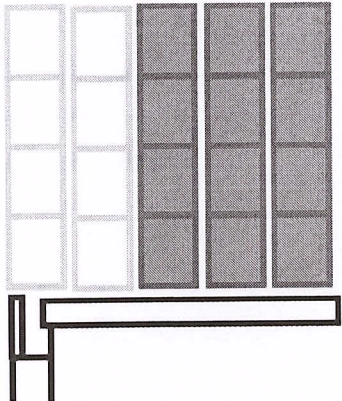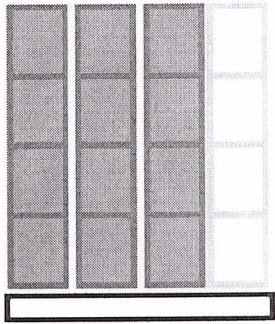
Partial loading for container hatch covers

Fig. 7.10.6.12 shall be deleted;

Para 7.10.6.14. The first paragraph shall be amended to read: "7.10.6.14 The equivalent stress σ_v in steel hatch cover structures related to the net thickness shall not exceed 0,8

$\cdot \, \sigma_F$, where σ_F is the minimum yield stress, in N/mm^2, of the material. For design loads according to 7.10.6.8 to 7.10.6.13, the equivalent stress σ_v related to the net thickness shall not exceed $0{,}9 \cdot \sigma_F$ when the stresses are assessed by means of FEM.", the rest remaining as it stands.";

the first sentence of the third paragraph shall be amended to read: "...For grillage analysis, the equivalent stress may be taken as follows: ", the rest remaining as it stands.";

the last paragraph shall be amended to read: "...In case of FEM calculations using shell or plane strain elements, the stresses shall be read from the centre of the individual element. It shall be observed that, in particular, at flanges of unsymmetrical girders, the evaluation of stress from element centre may lead to nonconservative results. Thus, a sufficiently fine mesh shall be applied in these cases or, the stress at the element edges shall not exceed the allowable stress. Where shell elements are used, the stresses shall be evaluated at the mid plane of the element. ";

Para 7.10.6.16. In the explication to Formula (7.10.6.16) the definition of the notation "σ" shall be amended to read:

"σ - maximum normal stress, in N/mm^2, of hatch cover top plating, determined according to Fig.. 7.10.6.16";

the **last two paragraphs** shall be deleted;

Fig. 7.10.6.16 shall be replaced with new Fig. 7.10.6.16 as follows: "
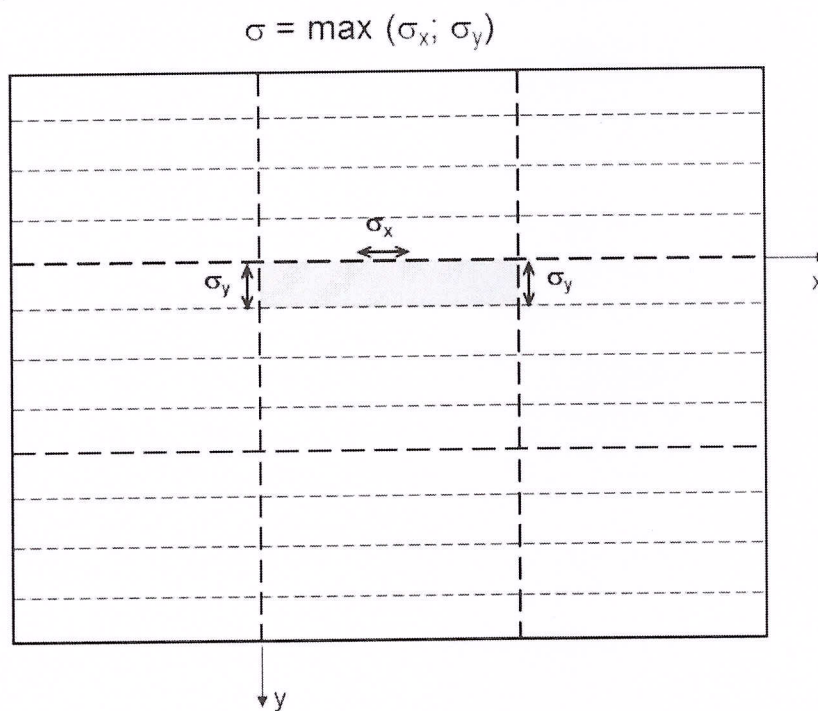
$$\sigma = \max(\sigma_x;\ \sigma_y)$$

Fig.7.10.6.16";

Para 7.10.6.17. The first paragraph shall be supplemented with the following text:

"**7.10.6.17** When the lower plating is taken into account as a strength member of the hatch cover, the net thickness, in mm, of lower plating shall be taken not less than 5 mm. When project cargo is intended to be carried on a hatch cover, the net thickness must not be less than: ", the rest remaining as it stands;

the second paragraph shall be deleted;

the text "$t_{min} = 5$ mm," shall be deleted;

the para shall be supplemented with the following text:

"N o t e. Project cargo means especially large or bulky cargo lashed to the hatch cover. Examples are parts of cranes or wind power stations, turbines, etc. Cargoes that can be considered as uniformly distributed over the hatch cover, e.g., timber, pipes or steel coils need not to be considered as project cargo.";

Para 7.10.6.18. Formulae "(7.10.6.18-1)" and "(7.10.6.18-2)" shall be amended to read:

$$Z = \frac{104 p s l^2}{\sigma_F}, \text{ in cm}^3, \text{ for design load according to 7.10.6.6} \quad (7.10.6.18-1)$$

$$Z = \frac{94 p s l^2}{\sigma_F}, \text{ in cm}^3, \text{ for design loads according to 7.10.6.9} \quad (7.10.6.18-2) \text{ ";}$$

shall be supplemented with new Formulae "(7.10.6.18-3)" and "(7.10.6.18-4)" reading as follows:

$$A_s = \frac{10.8 p s l}{\sigma_F}, \text{ in cm}^2, \text{ for design load according to 7.10.6.6} \quad (7.10.6.18-3)$$

$$A_s = \frac{9.6 p s l}{\sigma_F}, \text{ in cm}^2, \text{ for design load according to 7.10.6.9} \quad (7.10.6.18-4)\text{"},$$ the rest remaining as it stands;

the following text shall be introduced before **the second paragraph**:

"For secondary stiffeners of lower plating of double skin hatch covers, requirements mentioned above are not applied due to the absence of lateral loads.

The net thickness, in mm, of the stiffener (except u-beams/trapeze stiffeners) web is to be taken not less than 4 mm.", the rest remaining as it stands;

the fourth paragraph shall be supplemented with the following text:

"...The requirements of this paragraph are not applied to stiffeners of lower plating of double skin hatch covers if the lower plating is not considered as strength member. ". the rest remaining as it stands;

the last paragraph shall be amended to read:

"....For hatch covers subject to wheel loading or point loads stiffener scantlings are to be determined under consideration of the permissible stresses according to 7.10.6.14. ";

Para 7.10.6.21 shall be amended to read:

"**7.10.6.21** Strength calculation for hatch covers may be carried out by either grillage analysis or FEM. Double skin hatch covers or hatch covers with box girders shall be assessed using FEM (refer to 7.10.6.23). ";

Para 7.10.6.23. The last paragraph shall be amended to read:

"...The element height of webs of primary supporting member must not exceed one-third of the web height. Stiffeners, supporting plates against pressure loads, have to be included in the idealization. Stiffeners may be modelled by using shell elements, plane stress elements or beam elements. Buckling stiffeners may be disregarded for the stress calculation. ";

Para 7.10.6.28 shall be amended to read:

"**7.10.6.28** It shall be demonstrated that the continuous longitudinal and transverse stiffeners of partial and total plate fields comply with the conditions set out in 7.10.6.30 and 7.10.6.31.

For u-type stiffeners, the proof of torsional buckling strength according to 3.6.3.4 can be omitted.

Single-side welding is not permitted to use for secondary stiffeners except for u-stiffeners.
";

Para 7.10.6.39. The second paragraph shall be amended to read:

"At the connection with deck, the net section modulus Z, in cm^3, of the coaming stays designed as beams with flange (refer to Figs. 7.1.6.39-1 and 7.1.6.39-2) shall be taken not less than: ", the rest remaining as it stands;

the explication to Formula (7.10.6.39) shall be supplemented with the following notation:

"h_S – height of coaming stays in m;";

the **third paragraph** shall be amended to read:

"...For other designs of coaming stays, such as those shown in Figs. 7.10.6.39-3 и 7.10.6.39-4, the stresses shall be determined through a grillage analysis or FEM. The calculated stresses shall comply with the permissible stresses according to 7.10.6.14.";

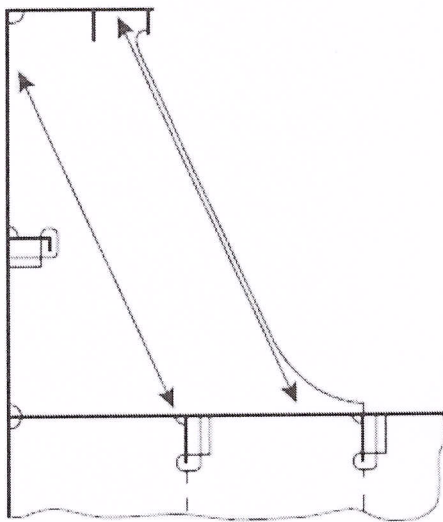shall be supplemented with new Figs 7.10.6.39 -1; 7.10.6.39 -2; 7.10.6.39 -3; 7.10.6.39 - 4:
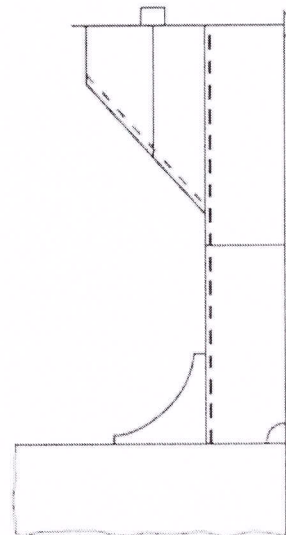

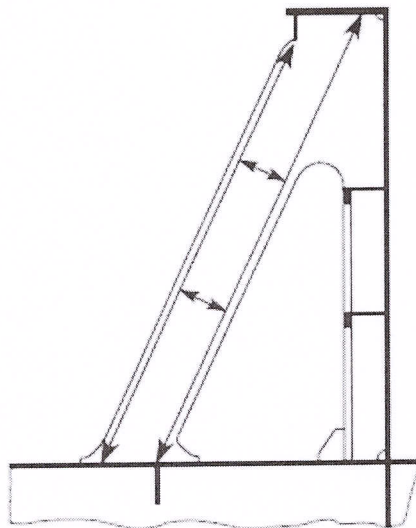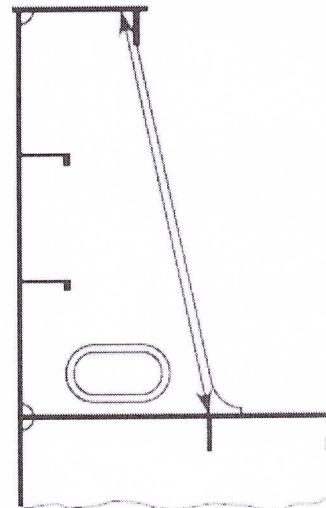Fig. 7.10.6.39-1   Fig.7.10.6.39-2

Fig.7.10.6.39-3   Fig.7.10.6.39-4"

Para 7.10.6.41. In the first sentence the text "designed" shall be replaced with the text "considered";

Para 7.10.6.43 The second paragraph shall be amended to read:

"...Coaming plates shall extend to the lower edge of the deck beams or hatch side girders shall be fitted that extend to the lower edge of the deck beams. Extended coaming plates and hatch side girders shall be flanged or fitted with face bars or half-round bars. Fig. 7.10.6.43 gives an example.";

Fig. 7.10.6.43 shall be amended with new Fig. 7.10.6.43:

Hatch coaming

Hatch side girder

Deck beam
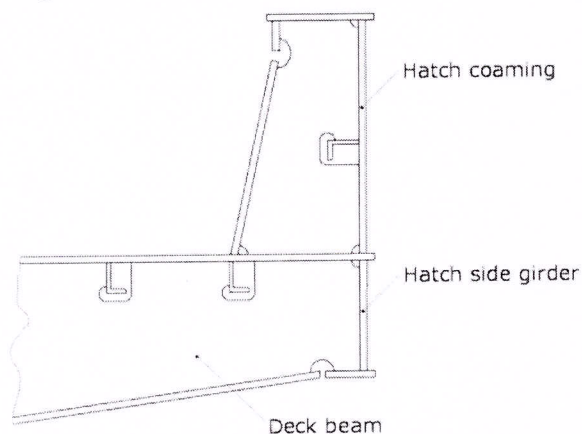
Para 7.10.6.48 after Formula (7.10.6.48) shall be supplemented with the text reading as follows:

"N o t e. The partial load cases given in Tab. 7.10.6.12 may not cover all unsymmetrical loadings, critical for hatch cover lifting. ";

Para 7.10.6.49. In the first sentence the text "securing devices" shall be amended to read "hath cover support";

shall be supplemented with the following text:

"The accelerations in longitudinal direction and in transverse direction do not need to be considered as acting simultaneously.";

Para 7.10.6.50. The fourth paragraph starting with the words " If necessary, ..." shall be deleted;

Para 7.10.6.53. The first sentence shall be deleted;

shall be supplemented with the following text before the first paragraph:

"**7.10.6.53** Steel renewal is required where the gauged thickness is less than t_{net} + 0,5 mm for

single skin hatch covers;

the plating of double skin hatch covers; and

coaming structures the corrosion additions t_s of which are provided in Tab. 7.10.6.52.", the rest remaining as it stands. ";

shall be supplemented with the following text:

"For coaming structures, the corrosion additions t_s of which are not provided in Tab. 7.10.6.5.2, is determined in compliance with 1.1.5 , Part II "Hull".".