CIRCULAR LETTER  No. 314-18-1738c  dated 11.04.2022

Re: amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2022, ND No. 2-020101-152-E

Item(s) of supervision:
ships under construction

Entry-into-force date: 01.05.2022


Number of pages: 1+7

Appendices:
Appendix 1: information on amendments introduced by the Circular Letter
Appendix 2: text of amendments to Part III "Equipment, Arrangements and Outfit"

Director General                                            Konstantin G. Palnikov

Text of CL:
We hereby inform that the Rules for the Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:
1. 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.
2. Apply the provisions of the Circular Letter during review and approval of the technical documentation on ships contracted for construction or conversion on or after 01.05.2022*, in the absence of a contract — according to 5.10 of Part II "Technical Documentation" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, starting from 01.05.2022.

* The definition “Date of contract for construction of a ship (series of ships)” is given in 1.1.2 of Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships.

List of the amended and/or introduced paras/chapters/sections:
Part III: para 2.1.3, Table 3.1.3-1, paras 3.2.5, 4.1.3, 7.10.6.34 and 7.14.2

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"Thesis" System No. 22-51832
## Information on amendments introduced by the Circular Letter
(for inclusion in the Revision History to the RS Publication)

<table>
<thead>
<tr>
<th>Nos.</th>
<th>Amended paras/chapters/sections</th>
<th>Information on amendments</th>
<th>Number and date of the Circular Letter</th>
<th>Entry-into-force date</th>
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<tbody>
<tr>
<td>1</td>
<td>Para 2.1.3</td>
<td>Reference to IACS UR S10 (Rev.6 Sep 2019) has been specified</td>
<td>314-18-1738c of 11.04.2022</td>
<td>01.05.2022</td>
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<tr>
<td>2</td>
<td>Table 3.1.3-1</td>
<td>Footnote has been specified</td>
<td>314-18-1738c of 11.04.2022</td>
<td>01.05.2022</td>
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<tr>
<td>3</td>
<td>Paras 3.2.5 — 3.2.5.3</td>
<td>Reference to IACS recommendation has been replaced by reference to the applicable requirements of these Rules; new paras 3.2.5.1 — 3.2.5.3 have been introduced considering IACS recommendation No. 10 (Rev.4 Sep 2020)</td>
<td>314-18-1738c of 11.04.2022</td>
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<tr>
<td>4</td>
<td>Paras 4.1.3 — 4.1.3.3</td>
<td>Reference to IACS recommendation has been replaced by reference to the applicable requirements of these Rules; new paras 4.3.1.1 — 4.1.3.3 have been introduced considering IACS recommendation No. 10 (Rev.4 Sep 2020)</td>
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<td>5</td>
<td>Para 7.10.6.34</td>
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<td>6</td>
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2 RUDDER AND STEERING GEAR

1 Para 2.1.3 is replaced by the following text:

"2.1.3 Steering gears may be designed compliant to IACS unified requirement (UR) S10 (Rev.6 Sept 2019) (the document is available at the IACS website: www.iacs.org.uk)."

3 ANCHOR ARRANGEMENT

2 Table 3.1.3-1. Footnote 2) is replaced by the following text:

"2) Refer to 3.2.5.".

3 Para 3.2.5 is replaced by the following text:

"3.2.5 For ships with an equipment length of not less than 135 m, intended to anchor in deep and unsheltered water, as well as to anchor in water with depth up to 120 m, current with up to 1,54 m/s, wind with up to 14 m/s and waves with significant height of up to 3 m, the anchoring equipment shall be selected according to 3.2.5.1 — 3.2.5.3.

3.2.5.1 The scope of chain cable is defined as the ratio between the length of chain paid out and water depth, and is assumed to be not less than 3 to 4.

3.2.5.2 Anchors and chain cables shall be in accordance with Table 3.2.5.2 and based on the Equipment Number $E_N_1$ obtained from the following formula:

$$E_N_1 = 0.628 \left[ a \left( \frac{E_N}{0.628} \right)^{1/2} + b (1 - a) \right]^{2.3} \tag{3.2.5.2}$$

where

- $a = 1.83 \times 10^{-5} \cdot L^3 + 2.09 \times 10^{-6} \cdot L^2 - 6.21 \times 10^{-4} \cdot L + 0.0866$;
- $b = 0.156 \cdot L + 8.372$;
- $L$ = the equipment length of the ship between perpendiculars which shall not be less than 96 % nor greater than 97 % of the extreme length on the summer load waterline (measured from forward end of the waterline);
- $E_N$ = Equipment Number calculated in compliance with 3.2.1.

Anchors shall be of the stockless high holding power (HHP) type. The mass of the head of a stockless anchor, including pins and fittings, shall not be less than 60 % of the total mass of the anchor. HHP anchors shall comply with the requirements of 8.1.3.2 of Part XIII "Materials".

The mass, per anchor, of bower anchors given in Table 3.2.5.2 is for anchors of equal mass. The mass of individual anchors may vary to 7 % of the tabular mass, but the total mass of anchors shall not be less than that recommended for anchors of equal mass.

Suitable arrangements shall be provided for securing the anchors in accordance with 3.6.1.2.
### Table 3.2.5.2

<table>
<thead>
<tr>
<th>Equipment Number $E N_1$</th>
<th>High holding power stockless bower anchors</th>
<th>Chain cable for bower anchors</th>
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<td>Less than</td>
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</table>

#### 3.2.5.3 Chain cables for bower anchors.

Bower anchors shall be associated with chain cables of Grade 2 or Grade 3. The total length of chain cable, as given in Table 3.2.5.2 shall be divided between the two bower anchors. The application of 6.3 of Part IX "Machinery" is recommended for the anchor windlass design and testing.

Notwithstanding the requirements according to 6.3 of Part IX "Machinery", the windlass unit prime mover shall be able to supply for at least 30 min a continuous duty pull $Z_{cont}$, in N, determined by the formula:

$$Z_{cont} = 35d^2 + 13.4m_A$$  \(3.2.5.3\)

where $d$ = chain diameter as per Table 3.2.5.2, in mm;

$m_A$ = HHP anchor mass as per Table 3.2.5.2, in kg.

In addition to the requirements of 6.3 of Part IX "Machinery", as far as practicable, for testing purpose the speed of the chain cable during hoisting of the anchor and cable shall be measured over 37.5 m of chain cable and initially with at least 120 m of chain and the anchor submerged and hanging free. The mean speed of the chain cable during hoisting of the anchor from the depth of 120 m to the depth of 82.5 m shall be at least 4.5 m/min..
4 MOORING LINES

4.1.3 is replaced by the following text:

"4.1.3 For ships with EN ≤ 2000 and having the ratio A/EN > 0.9, the following number of lines shall be added to the number of mooring lines as given by Table 3.1.3-1:

- one line where 0.9 < A/EN ≤ 1.1;
- two lines where 1.1 < A/EN ≤ 1.2;
- three lines where A/EN > 1.2,

where EN and A = Equipment Number and side-projected area (windage area), respectively, specified under 3.2.

The minimum recommended strength and number of mooring lines for ships with an Equipment Number EN > 2000 are given in 4.1.3.1 and 4.1.3.2, respectively. The length of mooring lines is specified in 4.1.3.3.

The strength of mooring lines and the number of head, stern, and breast lines (refer to the Note) for ships with an Equipment Number EN > 2000 are based on the side-projected area A₁. Side-projected area A₁ shall be calculated similar to the side-projected area A according to 3.2.1 but considering the following conditions:

- the ballast draught shall be considered for the calculation of the side-projected area A₁. For ship types having small variation in the draught, like e.g. passenger and ro-ro ships, the side-projected area A₁ may be calculated using the summer load waterline;
- wind shielding of the pier can be considered for the calculation of the side-projected area A₁ unless the ship is intended to be regularly moored to jetty type piers. A height of the pier surface of 3 m over waterline may be assumed, i.e. the lower part of the side-projected area with a height of 3 m above the waterline for the considered loading condition may be disregarded for the calculation of the side-projected area A₁;
- deck cargoes at the ship nominal capacity condition shall be included for the determination of side-projected area A₁. For the condition with cargo on deck, the summer load waterline may be considered. Deck cargoes may not need to be considered if ballast draught condition generates a larger side-projected area A₁ than the full load condition with cargoes on deck. The larger of both side-projected areas shall be chosen as side-projected area A₁.

The nominal capacity condition is defined as the theoretical condition where the maximum possible deck cargoes are included in the ship arrangement in their respective positions. For container ships the nominal capacity condition represents the theoretical condition where the maximum possible number of containers is included in the ship arrangement in their respective positions.

The mooring lines as given here under are based on a maximum current speed of 1.0 m/s and the following maximum wind speed $v_w$, in m/s:

- $v_w = 25,0 - 0.002 (A_1 - 2000)$ — for passenger ships, ferries, and car carriers with $2000 \text{ m}^2 < A_1 \leq 4000 \text{ m}^2$;
- $v_w = 21,0$ — for passenger ships, ferries, and car carriers with $A_1 > 4000 \text{ m}^2$;
- $v_w = 25,0$ — for other ships.

The wind speed is considered representative of a 30 second mean speed from any direction and at a height of 10 m above the ground. The current speed is considered representative of the maximum current speed acting on bow or stern (± 10°) and at a depth of one-half of the mean draught. Furthermore, it is considered that ships are moored to solid piers that provide shielding against cross current.

Additional loads caused by, e.g., higher wind or current speeds, cross currents, additional wave loads, or reduced shielding from non-solid piers may need to be particularly considered.
Furthermore, it shall be observed that unbeneﬁcial mooring layouts can considerably increase the loads on single mooring lines.

Note: The following is deﬁned with respect to the purpose of mooring lines, refer also to Figure 4.1.3:
- breast line — a mooring line that is deployed perpendicular to the ship, restraining the ship in the off-berth direction;
- spring line — a mooring line that is deployed almost parallel to the ship, restraining the ship in fore or aft direction;
- head/stern line — a mooring line that is oriented between longitudinal and transverse direction, restraining the ship in the off-berth and in fore or aft direction. The amount of restraint in fore or aft and off-berth direction depends on the line angle relative to these directions.

**Fig. 4.1.3**

### 4.1.3.1 Ship design minimum breaking load.

The ship design minimum breaking load, in kN, of the mooring lines shall be taken as:

\[
M_{BL, SD} = 0.1 \cdot A_1 + 350. 
\]  
(4.1.3.1-1)

The ship design minimum breaking load may be limited to 1275 kN (130 t). However, in this case the moorings shall be considered as not sufﬁcient for environmental conditions speciﬁed in 4.1.3. For these ships, the acceptable wind speed \(v_w^*\), in m/s, can be estimated as follows:

\[
v_w^* = v_w \cdot \sqrt{\frac{M_{BL, SD}}{M_{BL, SD}^*}} \]  
(4.1.3.1-2)

where \(v_w\) is the wind speed as per 4.1.3;
- \(M_{BL, SD}^*\) = the ship design minimum breaking load of the mooring lines intended to be supplied; and
- \(M_{BL, SD}\) = the ship design minimum breaking load as recommended according to Formula (4.1.3.1-1).

However, the ship design minimum breaking load shall not be taken less than corresponding to an acceptable wind speed of 21 m/s:

\[
M_{BL, SD}^* v_w^* \geq \left(\frac{21}{v_w}\right)^2 \cdot M_{BL, SD}. 
\]  
(4.1.3.1-3)

If lines are intended to be supplied for an acceptable wind speed \(v_w^*\) higher than \(v_w\) as per 4.1.3, the ship design minimum breaking load shall be taken as:

\[
M_{BL, SD}^* \geq \left(\frac{v_w^*}{v_w}\right)^2 \cdot M_{BL, SD}. 
\]  
(4.1.3.1-4)

### 4.1.3.2 Number of mooring lines.

The total number of head, stern and breast lines (refer to the Note in 4.1.3) shall be taken as follows:

\[
n = 8.3 \cdot 10^{-4} \cdot A_1 + 6. 
\]  
(4.1.3.2-1)
For oil tankers, chemical tankers, bulk carriers, and ore carriers the total number of head, stern and breast lines shall be taken as follows:

\[ n = 8.3 \cdot 10^{-4} \cdot A_1 + 4. \]  

(4.1.3.2-2)

The total number of head, stern and breast lines shall be rounded to the nearest whole number.

The number of head, stern and breast lines may be increased or decreased in conjunction with an adjustment to the ship design minimum breaking load of the lines. The adjusted ship design minimum breaking load, \( MBL_{SD}^{**} \), shall be taken as:

\[
MBL_{SD}^{**} = 1.2 \cdot MBL_{SD} \cdot n/n^{**} \leq MBL_{SD} \quad \text{for increased number of lines;}
\]
\[
MBL_{SD}^{**} = MBL_{SD} \cdot n/n^{**} \quad \text{for reduced number of lines}
\]

where \( MBL_{SD} = MBL_{SD} \text{ or } MBL_{SD}^{**} \) specified in 4.1.3.1, as appropriate;
\( n^{**} = \) the increased or decreased total number of head, stern and breast lines;
\( n = \) the number of lines for the considered ship type as calculated by formulas 4.1.3.2-1 and 4.1.3.2-2 without rounding.

Vice versa, the ship design minimum breaking load of head, stern and breast lines may be increased or decreased in conjunction with an adjustment to the number of lines.

The total number of spring lines (refer to the Note in 4.1.3.2) shall be taken not less than:

- two lines where \( EN < 5000 \);
- four lines where \( EN \geq 5000 \).

The ship design minimum breaking load of spring lines shall be the same as that of the head, stern and breast lines. If the number of head, stern and breast lines is increased in conjunction with an adjustment to the ship design minimum breaking load of the lines, the number of spring lines shall be taken as follows, but rounded up to the nearest even number:

\[
n_S^* = MBL_{SD}/MBL_{SD}^{**} \cdot n_S
\]

(4.1.3.2-3)

where \( MBL_{SD} = MBL_{SD} \text{ or } MBL_{SD}^{**} \), specified in 4.1.3.1, as appropriate;
\( n_S = \) the number of spring lines as given above;
\( n_S^* = \) the increased number of spring lines.

4.1.3.3 Length of mooring lines.

The length of mooring lines for ships with \( EN \leq 2000 \) may be taken from Table 3.1.3-1. For ships with \( EN > 2000 \) the length of mooring lines may be taken as 200 m.

The lengths of individual mooring lines may be reduced by up to 7% of the above given lengths, but the total length of mooring lines shall not be less than would have resulted had all lines been of equal length."

7 OPENINGS IN HULL, SUPERSTRUCTURES AND DECKHOUSES AND THEIR CLOSING APPLIANCES

5 Para 7.10.6.34 is replaced by the following text:

"7.10.6.34 To ensure weather tightness, the requirements of 7.10.6.45 — 7.10.6.51 applicable to hatch covers shall be met.

The packing material of hatch covers gaskets shall be suitable for all expected service conditions of the ship and shall be compatible with the cargoes to be transported. The packing material shall be selected with regard to dimensions and elasticity in such a way that expected deformations can be carried. Forces shall be carried by the steel structure only."
The packings shall be compressed so as to give the necessary tightness effect for all expected operating conditions. Special consideration shall be given to the packing arrangement in ships with large relative movements between hatch covers and coamings or between hatch cover sections.

6 Para 7.14.2 is replaced by the following text:

"7.14.2 Means of access and passages on ships referred to in 7.14.1 shall comply with the requirements of IMO resolutions MSC.134(76), MCS.151(78) and MSC.158(78), as well as IACS UI SC191 (Rev.8 Apr 2019) (the document is available at the IACS website: www.iacs.org.uk)."