RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER **No. 314-47-1249c** dated 24.07.2019

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, ND. No. 2-020101-114-E

Item(s) of supervision:

ships of ice classes

Entry-into-force date: ~~Valid till:~~ ~~Validity period extended till:~~
from the date of publication

~~Cancels / amends / adds Circular Letter No.~~ ~~dated~~

Number of pages: 1+9

Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Part II "Hull"

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. Familiarize the RS surveyors and interested organizations in the area of the RS Branch Offices' activity with the content of the Circular Letter.

2. Apply provisions of the Circular Letter during the RS practical activity.

List of the amended and/or introduced paras/chapters/sections:

Part II: Table 1.1.4.3, paras 3.10.1.1.4, 3.10.1.2.1, 3.10.1.2.2, Table 3.10.1.2.2, paras 3.10.1.2.3, 3.10.1.3.2, 3.10.2.6.1, 3.10.2.6.2, 3.10.3.1, 3.10.3.2.1, 3.10.3.3.1, 3.10.3.4.1, 3.10.3.4.2, 3.10.3.8, 3.10.4.1, 3.10.4.10.1, 3.10.4.10.2, 3.10.4.11.3, 3.10.4.11.4, 3.10.4.11.5, 3.10.4.11.6, 3.10.4.11.7, 3.10.4.11.8, 3.10.4.11.9

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"Thesis" System No. 19-165413

Appendix 1 to Circular Letter
No. 314-47-1249c dated 24.07.2019

Information on amendments introduced by the Circular Letter
(for inclusion in the Revision History to the RS Publication)

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Table 1.1.4.3	Requirements for assignment of application factor of steel mechanical properties η have been specified	314-47-1249c of 24.07.2019	24.07.2019
2	Para 3.10.1.1.4	Requirements related to determination of scantlings of ice-strengthening structures depending on hull shape have been deleted	314-47-1249c of 24.07.2019	24.07.2019
3	Para 3.10.1.2.1	Captions to the figures related to determination of hull shape parameters have been clarified	314-47-1249c of 24.07.2019	24.07.2019
4.	Para 3.10.1.2.2	Amendments relating to the requirements for hull configuration parameters have been made	314-47-1249c of 24.07.2019	24.07.2019
5	Table 3.10.1.2.2	Amendments relating to the requirements for hull shape parameters have been made	314-47-1249c of 24.07.2019	24.07.2019
6	Para 3.10.1.2.3	Amendments relating to the requirements for hull shape parameters have been made	314-47-1249c of 24.07.2019	24.07.2019
7	Para 3.10.1.3.2	Requirement for design ice waterline calculation has been introduced	314-47-1249c of 24.07.2019	24.07.2019
8	Para 3.10.2.6.1	Requirements for stem construction have been specified	314-47-1249c of 24.07.2019	24.07.2019
9	Para 3.10.2.6.2	Requirements for stem construction have been specified	314-47-1249c of 24.07.2019	24.07.2019
10	Para 3.10.3.1	Requirements relating to determination of ice load parameters for the bow areas with the vertical side ($\beta < 5°$) in the region of alternating draughts, or bulbous bows have been introduced	314-47-1249c of 24.07.2019	24.07.2019
11	Para 3.10.3.2.1	Definition of shape factor v_m in the explication to Formula (3.10.3.2.1) has been amended.	314-47-1249c of 24.07.2019	24.07.2019

12	Para 3.10.3.3.1	Definition of shape factor u_m in the explication to Formula (3.10.3.3.1) has been amended	314-47-1249c of 24.07.2019	24.07.2019
13	Para 3.10.3.4.1	Definition of parameter β_m^{A} in the explication to Formula (3.10.3.4.1) has been specified	314-47-1249c of 24.07.2019	24.07.2019
14	Para 3.10.3.4.2	Definition of parameter $\beta_m^{A_1}$ in the explication to Formula (3.10.3.4.2) has been specified	314-47-1249c of 24.07.2019	24.07.2019
15	Para 3.10.3.8	Requirements relating to determination of ice load parameters for the bow areas with the vertical side ($\beta < 5°$) in the region of alternating draughts, or bulbous bows have been introduced	314-47-1249c of 24.07.2019	24.07.2019
16	Para 3.10.4.1	Definition of parameter *u* in the explication to Formula (3.10.4.1) has been specified	314-47-1249c of 24.07.2019	24.07.2019
17	Para 3.10.4.10.1	Formulae (3.10.4.10.1-1) and (3.10.4.10.1-2) have been amended; requirements for the stem geometrical characteristics have been specified	314-47-1249c of 24.07.2019	24.07.2019
18	Para 3.10.4.10.2	Para regarding the requirements for the sternframe geometrical characteristics has been deleted	314-47-1249c of 24.07.2019	24.07.2019
19	Para 3.10.4.11.3	Requirements for structural members of bulbous bow have been specified	314-47-1249c of 24.07.2019	24.07.2019
20	Para 3.10.4.11.4	Para regarding the requirements for determination of the web area of a conventional bulb frame has been deleted	314-47-1249c of 24.07.2019	24.07.2019
21	Para 3.10.4.11.5	Para regarding the requirements for determination of the ultimate section modulus of a conventional frame has been deleted	314-47-1249c of 24.07.2019	24.07.2019

22	Para 3.10.4.11.6	Para 3.10.4.11.6 has been renumbered 3.10.4.11.4; Formulae (3.10.4.11.6-1) – (3.10.4.11.6-5) are renumbered (3.10.4.11.4-1) – (3.10.4.11.4-5) accordingly; definition of the parameter *s* in the explication to Formula (3.10.4.11.4-1) has been specified	314-47-1249c of 24.07.2019	24.07.2019
23	Para 3.10.4.11.7	Para regarding the requirements for scantlings of side stringers and deep frames inside the bulb has been deleted	314-47-1249c of 24.07.2019	24.07.2019
24	Para 3.10.4.11.8	Para regarding the requirements for thickness of a side stringer web and longitudinal plate elements has been deleted	314-47-1249c of 24.07.2019	24.07.2019
25	Para 3.10.4.11.9	Para regarding the requirements for thickness of a deep frame web and transverse plate elements has been deleted	314-47-1249c of 24.07.2019	24.07.2019

Appendix 2 to Circular Letter
No. 314-47-1249c dated 24.07.2019

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS, 2019,

ND No. 2-020101-114-E

PART II. HULL

1 DESIGN PRINCIPLES

1.1 GENERAL

1 **Table 1.1.4.3**. Value of upper yield stress "390" is replaced by "≥ 390".

3 REQUIREMENTS FOR STRUCTURES OF SHIPS OF SPECIAL DESIGN

3.10 STRENGTHENING OF ICE CLASS SHIPS AND ICEBREAKERS

2 **Para 3.10.1.1.4** is deleted.

3 **Para 3.10.1.2.1**. Captions to the figs. 3.10.1.2-1 – 3.10.1.2-4 are replaced by the following text:

"Fig. 3.10.1.2.1-1. α – slope of design ice waterline at the section considered, in deg.";
"Fig. 3.10.1.2.1-2. β – slope of frame on the level of design ice waterline at the section considered, in deg.";
"Fig. 3.10.1.2.1-3. α_0 – slope of design ice waterline at the fore perpendicular, in deg.; 1 – shell plating; 2 – stem.";
"Fig. 3.10.1.2.1-4. φ – slope of stem on the level of design ice waterline, in deg.".

4 **Para 3.10.1.2.2**. The first sentence is replaced by the following text:

"**3.10.1.2.2** The hull configuration parameters of ice class ships are recommended to be within the limits stated in Table 3.10.1.2.2.".

5 **Table 3.10.1.2.2.** In the last column ice class **Ice1** is deleted.

6 **Para 3.10.1.2.3**. The first two sentences is replaced by the following text:

"**3.10.1.2.3**. Hull configuration parameters of icebreakers.
For icebreakers, at 0–0,25*L* from the area of fore perpendicular within service draughts, straight and convex waterlines shall be used. The recommended entrance angles for above waterlines α_0 are within the limits of $\alpha_0 = 22^\circ \div 30^\circ$.".

7 **Para 3.10.1.3.2** is supplemented by the following paragraph:

"For calculation procedures of this Chapter ice loadline shall be taken as the design ice waterline, unless stated otherwise.".

8 **Para 3.10.2.6.1**. The second and the third sentences are deleted.

9 **Para 3.10.2.6.2**. The first sentence is replaced by the following:

"**3.10.2.6.2** A combined stem with bar welded thereto (Fig. 3.10.2.6.2-1, *a*), or a plate stem (Fig. 3.10.2.6.2-1, *b*) may be used.".

10 **Para 3.10.3.1** is supplemented by the following paragraph:

"At the fore part with slope of design ice waterline $\alpha > 3°$, for ice class ships with bulbous bows, and when $\beta \leq 5$, the ice load parameters shall be determined in compliance with 3.10.3.8.".

11 **Para 3.10.3.2.1.** The definition of factor v_m in the explication to Formula (3.10.3.2.1) is replaced by the following text:

"v_m = value of the shape factor v , which is the maximum one for the region, as determined at sections within *x* = 0; 0,025*L*; 0,05*L*; 0,075*L*; 0,1*L* , etc. from the forward perpendicular (as far as **Ice1**, **Ice2** and **Ice3** ice class ships are concerned, design sections where $x \leq 0{,}58b$, shall only be considered; for *b*, refer to Fig. 3.10.1.3.2) at the design ice waterline. The value shall be determined by the following formulae:

for ships and icebreakers with the hull shape compliant with the provisions of 3.10.1.2.2 and 3.10.1.2.3

$v = \left(0{,}278 + 0{,}18\frac{x}{L}\right) \cdot \sqrt[4]{\frac{\alpha^2}{\beta}}$ at $\frac{x}{L} \leq 0{,}25$;

$v = \left(0{,}343 - 0{,}08\frac{x}{L}\right) \cdot \sqrt[4]{\frac{\alpha^2}{\beta}}$ at $\frac{x}{L} > 0{,}25$;

for other ships and icebreakers

$$v = f_v\left(0{,}9 + 0{,}3\frac{x}{L} + 0{,}005\alpha - 0{,}0015\beta'\right)$$

where *L* = length at design ice waterline;

x = distance between the considered section and the forward perpendicular, in m;

α = angle of design waterline inclination which shall be measured in accordance with Figs. 3.10.1.2-1 and 3.10.1.2-3 (where *x* = 0), in deg.;

β = angle of frame inclination at design ice waterline on the considered section which shall be measured in accordance with Fig. 3.10.1.2.1-2, in deg.; where the frame is concave, in case of **Arc4**, **Arc5**, **Arc6**, **Arc7**, **Arc8**, **Arc9** ice class ships, β shall be chosen as a minimum angle, which is measured at service waterlines;

$\beta' = \text{arctg}(\text{tg}\,\beta\cos\alpha)$ = side inclination angle with regard to normal, deg.;

$f_v = \frac{(\sin\alpha\cos\beta_r)^{0,54}}{(\cos\beta_r)^{0,17}(\sin\beta_r)^{0,25}}$.".

12 **Para 3.10.3.3.1.** The definition of factor u_m in the explication to Formula (3.10.3.3.1) is replaced by the following text:

"u_m = maximum value of the shape factor *u* for the region, as determined at sections within *x* = 0; 0,025*L;* 0,05*L;* 0,075*L;* 0,1*L*, etc. from forward perpendicular (as far as **Ice1**, **Ice2** and **Ice3** ice class ships are concerned, sections where $x \leq 0{,}58b$ shall only be considered; for *b*, refer to Fig. 3.10.1.3.2) at the design ice waterline. The value shall be determined by the following formulae:

for ships and icebreakers with the hull shape compliant with the provisions of 3.10.1.2.2 and 3.10.1.2.3

$u = k_{\text{B}}\left(0{,}635 + 0{,}61\frac{x}{L}\right) \cdot \sqrt{\frac{\alpha}{\beta}}$ at $\frac{x}{L} \leq 0{,}25$;

$u = k_{\text{B}}\left(0{,}862 - 0{,}30\frac{x}{L}\right) \cdot \sqrt{\frac{\alpha}{\beta}}$ at $\frac{x}{L} > 0{,}25$;

for other ships and icebreakers

$$u = f_u\left(0{,}72 + \frac{x}{L} + 0{,}001\alpha - 0{,}013\frac{x}{L}\beta'\right)$$

where *L*, *x*, α, β, β' – refer to 3.10.3.2.1;

$$k_{\text{B}} = \begin{cases} 1 \text{ at } \beta \geq 7° \\ 1{,}15 - 0{,}15\frac{\beta}{7} \text{ at } \beta < 7° \end{cases};$$

$$f_u = \frac{(\sin\alpha\cos\beta\prime)^{0{,}58}}{(\cos\beta\prime)^{0{,}33}(\sin\beta\prime)^{0{,}5}}.$$".

13 **Para 3.10.3.4.1.** The definition of parameter β_m^{A} in the explication to Formula (3.10.3.4.1) is replaced by the following text:

"β_m^{A} = angle β' in the design section of region A for which the value of the *u* parameter is maximum (refer to 3.10.3.3.1);".

14 **Para 3.10.3.4.2.** The definition of parameter $\beta_m^{\text{A}_1}$ in the explication to Formula (3.10.3.4.2) is replaced by the following text:

"$\beta_m^{\text{A}_1}$= angle β' in the design section of region A_1 for which the value of the *u* parameter is maximum (refer to 3.10.3.3.1);".

15 New **Para 3.10.3.8** is introduced reading as follows:

"**3.10.3.8** Ice load parameters for the bow areas with the vertical side ($\beta < 5$) in the region of alternating draughts, or bulbous bows.

3.10.3.8.1 For ships of ice classes, the ice pressure, in kPa, shall be determined by the following formulae:

for ships of ice classes **Ice1**, **Ice2**, **Ice3**

$p_{\text{AI}} = 0{,}985 p_{ref}^{i} v_m \left(\frac{\Delta}{1000}\right)^{0{,}0132}$, $1 \leq \Delta \leq 5$ thosand t;

$p_{\text{AI}} = 0{,}976 p_{ref}^{i} v_m \left(\frac{\Delta}{1000}\right)^{0{,}0052}$, $5 < \Delta \leq 200$ thousand t;

for ice classes **Arc4**, **Arc5**, **Arc6, Arc7**

$$p_{\text{AI}} = 0{,}790 p_{ref}^{i} v_m \left(\frac{\Delta}{1000}\right)^{0{,}0614}$$

where p_{ref}^{i} = factor to be taken from Table 3.10.3.8.1-1 based on the ice class;

v_m = maximum value of the shape factor v to be determined in bow area sections with the vertical side at design waterline by the formula

$v\left(\frac{x}{L}, \alpha\right) = b_0^v + b_1^v \frac{x}{L} + b_2^v \alpha + b_{11}^v \left(\frac{x}{L}\right)^2 + b_{22}^v \alpha^2 + b_{12}^v \frac{x}{L}\alpha$;

b_i^v = factors to be taken from Table 3.10.3.8.1-2;

Δ = displacement at design ice waterline, t.

For ships with bulbous bows, when determining the design loads on the bulb structure, v_m is determined at the ballast waterline, if it passes through the bulb, otherwise – at the waterline, where inclination angle of the bulb plating is $\beta = 0 \ldots 5$.

Table 3.10.3.8.1-1

	$1 \leq \Delta \leq 5$ thousand t			$5 < \Delta \leq 200$ thousand t			**Arc4**	**Arc5**	**Arc6**	**Arc7**
	Ice1	**Ice2**	**Ice3**	**Ice1**	**Ice2**	**Ice3**				
p_{ref}^{i}	1100	1430	1760	1120	1460	1810	3620	5910	10360	16020
b^{H}	–	–	–	–	–	–	1,5	2,0	3,7	4,8
b_{ref}^{i}	0,65	0,80	1,00	0,65	0,80	1,00	–	–	–	–
l_{ref}^{i}	3,66	4,33	4,27	12,05	14,22	13,94	4,55	4,52	4,39	4,23

Table 3.10.3.8.1-2

b_i^v	$1 \le \Delta \le 5$ thousand t			$5 < \Delta \le 200$ thousand t			Arc4	Arc5	Arc6	Arc7
	Ice1	Ice2	Ice3	Ice1	Ice2	Ice3				
b_0^v	0,769	0,747	0,714	1,015	1,020	1,008	0,728	0,754	0,790	0,820
b_1^v	-4,004	-3,924	-3,373	-5,829	-5,975	-5,679	-3,758	-4,790	-6,170	-7,269
b_2^v	0,039	0,040	0,040	0,035	0,036	0,037	0,021	0,021	0,020	0,018
b_{11}^v	11,17	11,26	9,75	14,57	15,06	13,46	20,50	24,90	32,21	37,65
b_{22}^v	-0,0003	-0,0003	-0,0003	-0,0003	-0,0003	-0,0003	-0,0003	-0,0002	-0,0002	-0,0002
b_{12}^v	-0,0490	-0,0517	-0,0642	-0,0393	-0,0404	-0,0481	0,0688	0,0917	0,1188	0,1414

3.10.3.8.2 Vertical distribution of ice pressure, in m, for ice class ships **Ice1**, **Ice2**, **Ice3** shall be determined by the formula

$b_{\text{A}} = b_{ref}^i u_{b\_m}$, but not exceeding the distance between the side stringers (for structures inside the bulb – platforms or webs installed according to 3.10.2.6.4).

where b_{ref}^i = the factor taken as per Table 3.10.3.8.1-1 depending on the ice class;

u_{b_m} = maximum value of the shape factor u_b to be determined in sections of bow area with the vertical side at design ice waterline by the formula

$u_b\left(\frac{x}{L}\right) = b_0^u + b_1^u \frac{x}{L} + b_{11}^u \left(\frac{x}{L}\right)^2$;

b_i^u = factors to be taken from Table 3.10.3.8.3.

Vertical distribution of ice pressure, in m, for ships of ice classes **Arc4**, **Arc5**, **Arc6, Arc7** shall be determined by the formula

$b_{\text{A}} = b^{\text{H}}$, but not exceeding the distance between the side stringers (for structures inside the bulb – platforms or webs installed according to 3.10.2.6.4)

where b^{H} is taken from Table 3.10.3.8.1-1 based on the ice class.

Table 3.10.3.8.2

b_i^u	Ice1	Ice2	Ice3
b_0^u	2,283	2,283	2,146
b_1^u	-11,88	-11,85	-10,28
b_{11}^u	22,14	22,02	17,60

3.10.3.8.3 Horizontal distribution of ice pressure, in m, shall be determined by the following formulae:

for ships of ice classes **Ice1**, **Ice2**, **Ice3**

$l_{\text{A}} = 0{,}748 l_{ref}^i u_{l\_m} \left(\frac{\Delta}{1000}\right)^{0{,}3065}$, $1 \le \Delta \le 5$ thousand t;

$l_{\text{A}} = 0{,}218 l_{ref}^i u_{l\_m} \left(\frac{\Delta}{1000}\right)^{0{,}3311}$, $5 < \Delta \le 200$ thousand t;

for ships of ice classes **Arc4**, **Arc5**, **Arc6, Arc7**

$$l_{\text{A}} = 0{,}337 l_{ref}^i u_{l\_m} \left(\frac{\Delta}{1000}\right)^{0{,}2906}$$

where l_{ref}^i = factor to be taken from Table 3.10.3.8.3-1 based on on the ice class;

u_{l_m} = maximum value of the shape factor u_l to be determined in sections of bow area with the vertical side at design waterline by the formula

$u_l\left(\frac{x}{L}, \alpha\right) = b_0^u + b_1^u \frac{x}{L} + b_2^u \alpha + b_{11}^u \left(\frac{x}{L}\right)^2 + b_{22}^u \alpha^2 + b_{12}^u \frac{x}{L} \alpha$;

b_i^u = factors to be taken from Table 3.10.3.8.3.

Table 3.10.3.8.3

b_i^u	$1 \leq \Delta \leq 5$ thousand t			$5 < \Delta \leq 200$ thousand t			Arc4	Arc5	Arc6	Arc7
	Ice1	Ice2	Ice3	Ice1	Ice2	Ice3				
b_0^u	0,186	0,171	0,166	0,167	0,155	0,139	0,307	0,302	0,324	0,320
b_1^u	-3,339	-3,319	-2,377	-3,297	-3,318	-2,607	0,205	0,325	0,294	0,313
b_2^u	0,0241	0,0227	0,0184	0,0231	0,0216	0,0222	0,0370	0,0375	0,0363	0,037
b_{11}^u	17,2	17,6	18,4	17,4	17,9	15,02	2,37	1,78	1,17	1,27
b_{22}^u	-0,0003	-0,0003	-0,0002	-0,0003	-0,0003	-0,0003	-0,0002	-0,0003	-0,0002	-0,0003
b_{12}^u	0,148	0,159	0,110	0,153	0,165	0,152	0,031	0,030	0,030	0,028

3.10.3.8.4 For ships of ice classes **Ice1**, **Ice2**, **Ice3** with stretched area of vertical side (from the forward perpendicular to parallel midship body), intermediate regions of ice strengthening may be added at the length of bow. In this case, the values of hull shape factors v_m, u_{b_m}, u_{l_m} shall be taken equal to the maximum value of the relevant factors determined for each intermediate regions at designed ice waterline.

3.10.3.8.5 For ships of ice classes **Arc4**, **Arc5**, **Arc6**, **Arc7** with bulbous bows and extended bow area at design waterline, an intermediate region of ice strengthening inside the region A may be added, in addition to the requirements of 3.10.1.3.1. In this case, the values of hull shape factors v_m, u_{b_m}, u_{l_m} shall be taken equal to the maximum value of the relevant factors determined for each intermediate region inside the A region at design waterline.".

16 **Para 3.10.4.1.** The definition of parameter *u* in the explication to **Formula (3.10.4.1)** is replaced by the following text:

"*u* = annual reduction of shell plating as a result of corrosion wear and abrasion, in mm per year, to be taken from Table 3.10.4.1 of this Part. When taking measures to protect the shell plating from corrosion wear and abrasion complying with 6.5.3, Part XIII "Materials" and 3.5.1, Part III "Technical Supervision during Manufacture of Materials" of the Rules for Technical Supervision during Construction of Ships and Manufacture of Materials and Products for Ships, the value u may be reduced by 25 % when applying Class II protective coatings and by 50 % when applying protective coatings of Class I. In this case the value Δs_{sp0} shall not be taken less than determined in 1.1.5.2 of this Part. In the drawings of hull structures the scantlings determined at *u* according to Table 3.10.4.1 of this Part shall be additionally indicated. A special entry shall be made in the Classification Certificate of such ships (refer to 2.3.1, Part I "Classification" of these Rules).".

17 **Para 3.10.4.10.1. Formula (3.10.4.10.1-1)** shall be replaced by the following formula:

"$S = k_k \eta f(\Delta)$.".

The explication to **Formula (3.10.4.10.1-1)** is supplemented by the following definition of parameter η:

"η = application factor of mechanical properties of material determined according to 1.1.4.3.".

18 **Para 3.10.4.10.1. Formula (3.10.4.10.1-2)** shall be replaced by the following formula:

"$W = 1{,}16\eta pb$.".

The explication to **Formula (3.10.4.10.1-2)** is supplemented by the following definition of parameter η:

"η = application factor of mechanical properties of material determined according to 1.1.4.3.".

19 **Para 3.10.4.10.1.** The paragraph precedent to **Formula (3.10.4.10.1-4)** is replaced by the following text:

"In this case, the plate thickness *s*, in mm, of combined and plate stems shall not be less than determined by the formula:".

20 **Para 3.10.4.10.2** is deleted.

21 **Para 3.10.4.11.3** is replaced with the following text:

"**3.10.4.11.3** Dimensions of the bulb structural elements shall be determined by calculation procedures specified in 3.10.4 for ice load parameters determined in accordance with 3.10.3.8.2 – 3.10.3.8.5. In any case, the thickness of the bulb shell plating shall not be less than the thickness of the shell plating in region AI.".

22 **Paras 3.10.4.11.4** and **3.10.4.11.5** are deleted**.**

23 **Para 3.10.4.11.6** is renumbered **3.10.4.11.4**. **Formulae (3.10.4.11.6-1) – (3.10.4.11.6-5)** renumbered **(3.10.4.11.4-1) – (3.10.4.11.4-5)** accordingly.

24 The definition of parameter *s* in the explication to **Formula (3.10.4.11.4-1)** is replaced by the following text:

"*s* = the bulb shell plating thickness according to 3.10.4.11.3.".

25 **Paras 3.10.4.11.7 – 3.10.4.11.9** are deleted**.**