IACS Common Structural Rules for Bulk Carriers, January 2006

Corrigenda 1

May 2006

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<tr><td>Ch 3, Sec 2, [2.1.3]</td><td>The ship is to be built at least with the gross scantlings obtained by adding the corrosion additions, specified in Ch 3, Sec 3, to the net scantlings. The thickness for voluntary additions to be added as an extra.</td><td>The ship is to be built at least with the gross scantlings obtained by adding the corrosion additions, specified in Ch 3, Sec 3, to the net scantlings. The thickness for voluntary addition is to be added as an extra.</td><td>Editorial correction</td></tr>
<tr><td>Ch 3, Sec 2, [3.2]</td><td></td><td>Add the following requirement after [3.2.6]:
3.2.7 Check of primary supporting members for ships less than 150 m in length L
The net thickness of plating which constitutes primary supporting members for ships less than 150 m in length L, to be checked according to Ch 6, Sec 4, [2], is to be obtained by deducting t_C from the gross thickness.</td><td>Addition of a missing information</td></tr>
<tr><td>Ch 3, Sec 3, Tab 1</td><td>Corrosion additions for “Dry bulk, cargo hold”
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<tr><td rowspan="3">Transverse bulkhead</td><td>Upper part (4)</td><td></td></tr>
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</table></td><td>Editorial correction in the third column of Tab 1</td></tr>
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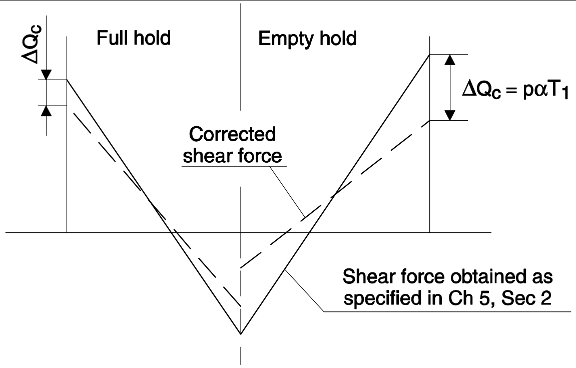
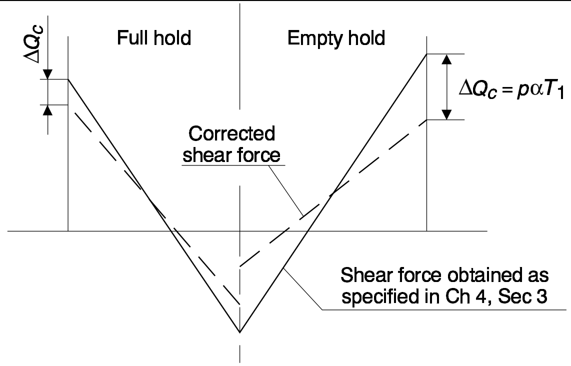
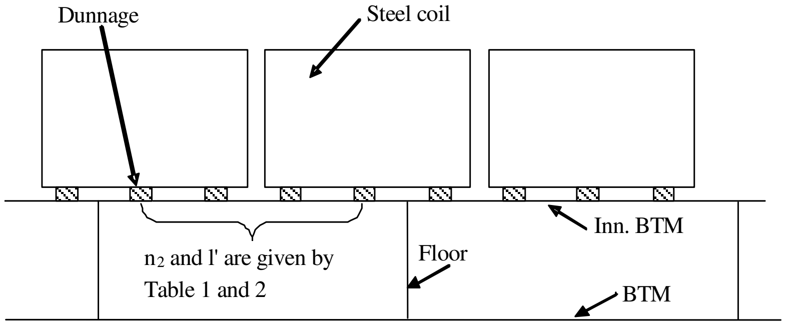
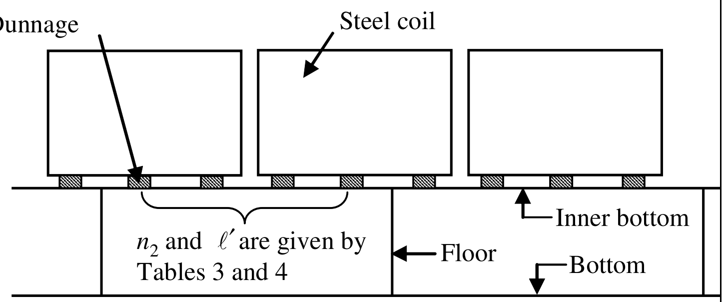
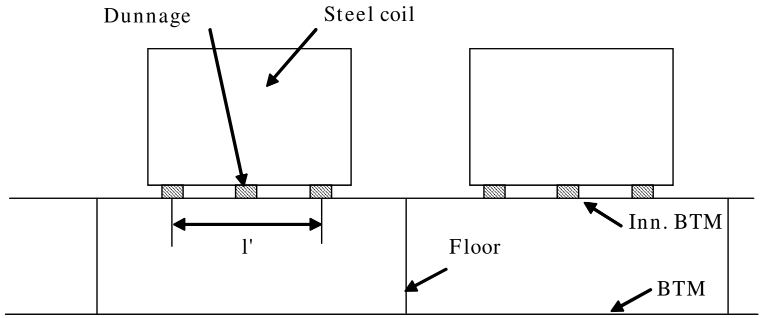
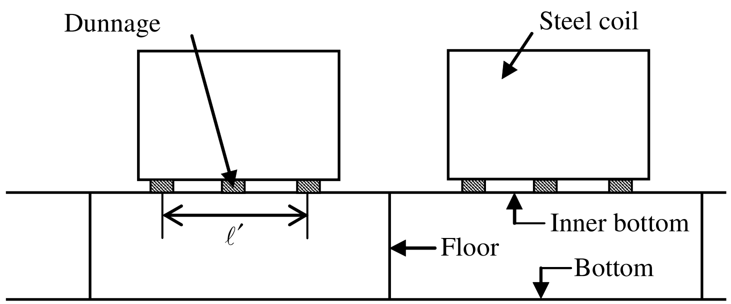
Reference	***Before amendment***	***After amendment***	***Explanation***
	Contents	***Contents***	
Ch 3, Sec 6, [6.5.2]	Bilge keels are not be welded directly to the shell plating. An intermediate flat whose thickness is equal to that of the bilge strake is required on the shell plating. The ends of the bilge keel are to be sniped as shown in Fig.18 or rounded with large radius. The ends are to be located in way of transverse bilge stiffeners inside the shell plating and the ends of intermediate flat are not to be located at the block joints. The bilge keel and the intermediate flat are to be made of steel with the same yield stress as the one of the bilge strake. The bilge keel with a length greater than 0.15L is to be made with the same grade of steel as the one of bilge strake. The net thickness of the intermediate flat is to be equal to that of the bilge strake. However, this thickness may generally not be greater than 15 mm. Scallops in the bilge keels are to be avoided.	Bilge keels are not be welded directly to the shell plating. An intermediate flat is required on the shell plating. The ends of the bilge keel are to be sniped as shown in Fig.18 or rounded with large radius. The ends are to be located in way of transverse bilge stiffeners inside the shell plating and the ends of intermediate flat are not to be located at the block joints. The bilge keel and the intermediate flat are to be made of steel with the same yield stress as the one of the bilge strake. The bilge keel with a length greater than 0.15L is to be made with the same grade of steel as the one of bilge strake. The net thickness of the intermediate flat is to be equal to that of the bilge strake. However, this thickness may generally not be greater than 15 mm. Scallops in the bilge keels are to be avoided.	Sentence stated twice in the requirement.
Ch 4, Sec 3, Figure 1	**Figure 1: Sign conventions for shear forces *Q* and bending moments M_{SW}, M_{WV}, M_H**	**Figure 1: Sign conventions for shear forces *Q* and bending moments M_{SW}, M_{WV}, M_{WH}**	Editorial correction
Ch4, Sec5, [1.6.1]	For the positive hydrodynamic pressure at the waterline (in load cases H1, H2, F1, R1, R2 and P1), the hydrodynamic pressure $P_{W,C}$ at the side above waterline is given (see Fig 5), in kN/m^2, by: ………………….	For the positive hydrodynamic pressure at the waterline (in load cases H1, H2, F2, R1, R2 and P1), the hydrodynamic pressure $P_{W,C}$ at the side above waterline is given (see Fig 5), in kN/m^2, by: ………………….	Editorial correction
Ch4, Sec5, [1.6.2]	For the negative hydrodynamic pressure at the waterline (in load cases H1, H2, F2, R1, R2, and P2), the hydrodynamic pressure $P_{W,C}$, under the waterline is given (see Fig 5), in kN/m^2, by: ………………….	For the negative hydrodynamic pressure at the waterline (in load cases H1, H2, F1, R1, R2 and P2), the hydrodynamic pressure $P_{W,C}$, under the waterline is given (see Fig 5), in kN/m^2, by: ………………….	Editorial correction

Reference	***Before amendment***	***After amendment***	***Explanation***
	Contents	***Contents***	
Ch 4, Sec 6, Symbols	ρ_C : Density of the dry bulk cargo, in t/m^3, taken equal to: • the value given in Tab 1 for ships having a length of 150 m and above • the maximum density from the loading manual for ships having a length less than 150 m	ρ_C : Density of the dry bulk cargo, in t/m^3, taken equal to: • the value given in Tab 1 for ships having a length *L* of 150 m and above • the maximum density from the loading manual for ships having a length *L* less than 150 m	Editorial correction
Ch 4, Sec 6, [1.1.2]	where: h_1 : Vertical distance obtained from the following formula, see Fig 2. ………….. V_{TS} : Total volume of transverse stools at bottom of transverse bulkheads within the concerned cargo hold length ℓ_H. This volume excludes the part of hopper tank passing through the transverse bulkhead. h_2 : Bulk cargo upper surface, depending on *y*, given by: ………………………	where: h_1 : Vertical distance, in m, obtained from the following formula, see Fig 2. ………….. V_{TS} : Total volume, in m^3, of transverse stools at bottom of transverse bulkheads within the concerned cargo hold length ℓ_H. This volume excludes the part of hopper tank passing through the transverse bulkhead. h_2 : Bulk cargo upper surface, in m, depending on *y*, given by: ………………………	Editorial correction (Units for h_1, V_{TS} and h_2)
Ch 4, Sec 7, [1.1]	**1.1 Ships having a length less than 150 m**	**1.1 Ships having a length *L* less than 150 m**	Editorial correction
Ch 4, Sec 7, [1.2]	**1.2 Ships having a length of 150 m and above**	**1.2 Ships having a length *L* of 150 m and above**	Editorial correction
Ch 4, Sec 7, [1.2.1]	The requirements in [2] to [4] are applicable to ships having a length of 150 m and above.	The requirements in [2] to [4] are applicable to ships having a length *L* of 150 m and above.	Editorial correction
Ch 4, Sec 8, [1.2]	**1.2 Ships equal to or greater than 150 m in length**	**1.2 Ships equal to or greater than 150 m in length *L***	Editorial correction
Ch 4, Sec 8, [2.1.2]	**2.1.2 Ships equal to or greater than 150 m in length** In addition to [2.1.1], for **BC-A**, **BC-B**, and **BC-C** ships, the loading manual is also to describe:	**2.1.2 Ships equal to or greater than 150 m in length *L*** In addition to [2.1.1], for **BC-A**, **BC-B** and **BC-C** ships, the loading manual is also to describe:	Editorial corrections

Reference	Before amendment Contents	After amendment Contents	Explanation
Ch 4, Sec 8, [2.2.2]	**2.2.2 Ships equal to or greater than 150 m in length** In addition to [2.2.1], for **BC-A**, **BC-B**, and **BC-C** ships, the following loading conditions, ...	**2.2.2 Ships equal to or greater than 150 m in length *L*** In addition to [2.2.1], for **BC-A**, **BC-B** and **BC-C** ships, the following loading conditions, ...	Editorial corrections
Ch 4, Sec 8, [3.1.2]	**3.1.2 Ships equal to or greater than 150 m in length** For **BC-A**, **BC-B**, and **BC-C** ships, the loading instrument is	**3.1.2 Ships equal to or greater than 150 m in length *L*** For **BC-A**, **BC-B** and **BC-C** ships, the loading instrument is	Editorial corrections
Ch 4, Sec 8, [3.2.2]	**3.2.2 Ships equal to or greater than 150 m in length** In addition, for **BC-A**, **BC-B**, and **BC-C** ships, the approval	**3.2.2 Ships equal to or greater than 150 m in length *L*** In addition, for **BC-A**, **BC-B** and **BC-C** ships, the approval	Editorial corrections
Ch 4, App 1, [1.1.1]	The requirements of this Appendix apply to ships of 150 m in length and above.	The requirements of this Appendix apply to ships of 150 m in length *L* and above.	Editorial corrections
Ch 4, App 1, [2.2.2]	The maximum permissible cargo mass and the minimum required cargo mass corresponding to draught for loading/unloading conditions in harbour may be increased or decreased by 15% of the maximum permissible mass for the cargo hold in seagoing condition. However, maximum permissible mass is in no case to be greater than the maximum permissible cargo mass at designed maximum load draught for each cargo hold.	The maximum permissible cargo mass and the minimum required cargo mass corresponding to draught for loading/unloading conditions in harbour may be increased or decreased by 15% of the maximum permissible mass at the maximum draught for the cargo hold in seagoing condition. However, maximum permissible mass is in no case to be greater than the maximum permissible cargo mass at designed maximum load draught for each cargo hold.	Editorial correction
Ch 4, App 1, [3.2.2]	The maximum permissible cargo mass and minimum required cargo mass corresponding to draught for loading/unloading conditions in harbour may be increased or decreased by 15% of the maximum permissible mass for the cargo hold. However, maximum permissible mass is in no case to be greater than the maximum permissible cargo mass at designed maximum load draught for each cargo hold.	The maximum permissible cargo mass and minimum required cargo mass corresponding to draught for loading/unloading conditions in harbour may be increased or decreased by 15% of the maximum permissible mass at the maximum draught for the cargo hold in seagoing condition. However, maximum permissible mass is in no case to be greater than the maximum permissible cargo mass at designed maximum load draught for each cargo hold.	Editorial correction

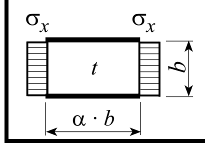
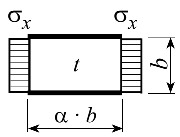
Reference	***Before amendment*** ***Contents***	***After amendment*** ***Contents***	***Explanation***
Ch 5, Sec 1, [1.4.2]	.... • if continuous trunks or hatch coamings are taken into account in the calculation of I_Y, as specified in [1.2.2]: $V_D = (z_T - N)\left(0.9 + 0.2\frac{Y_T}{B}\right) \geq z_D - N$	.... • if continuous trunks or hatch coamings are taken into account in the calculation of I_Y, as specified in [1.2.2]: $V_D = (z_T - N)\left(0.9 + 0.2\frac{y_T}{B}\right) \geq z_D - N$	Editorial correction (change "Y" in the formula into small letter)
Ch 5, Sec 1, Fig 2			Correction of cross-reference
Ch 5, Sec 1, [5.1.3]	.... $Q_P = \varepsilon\left(\frac{120}{k\delta}\frac{\mathrm{I}_Y t}{S} + \Delta Q_C\right) - Q_{WV}$	.... $Q_P = \varepsilon\left(\frac{120}{k\delta}\frac{I_Y t}{S} + \Delta Q_C\right) - Q_{WV}$	Editorial correction (change "I" in the formula into Italic)
Ch 5, Sec 1, [5.3.3]	.... $Q_{P,F} = \varepsilon\left(\frac{120}{k\delta}\frac{\mathrm{I}_Y t}{S} + \Delta Q_C\right) - Q_{WV,F}$	.... $Q_{P,F} = \varepsilon\left(\frac{120}{k\delta}\frac{I_Y t}{S} + \Delta Q_C\right) - Q_{WV,F}$	Editorial correction (change "I" in the formula into Italic)
Ch 5, Sec 2, [1.1.1]	The requirements of this Section apply to ships equal to or greater than 150 m in length.	The requirements of this Section apply to ships equal to or greater than 150 m in length *L*.	Editorial correction

Reference	Before amendment	After amendment	Explanation
	Contents	Contents	
Ch5, App1, Symbols	I_Y : Moment of inertia, in m^4, of the hull transverse section around its horizontal neutral axis, to be calculated according to Ch 5, Sec 1, [1.4]	I_Y : Moment of inertia, in m^4, of the hull transverse section around its horizontal neutral axis, to be calculated according to Ch 5, Sec 1, [1.5.1]	Correction of cross-reference
Ch5, App1, [2.2.3]	Φ : Edge function, equal to: $\Phi = -1$ for $\varepsilon < -1$ $\Phi = \varepsilon$ for $-1 < \varepsilon < 1$ $\Phi = 1$ for $\varepsilon > 1$	Φ : Edge function, equal to: $\Phi = -1$ for $\varepsilon < -1$ $\Phi = \varepsilon$ for $-1 \le \varepsilon \le 1$ $\Phi = 1$ for $\varepsilon > 1$	Editorial correction
Ch 6, Sec 1, Symbols	c_a : Aspect ratio of the plate panel, equal to: ……………	c_a : Coefficient of aspect ratio of the plate panel, equal to: ……………	Editorial correction
Ch 6, Sec 1, [2.5.3]	.... This increase in net thickness is to be equal to 40%, but need not exceed 4.5 mm.	.... This increase in net thickness is not to be less than 40% of the net thickness of sheerstrake, but need not exceed 4.5 mm.	Editorial correction
Ch 6, Sec 1, [2.6.2]	.... This increase in net thickness is to be equal to 40%, but need not exceed 4.5 mm.	.... This increase in net thickness is not to be less than 40% of the net thickness of stringer plate, but need not exceed 4.5 mm.	Editorial correction
Ch 6, Sec 1, [2.7.2]	.... F : Force, in kg, taken equal to: $F = K_S \frac{W n_1 n_2}{n_3}$, ...	.... F : Force, in kg, taken equal to: $F = K_S \frac{W n_1 n_2}{n_3}$	Editorial correction (comma deleted)

Reference	***Before amendment*** ***Contents***	***After amendment*** ***Contents***	***Explanation***
Ch 6, Sec 1, Figure 3			Editorial and cross-reference correction
Ch 6, Sec 1, Figure 4			Editorial correction
Ch 6, Sec 1, [3.1.5]	……………: $\sigma_X = C_\ell \left[C_{SW}\left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\| y \right] 10^{-3}$ where: C_ℓ : Coefficient taken equal to: $C_\ell = \frac{x}{0.3L}$ for $0 \le \frac{x}{L} < 0.3$	……………: $\sigma_X = \left[C_{SW}\left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\| y \right] 10^{-3}$ ………	Editorial correction

Reference	*Before amendment*	*After amendment*	*Explanation*
	Contents	*Contents*	
	$C_\ell = 1.0$ for $0.3 \le \frac{x}{L} \le 0.7$ $C_\ell = \frac{1}{0.3}\left(1-\frac{x}{L}\right)$ for $0.7 < \frac{x}{L} \le 1.0$ ………..		
Ch 6, Sec 2, [2.5.3]	…………… $A_{sh} = \frac{5 a_Y F'}{\tau_a \sin\varphi \sin\phi}$ where: …………… φ : Angle, in deg, between inner bottom plating and hopper sloping plate or inner hull plating.	…………… $A_{sh} = \frac{5 a_Y F'}{\tau_a \sin\varphi \sin\phi} 10^{-3}$ where: …………… φ : Angle, in deg, between inner bottom plating and hopper sloping plate or inner hull plating ℓ' : Distance, in m, between load points per elementary plate panel of inner bottom plate in ship length, sloping plate or inner hull plating, as defined in Ch 6, Sec 1, [2.7.2].	Editorial correction in formula and addition of a missing information
Ch 6, Sec 2, [3.1.5]	……………: $\sigma_X = C_\ell \left[C_{SW} \left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\| y \right] 10^{-3}$ where: C_ℓ : Coefficient taken equal to: $C_\ell = \frac{x}{0.3L}$ for $0 \le \frac{x}{L} < 0.3$	……………: $\sigma_X = \left[C_{SW} \left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\| y \right] 10^{-3}$ ………	Editorial correction

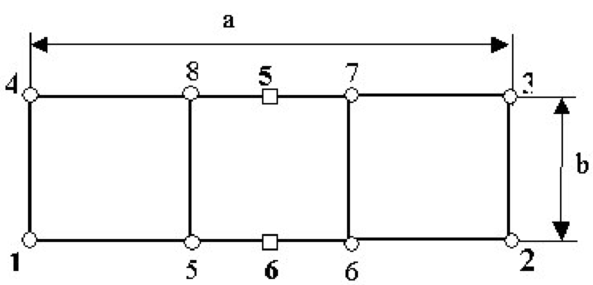
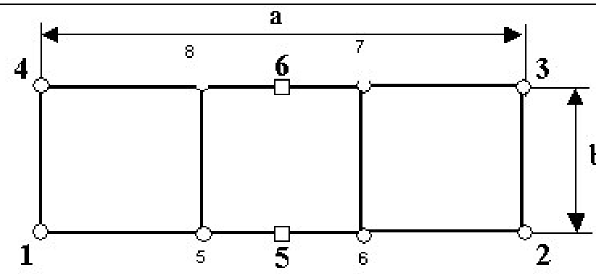
Reference	Before amendment Contents	After amendment Contents	Explanation
	$\underline{C_\ell = 1.0}$ for $\underline{0.3 \le \frac{x}{L} \le 0.7}$ $\underline{C_\ell = \frac{1}{0.3}\left(1 - \frac{x}{L}\right)}$ for $\underline{0.7 < \frac{x}{L} \le 1.0}$ ………..		
Ch 6, Sec 2, [3.2.4]	**3.2.4 Net section modulus of corrugated bulkhead of ballast hold for ships having a <u>length</u> less than 150m** The net section modulus w, in cm^3, of corrugated bulkhead of ballast hold for ships having a <u>length</u> less than 150m subjected to lateral pressure are to be not less than the values obtained from the following formula: ……………………	**3.2.4 Net section modulus of corrugated bulkhead of ballast hold for ships having a <u>length *L*</u> less than 150m** The net section modulus w, in cm^3, of corrugated bulkhead of ballast hold for ships having a <u>length *L*</u> less than 150m subjected to lateral pressure are to be not less than the values obtained from the following formula: ……………………	Editorial correction
Ch 6, Sec 2, [3.3.3]	……………. $\underline{t'_{LB} = \left(\frac{t_{LB}^2}{t_w}\right)^{1/3}}$	……………. $\underline{t'_{LB} = \left(t_{LB}^2\, t_W\right)^{1/3}}$	Editorial correction
Ch 6, Sec 2, Tab 6, Note 1	α : Coefficient defined in <u>[3.2.4]</u>	α : Coefficient defined in <u>[3.2.5]</u>	Correction of cross-reference
Ch 6, Sec 3, Symbols	……………… σ_e : Reference stress, taken equal to: $\sigma_e = 0.9E\left(\frac{t}{b}\right)^2$ ………………	……………… σ_e : Reference stress, taken equal to: $\underline{\sigma_e = 0{,}9 \cdot E\left(\frac{t}{b'}\right)^2}$ <u>*b'* : shorter side of elementary plate panel</u> ………………	Correction of one parameter

Reference	*Before amendment*	*After amendment*	*Explanation*
	Contents	*Contents*	
Ch 6, Sec 3, Tab 2	Row of buckling load case 8: **8**  | === | $\alpha \geq \frac{2}{3}$ $\alpha < \frac{2}{3}$ | $K = 6.97$ $K = \frac{1}{\alpha^2} + 2.5 + 5\alpha^2$	Row of buckling load case 8: **8**  | === | $\alpha \geq \frac{2}{3}$ | $K = 6.97$ $\alpha < \frac{2}{3}$ | $K = \frac{1}{\alpha^2} + 2.5 + 5\alpha^2$	Add line in third column
Ch 6, Sec 3, [3.1.2]	…………….. Each term of the above conditions must be less than 1.0. The reduction factors κ_x and κ_y are given in Tab 2 and/or Tab 3. The coefficients $e1$, $e2$ and $e3$ are defined in Tab 4.	…………….. Each term of the above conditions must be less than 1.0. The reduction factors κ_x and κ_y are given in Tab 2 and/or Tab 3 The coefficients $e1$, $e2$ and $e3$ are defined in Tab 4. For the determination of $e3$, κ_y is to be taken equal to 1 in case of longitudinally framed plating and κ_x is to be taken equal to 1 in case of transversely framed plating.	Information missing
Ch 6, Sec 3, [4.2.2]	t_a : Gross offered thickness of attached plate, in mm	t_a : Net thickness offered of attached plate, in mm	Editorial correction
Ch 6, Sec 3, [4.2.2]	A_x, A_y : Net sectional area, in mm^2, of the longitudinal or transverse stiffener respectively without attached plating $\tau_1 = \left[\tau - t\sqrt{R_{eH} E\left(\frac{m_1}{a^2} + \frac{m_2}{b^2}\right)}\right] \geq 0$ ____________________	A_x, A_y : Net sectional area, in mm^2, of the longitudinal or transverse stiffener respectively without attached plating $\tau_1 = \left[\tau - t\sqrt{R_{eH} E\left(\frac{m_1}{a^2} + \frac{m_2}{b^2}\right)}\right] \geq 0$	Editorial correction (line under formula deleted)
Ch 6, Sec 3, [4.2.3]	Longitudinal and transverse ordinary stiffeners not subjected to lateral pressure are considered as complying with the requirement of [4.2.1] if their gross moments of inertia I_x and I_y, in cm^4, are not less than the value obtained by the following formula: ………………….	Longitudinal and transverse ordinary stiffeners not subjected to lateral pressure are considered as complying with the requirement of [4.2.1] if their net moments of inertia I_x and I_y, in cm^4, are not less than the value obtained by the following formula: …………………….	Editorial correction

Reference	Before amendment Contents	After amendment Contents	Explanation
Ch 6, Sec 3, [6.1.1]	$\tau_c = \tau_E$ for $\tau_{\mathrm{E}} \le \frac{R_{eH}}{2\sqrt{3}}$ $\tau_c = \frac{R_{eH}}{\sqrt{3}}\left(1 - \frac{R_{eH}}{4\sqrt{3}\,\tau_E}\right)$ for $\tau > \frac{R_{eH}}{2\sqrt{3}}$	$\tau_c = \tau_E$ for $\tau_E \le \frac{R_{eH}}{2\sqrt{3}}$ $\tau_c = \frac{R_{eH}}{\sqrt{3}}\left(1 - \frac{R_{eH}}{4\sqrt{3}\,\tau_E}\right)$ for $\tau_E > \frac{R_{eH}}{2\sqrt{3}}$	Editorial corrections (1st line subscript "E" into Italic, and 2nd line: add subscript "*E*")
Ch 6, Sec 4, [1.2]	**1.2 Primary supporting members for ships less than 150 m in <u>length</u>**	**1.2 Primary supporting members for ships less than 150 m in <u>length *L*</u>**	Editorial correction
Ch 6, Sec 4, [1.2.1]	For primary supporting members for ships having a <u>length</u> less than 150 m, the strength check of such members is to be carried out according to the provisions specified in [2] and [4].	For primary supporting members for ships having a <u>length *L*</u> less than 150 m, the strength check of such members is to be carried out according to the provisions specified in [2] and [4].	Editorial correction
Ch 6, Sec 4, [1.3]	**1.3 Primary supporting members for ships of 150 m or more in <u>length</u>**	**1.3 Primary supporting members for ships of 150 m or more in <u>length *L*</u>**	Editorial correction
Ch 6, Sec 4, [1.3.1]	For primary supporting members for ships having a <u>length</u> of 150 m or more, the direct strength analysis is to be carried out according to the provisions specified in Ch 7. In addition, ...	For primary supporting members for ships having a <u>length *L*</u> of 150 m or more, the direct strength analysis is to be carried out according to the provisions specified in Ch 7. In addition, ...	Editorial correction
Ch 6, Sec 4, [2]	**2. Scantling of primary supporting members for ships of less than 150 m in <u>length</u>**	**2. Scantling of primary supporting members for ships of less than 150 m in <u>length *L*</u>**	Editorial correction
Ch 6, Sec 4, [2.1.5]	……………: $\sigma_X = C_\ell\left[C_{SW}\left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\|y\right]10^{-3}$ <u>where:</u> <u>C_ℓ : Coefficient taken equal to:</u> <u>$C_\ell = \frac{x}{0.3L}$ for $0 \le \frac{x}{L} < 0.3$</u>	……………: $\sigma_X = \left[C_{SW}\left\|\frac{M_{SW}}{I_Y}\right\|(z-N) + C_{WV}\left\|\frac{M_{WV}}{I_Y}\right\|(z-N) - C_{WH}\left\|\frac{M_{WH}}{I_Z}\right\|y\right]10^{-3}$ ………	Editorial correction

Reference	Before amendment Contents	After amendment Contents	Explanation
	$C_\ell = 1.0$ for $0.3 \le \frac{x}{L} \le 0.7$ $C_\ell = \frac{1}{0.3}\left(1 - \frac{x}{L}\right)$ for $0.7 < \frac{x}{L} \le 1.0$ ………..		
Ch 6, Sec 4, [2.6.3]	……………….. $t_w = 1.75 \cdot \sqrt[3]{\frac{h_w \tau_a}{10 C_5} A_{sh}}$ where: …………	……………….. $t_w = 1.75 \cdot \sqrt[3]{\frac{h_w \tau_a}{10^4\ C_5} A_{sh}}$ where: …………	Editorial correction
Ch 6, Sec 4, [3.1.3]	A_g : Sectional area, in mm², of the girder panel adjacent to the stool (or transverse bulkhead, if no stool is fitted)	A_g : Net sectional area, in mm², of the girder panel adjacent to the stool (or transverse bulkhead, if no stool is fitted)	Editorial correction
Ch 6, Sec 4, [3.1.4]	X : Pressure, in kN/m² , to be obtained from the following formulae: • for dry bulk cargoes, the lesser of: $X = \frac{Z + \rho g (z_F - 0.1 D_1 - h_F)}{1 + \frac{\rho}{\rho_C}(perm - 1)}$ $X = Z + \rho g (z_F - 0{,}1 D_1 - h_F\, perm)$ • for steel mill products: $X = \frac{Z + \rho g (z_F - 0.1 D_1 - h_F)}{1 - \frac{\rho}{\rho_C}}$ ………..	X : Pressure, in kN/m² , to be obtained from the following formulae: • for dry bulk cargoes, the lesser of: $X = \frac{Z + \rho g (z_F - 0.1 D_1 - h_F)}{1 + \frac{\rho}{\rho_C}(perm - 1)}$ $X = Z + \rho g (z_F - 0.1 D_1 - h_F\, perm)$ • for steel mill products: $X = \frac{Z + \rho g (z_F - 0.1 D_1 - h_F)}{1 - \frac{\rho}{\rho_C}}$ ………..	Editorial correction (Correction of comma and small letter)

Reference	Before amendment Contents	After amendment Contents	Explanation
	h_f : Inner bottom flooding head is the distance, in m, measured vertically with the ship in the upright position, from the inner bottom to a level located at a distance z_F, in m, from the baseline.	h_F : Inner bottom flooding head is the distance, in m, measured vertically with the ship in the upright position, from the inner bottom to a level located at a distance z_F, in m, from the baseline.	
Ch 7, Sec 1, Fig 1	Bulk Carrier > 150 m .... Fatigue Assessment (Sec 3 & Ch 8)	Bulk Carrier $\geq$ 150 m .... Fatigue Assessment (Sec 4 & Ch 8)	Editorial and cross-reference corrections
Ch 7, Sec 2, [2.5.4]	**2.5.4 Influence of local loads.**	**2.5.4 Influence of local loads**	Editorial correction (comma deleted)
Ch7, App 2, Symbols	C : Coefficient taken equal to: $C = \dfrac{E}{2(1-\nu^2)}$	C : Coefficient taken equal to: for 4-node buckling panel: $C = \dfrac{E}{2(1-\nu^2)}$ for 8-node buckling panel: $C = \dfrac{E}{4(1-\nu^2)}$	Editorial correction
Ch 7, App 2 [2.2.2]	LC 3: shear $\tau = 0.25\sum_{i=1}^{4}\lvert\tau_i\rvert$	LC 5: shear: $\tau = \left\lvert\dfrac{\tau_1+\tau_2+\tau_3+\tau_4}{4}\right\rvert$	Editorial corrections

Reference	***Before amendment*** ***Contents***	***After amendment*** ***Contents***	***Explanation***
Ch7, App 2, [2.2.3]	**2.2.3 8-node buckling panel** ***(Figure)*** Stress displacement relationship for a 8-node buckling panel (compressive stresses are positive) **Figure 2: 8-node buckling panel**	**2.2.3 8-node buckling panel** Stress displacement relationship for a 8-node buckling panel (compressive stresses are positive) ***(Figure)*** **Figure 2: 8-node buckling panel**	Text was not in the right place
Ch7, App 2, [2.2.3], Fig 2		 **1** to **4**: Displ. & Stress Nodes **5** & **6**: Stress Nodes 5 to 8: Displacement Nodes	Editorial correction
Ch7, App 2, [2.2.3]	*The term in line 15 / column 12 of the matrix is* <u>*6m/b*</u>. *The term in line 5 / right end column is* <u>u_2</u>	*The term in line 15 / column 12 of the matrix is to be replaced by* <u>*6m/a*</u>. *The term in line 5 / right end column is to be replaced by* <u>u_3</u>	Editorial corrections
Ch 7, App 2 [2.2.3]	LC 1: longitudinal compression	LC 1: longitudinal compression	Editorial correction

Reference	***Before amendment***	***After amendment***	***Explanation***
	Contents	***Contents***	
	$\sigma_l = Max\left(\frac{\sigma_{1x}+\sigma_{4x}}{2}, \frac{\sigma_{6x}+\sigma_{5x}}{2}, \frac{\sigma_{2x}+\sigma_{3x}}{2}\right)$ $\Delta\sigma_l = \frac{1}{3}(\sigma_{4x}-\sigma_{1x}+\sigma_{5x}-\sigma_{6x}+\sigma_{3x}-\sigma_{2x})$ $\sigma_x = \sigma_l + 0.5\lvert\Delta\sigma_l\rvert$ $\psi_x = 1-\lvert\Delta\sigma_l\rvert/\sigma_x$	$\sigma_l = Max\left(\frac{\sigma_{1x}+\sigma_{4x}}{2}, \frac{\sigma_{6x}+\sigma_{5x}}{2}, \frac{\sigma_{2x}+\sigma_{3x}}{2}\right)$ $\underline{\Delta\sigma_l = \frac{1}{3}(\sigma_{4x}-\sigma_{1x}-\sigma_{5x}+\sigma_{6x}+\sigma_{3x}-\sigma_{2x})}$ $\sigma_x = \sigma_l + 0.5\lvert\Delta\sigma_l\rvert$ $\psi_x = 1-\lvert\Delta\sigma_l\rvert/\sigma_x$	
Ch 7, App 2 [2.2.3]	LC 5: shear $\tau = \frac{1}{6}\sum_{i=1}^{6}\lvert\tau_i\rvert$	LC 5: shear $\tau = Max\left\{\left\lvert\frac{\tau_1+\tau_4+\tau_5+\tau_6}{4}\right\rvert, \left\lvert\frac{\tau_2+\tau_3+\tau_5+\tau_6}{4}\right\rvert\right\}$	Editorial correction
Ch 8, Sec 2, [2.3.2]	$\sigma_{m,j}$: Local hot spot mean stress, in N/mm², in the condition "*j*", obtained from the following formulae: $\sigma_{m,1} = \begin{cases} R_{eH} - 0.6\Delta\sigma_{W,1} & \text{for } \sigma_{res}+\sigma_{mean,1}+0.6\Delta\sigma_{W,1} > R_{eH} \\ \sigma_{mean,1}+\sigma_{res} & \text{for } \sigma_{res}+\sigma_{mean,1}+0.6\Delta\sigma_{W,1} \le R_{eH} \\ -0.18\Delta\sigma_{W,1} & \text{for } 0.6\Delta\sigma_{W,1} \ge R_{eH} \end{cases}$ $\sigma_{m,j(j\neq 1)} = \begin{cases} \sigma_{m,1}-\sigma_{mean,1}+\sigma_{mean,j} & \text{for } \sigma_{m,1}-\sigma_{mean,1}+\sigma_{mean,j}-0.24\Delta\sigma_{W,j} > -R_{eH} \\ -R_{eH}+0.24\Delta\sigma_{W,j} & \text{for } \sigma_{m,1}-\sigma_{mean,1}+\sigma_{mean,j}-0.24\Delta\sigma_{W,j} \le -R_{eH} \\ -0.18\Delta\sigma_{W,j} & \text{for } 0.6\Delta\sigma_{W,j} \ge R_{eH} \end{cases}$	$\sigma_{m,1}$: Local hot spot mean stress, in N/mm², in the condition "1", obtained from the following formulae: • if $0.6\Delta\sigma_{W,1} \ge 2.5R_{eH}$: $\sigma_{m,1} = -0.18\Delta\sigma_{W,1}$ • if $0.6\Delta\sigma_{W,1} < 2.5R_{eH}$: $\sigma_{m,1} = R_{eH} - 0.6\Delta\sigma_{W,1}$ for $0.6\Delta\sigma_{W,1} > R_{eH} - \sigma_{res} - \sigma_{mean,1}$ $\sigma_{m,1} = \sigma_{mean,1} + \sigma_{res}$ for $0.6\Delta\sigma_{W,1} \le R_{eH} - \sigma_{res} - \sigma_{mean,1}$ $\sigma_{m,j}$: Local hot spot mean stress, in N/mm², in the condition "*j*", obtained from the following formulae: • if $0.24\Delta\sigma_{W,j} \ge R_{eH}$:	Coefficient in the third condition corrected from 0.6 to 0.24 and rearrangement of the conditional statements

Reference	*Before amendment* *Contents*	*After amendment* *Contents*	*Explanation*
		$\sigma_{m,\ j(j\neq1)} = -0.18\Delta\sigma_{W,\ j}$ • if $0.24\Delta\sigma_{W,\ j} < R_{eH}$: $\sigma_{m,\ j(j\neq1)} = -R_{eH} + 0.24\Delta\sigma_{W,\ j}$ for $0.24\Delta\sigma_{W,\ j} > R_{eH} + \sigma_{m,1} - \sigma_{mean,1} + \sigma_{mean,\ j}$ $\sigma_{m,\ j(j\neq1)} = \sigma_{m,1} - \sigma_{mean,1} + \sigma_{mean,\ j}$ for $0.24\Delta\sigma_{W,\ j} \leq R_{eH} + \sigma_{m,1} - \sigma_{mean,1} + \sigma_{mean,\ j}$	
Ch 8, Sec 3, [3.2.1]	………… $\sigma_{LW,i1(k)}$, $\sigma_{LW,i2(k)}$: As defined in 2.2.1	………… $\sigma_{LW,i1(k)}$, $\sigma_{LW,i2(k)}$: As defined in 2.2.1	Line under formula deleted.
Ch 9, Sec 1, Tab 2	**Net thickness, in mm** Intact conditions: $t = 15.8 c_a c_r s \sqrt{\frac{p_S + p_W}{0.7 R_Y}}$ Bow flare area: $t = 15.8 c_a c_r s \sqrt{\frac{p_{FB}}{0.7 R_Y}}$ Testing conditions: $t = 15.8 c_a c_r s \sqrt{\frac{p_T}{1.05 R_Y}}$	**Net thickness, in mm** Intact conditions: $t = 15.8 c_a c_r s \sqrt{\frac{p_S + p_W}{0.9 R_Y}}$ Bow flare area: $t = 15.8 c_a c_r s \sqrt{\frac{p_{FB}}{0.9 R_Y}}$ Testing conditions: $t = 15.8 c_a c_r s \sqrt{\frac{p_T}{1.05 R_Y}}$	Editorial correction in the formulae for intact conditions and bow flare area
Ch 9, Sec 1, Tab 3	*Formula for net section modulus of stiffeners in bow flare area:* $w = \frac{p_{FB} s \ell^2}{0{,}9 m R_Y} 10^3$	*Formula for net section modulus of stiffeners in bow flare area:* $w = \frac{p_{FB} s \ell^2}{0.9 m R_Y} 10^3$	Editorial correction (comma)
Ch 9, Sec 1, [5.2.1]	$t = 15.8 C_a C_r s \sqrt{\frac{C_s P_{SL}}{R_{eH}}}$	$t = 15.8 C_a C_r s \sqrt{\frac{C_s p_{SL}}{R_{eH}}}$	Editorial correction (small letter)

<table>
<tr><th rowspan="2">Reference</th><th>Before amendment</th><th>After amendment</th><th rowspan="2">Explanation</th></tr>
<tr><th>Contents</th><th>Contents</th></tr>
<tr><td>Ch 9, Sec 1, [5.3.1]</td><td>$w = \frac{C_s P_{SL} s \ell^2}{16 R_{eH}} 10^3$</td><td>$w = \frac{C_s p_{SL} s \ell^2}{16 R_{eH}} 10^3$</td><td>Editorial correction (small letter)</td></tr>
<tr><td>Ch 9, Sec 1, [5.3.2]</td><td>$A = \frac{5\sqrt{3} P_{SL} s(\ell - 0.5s)}{R_{eH} \sin\phi}$</td><td>$A = \frac{5\sqrt{3} p_{SL} s(\ell - 0.5s)}{R_{eH} \sin\phi}$</td><td>Editorial correction (small letter)</td></tr>
<tr><td>Ch 9, Sec 1, [7.1.1]</td><td>An enclosed forecastle is to be fitted on the freeboard deck.
The aft bulkhead of the enclosed forecastle is to be fitted in way or aft of the forward bulkhead of the foremost hold, as shown in <u>Fig 3</u>.</td><td>An enclosed forecastle is to be fitted on the freeboard deck.
The aft bulkhead of the enclosed forecastle is to be fitted in way or aft of the forward bulkhead of the foremost hold, as shown in <u>Fig 2</u>. <u>However, if this requirement hinders hatch cover operation, the aft bulkhead of forecastle may be fitted forward of the forward bulkhead of the foremost cargo hold provided the forecastle length is not less than 7% of ship length for freeboard as specified in Ch 1, Sec 4, [3.2] abaft the fore side of stem</u>.</td><td>Correction of cross-reference and correction in order to comply with IACS UR S28 Rev.2 Sept. 2005</td></tr>
<tr><td>Ch 9, Sec 2, Tab 2</td><td><table><tr><th colspan="2">Net thickness, in mm</th></tr><tr><td>Intact conditions</td><td>$t = 15.8 c_a c_r s \sqrt{\frac{p_S + p_W}{0.7 R_Y}}$</td></tr><tr><td>Testing conditions</td><td>$t = 15.8 c_a c_r s \sqrt{\frac{p_T}{1.05 R_Y}}$</td></tr></table></td><td><table><tr><th colspan="2">Net thickness, in mm</th></tr><tr><td>Intact conditions</td><td>$t = 15.8 c_a c_r s \sqrt{\frac{p_S + p_W}{0.9 R_Y}}$</td></tr><tr><td>Testing conditions</td><td>$t = 15.8 c_a c_r s \sqrt{\frac{p_T}{1.05 R_Y}}$</td></tr></table></td><td>Editorial correction in the formula for intact conditions</td></tr>
<tr><td>Ch 9, Sec 5, [2.4.3]</td><td>Hold accesses located on the weather deck are to be provided with <u>watertight</u> metallic hatch covers, unless they are protected by a closed superstructure. The same applies to accesses located on the forecastle deck and leading directly to a dry cargo hold through a trunk.</td><td>Hold accesses located on the weather deck are to be provided with <u>weathertight</u> metallic hatch covers, unless they are protected by a closed superstructure. The same applies to accesses located on the forecastle deck and leading directly to a dry cargo hold through a trunk.</td><td>Editorial correction</td></tr>
<tr><td>Ch 9, Sec 5, [4.1.3]</td><td>If applicable, <u>the still water and wave</u> lateral pressures are ....</td><td>If applicable, <u>the static and dynamic</u> lateral pressures are ....</td><td>Editorial correction</td></tr>
<tr><td>Ch 9, Sec 5, [4.2.1]</td><td>The wave lateral pressure to be considered as acting on each hatch cover is to be calculated at a point located:</td><td>The wave lateral pressure to be considered as acting on each hatch cover is to be calculated at a point located:</td><td>Editorial correction</td></tr>
</table>

Reference	Before amendment Contents	After amendment Contents	Explanation
	cover is to be calculated at a point located: • longitudinally, at the hatch cover mid-length • transversely, on the longitudinal plane of symmetry of the ship • vertically, at the top of the hatch coaming.	cover is to be calculated at a point located: • longitudinally, at the hatch cover mid-length • transversely, on the longitudinal plane of symmetry of the ship vertically, at the top of the hatch <u>cover</u>.	
Ch 9, Sec 5, [6.3.2]	$w = 1.21 \frac{p_C s l^2 10^3}{m c_p R_{eH}}$	$w = 1.21 \frac{p_C s \ell^2 10^3}{m c_p R_{eH}}$	Editorial correction (l to ℓ)
Ch 9, Sec 6, [5.4.2]	<u>c_{SH}</u> : Coefficient which accounts for the absence of sheer, if applicable, to be taken equal to: <u>c_{SH}</u> = 1.0 in the case of standard sheer or sheer greater than standard sheer <u>c_{SH}</u> = 1.5 in the case of no sheer	<u>C_{SH}</u> : Coefficient which accounts for the absence of sheer, if applicable, to be taken equal to: <u>C_{SH}</u> = 1.0 in the case of standard sheer or sheer greater than standard sheer <u>C_{SH}</u> = 1.5 in the case of no sheer	Editorial correction
Ch 10, Sec 1, Fig20	t = <u>plate thickness in accordance with Section 14, E.3.1 [mm]</u>	*t* = <u>thickness of rudder plating, in mm</u>	Editorial correction
Ch 10, Sec 2, [2.1.1]	.... <u>Bulwarks</u> are to be aligned with the beams located below or are to be connected to them by means of local transverse stiffeners. As an alternative, the lower end of the stay may be supported by a longitudinal stiffener.	.... <u>Stay and brackets of bulwarks</u> are to be aligned with the beams located below or are to be connected to them by means of local transverse stiffeners. As an alternative, the lower end of the stay <u>and bracket</u> may be supported by a longitudinal stiffener.	Editorial corrections
Ch 10, Sec 3, [3.7.6]	A windlass brake is to be provided having sufficient capacity to stop the anchor and chain cable when paying out the latter with safety, in the	A windlass brake is to be provided having sufficient capacity to stop the anchor and chain cable when paying out the latter with safety, in	Editorial correction

Reference	***Before amendment***	***After amendment***	***Explanation***
	Contents	***Contents***	
	event of failure of the power supply to the prime mover. Windlasses not actuated by steam are also to be provided with a non-return device.	the event of failure of the power supply to the prime mover. Windlasses not actuated by steam are also to be provided with a non-return device.	
Ch 10, Sec 3, [3.7.8]	For ships of length 80 m or more, where the height of the exposed deck in way of the item	Where the height of the exposed deck in way of the item	Editorial correction
Ch 11, Sec 2, Table 1	(2) Leg length of fillet welds is made fine adjustments corresponding to the corrosion addition tC specified in Ch 3, Sec 3, Tab 1 as follows:	(2) Leg length of fillet welds is made fine adjustments corresponding to the corrosion addition t_C specified in Ch 3, Sec 3, Tab 1 as follows:	Editorial correction
Ch 13, Sec 2, Symbol	t_c : Corrosion addition, in mm, defined in Ch 3, Sec3 ………………. $t_{voluntary\_addition}$: Voluntary thickness addition; Thickness, in mm, voluntarily added as the Owner's extra margin for corrosion wastage in addition to t_c	t_C : Corrosion addition, in mm, defined in Ch 3, Sec3 ………………. $t_{voluntary\_addition}$: Voluntary thickness addition; Thickness, in mm, voluntarily added as the Owner's extra margin for corrosion wastage in addition to t_C	Editorial correction (capital letter in t_C)