TÜRK LOYDU RULE CHANGE SUMMARY

TL NUMBER: 03/2018 JUNE 2018

Latest editions of TL Rules incorporate all rule changes. The latest rule revisions of a published rule are shown with a vertical line. Changes after the publication of the rule are written in red colour.

Please note that within this document added items are written in red and for deleted items strikethrough is applied. After the publication of relevant rule, those revisions are to be indicated with a vertical line. Following Rule Changes presented in English are also implemented into Turkish Version of Rules.

RULE CHANGE SUMMARY

CLASSIFICATION AND SURVEYS

No	Item
01	Section 02
02	Section 03

CHAPTER 1 - HULL

No	Item
01	Section 05
02	Section 08
03	Section 12
04	Section 15
05	Section 17

06	**Section 26**

CHAPTER 2 – MATERIAL

No	**Item**
01	**Section 03**

CHAPTER 4 - MACHINERY

No	**Item**
01	**Section 01**
02	**Section 02**
03	**Section 09**
04	**Section 11**

CHAPTER 36 – OFFSHORE SERVICE VESSELS

No	**Item**
01	**Section 05**

CHAPTER 101 – NAVAL SHIP TECHNOLOGY, CLASSIFICATION AND SURVEYS

No	**Item**
01	**Section 02**

ADDITIONAL RULE – IMPLEMENTATION OF MARPOL ANNEX VI AND NOx TECHNICAL CODE

No	**Item**
01	**General**

CLASSIFICATION AND SURVEYS

01. Section 02 – Classification

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Table 2.13a row for DSC notation was revised as below:

DSC	Ships which were built before 01 January 1996 and complying the main parts of TL Rules, Chapter 7 - High Speed Vessels (1993) and subject to the IMO DSC Code	High-speed crafts	Part C Chapter 7 High Speed Crafts, IMO DSC Code	

Table 2.18 was revised as below:

HNLS	Transport Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk in Offshore Support Vessels	Offshore Supply vessels, Offshore Service Vessels	IMO Resolution A.1122 (30) as may be amended	

02. Section 03 – Surveys

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Note was added to under item A.2.1 as below:

Note: *Special consideration may be given in application of relevant sections of UR Z3, UR Z7, UR Z18 and UR Z24 to commercial vessels owned or chartered by Goverments, which are utilized in support of military operations or service.*

Notes were added to under items B.3.1, C.3.1 and D.2.1 as below:

Note:

For details of surveys, assessment and repair of hull structure of container ships, see IACS Rec. 84.

Notes were added to under items B.3.4, B.3.5, C.3.3, C.3.4, D.2.4 and D.2.5 as below:

Note:

For details of surveys, assessment and repair of hull structure of bulk carriers, see IACS Rec. 76.

Notes were added to under items B.3.6, C.3.5.1, and D.2.6.1 as below:

Note:

For details of surveys, assessment and repair of hull structure of double hull oil tankers, see IACS Rec. 96.

Item D.3.1.1 was revised according to UR Z18 Rev.7 as below:

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- If the significant repairs as stated in above, is considered by **TL** to have any impact on response characterisitics of the propulsion systems, then the scope of sea trial shall also include a test plan for astern response characteristics based on those required for such an equipment or systems when fitted to the new ship. Refer to UR M25 for astern testing requirements.

  The tests are to demonstrate the satisfactory operation of the equipment or system under realistic service conditions at least over manoeuvring range of the propulsion plant, for both ahead and astern directions.

  Depending on the actual extent of the repair, **TL** may accept a reduction of the test plan.

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PART A – CHAPTER 1 – HULL

01. Section 05 – Design Loads

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item A.2.3 was revised as below:

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P_V = Pressure [kN/m^2],

For cargo tanks of tankers equipped with a pressure relief valve:

Pv is the set pressure of pressure relief valve, not to be taken less than 25 [kN/m^2]. Smaller set pressures than 25 [kN/m^2] may be accepted in special cases. The set pressure will be entered into the class certificate.

For ballast water tanks:

Pv is the working pressure during ballast water exchange, not to be taken less than 10 [kN/m^2] for the sequential method as well as for the flow-through method.Pv =10*(ΔZ-2,5) + ΔPv

If the ballast water exchange is done by using a ring-ballast system and the dilution method, for which an equivalent inflow and outflow is to be ensured, pv = 0 bar can be used.

Δz : distance [m] from tank top to top of overflow used for ballast water exchange.

Δpv : pressure losses in the overflow line during ballast water exchange, not to be taken less than 10 [kN/m^2].

.....

Item B.2.1 was revised as below:

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av(max) = ka. g for scantling calculations

ka =V/(L)^05.k

k= 0,2 x=0

k= 0,12 0.2<x/L<=0.7

k= 0,4 x=L

Item C.3.2 was revised as below:

The static tank design pressure, is to be taken as one of the following values:

Item C.3.2.1 was revised as below:

.....

$P_{ST} = \rho_L g h_1$ + Pv [kN/m^2]

p_V = As defined in A.2.3.

Item C.3.2.2 was revised as below:

.....

$P_{T2} = \rho_{SW} g h_2$ [kN/m2]

h_2 = Distance of load centre from top of overflow or from a point 2.4 m above tank top, whichever is the greater. Tank venting pipes of cargo tanks of tankers are not to be regarded as overflow pipes.

Item C.3.2.3 was revised as below:

.....

$P_{T1} = \rho_{SW} g h_1 + p_V$ [kN/m2]

p_V = As defined in A.2.3.

.....

Item C.3.2.4 was revised as below:

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$P_{T3} = \rho_{SW} g h_F$ [kN/m2]

.....

Item D.8.1.1 was revised as below:

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P_{DT} (max) = ka * (P_{ST}-P_V)

ka = As defined in B.2.1.

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02. Section 08 – Supporting Structures

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item B.3.5.3.5 was revised as below:

3.5.3.5 The plate floors are to be stiffened at every longitudinal by a vertical stiffener having a depth not less than 150 mm and a thickness equal to the thickness of the floors. For ships of length, L, less than 90 m, the depth is to be not less than 1,65*L mm, with a minimum of 50 mm. Equivalent stiffeners with a same sectional area may be used.

Item D.2.4 was revised as below:

The hull supporting structure of anchor windlass and chain stopper is to be sufficient to accommodate the opertating and sea loads.

Item D.2.4.2 was revised as below:

The acting forces (operating loads) are to be calculated for 80 % and 45 % respectively of the rated breaking load of the chain cable, i.e.:

for chain stoppers 80 %

for windlasses 80 %, where chain stoppers are not fitted.

45 %, where chain stoppers are fitted.

The operating loads are to be applied in the direction of the chain cable.

Item D.2.4.3 was added as below:

2.4.3 Sea loads are to be taken accordinf to Ch. 4, Sec. 11, A.4.3.1.

03. Section 12 – Tank Structures

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item A.2 was revised as below:

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= max(P_{ST} + P_{DT}, P_{T3}, P_{T4} or P_{T5})

.....

Item B.1.1 was revised as below:

t = max (t_1, t_2)

.....

$t2 = 0.9s.(P_{T2}.k)^{0.5} + t_K$ [mm]

.....

P_{T2} = Design tank pressure load [kN/m^2] according to Sec.5, C.3.2.2

.....

Item B.4.1.1 was revised as below:

.....

W = max (W_1, W_2)

$W1 = 0.55s\,\ell^2 P_T k$ [cm^3]

$W_2 = 0.44s\ell^2 P_{T2} k$ [cm^3]

.....

04. Section 15 – Hatchways

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Section was revised totally according to UR S21A Rev.1 Corr.1.

05. Section 17 – Equipment

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Section was revised totally according to UR A1Rev.6, Corr.1 and Corr.2, UR A2 Rev.4, Corr.1 and Corr.2 and Rec.10 Rev.3.

06. Section 26 – Stability

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item F was revised according to UR L5 Rev.3 as below:

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~~A~~ Stability software ~~instrument~~ installed onboard shall cover all mandatory class and statutory intact and damage stability requirements applicable to the ship. This rule ~~which~~ requires ~~only software~~ approval, ~~applies to onboard computers which are provided with software~~ of software installed on board computers which is capable of performing stability calculations ~~for the vessel~~.

.....

1.3 The input/output information shall be easily comparable with the approved stability booklet so as to avoid confusion and possible misinterpretation by the operator relative to the approved stability information.

1.5 The language in which the stability calculation results are displayed and printed out as well as the operation manual is written shall be the same as used in the ship's approved stability booklet. **TL** may require a translation into a language considered appropriate.

1.6 The stability instrument is to be ship specific equipment and the results of the calculations are to be only applicable to the ship for which it has been approved.

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3. Types of Stability Software

Four types of calculations performed by stability software are acceptable depending upon a vessel's stability requirements:

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3.2 Type 2

Software calculating intact stability and checking damage stability on basis of a limit curve (e.g., for vessels applicable to SOLAS part B-1 damage stability calculations, etc.) or checking all the stability requirements (intact and damage stability) on the basis of a limit curve.

3.3 Type 3

Software calculating intact stability and damage stability by direct application of pre-programmed damage cases based on the relevant Conventions or Codes for each loading condition (for some tankers etc.). The results of the direct calculations performed by the stability instrument could be accepted by **TL** even if they differ from the required minimum GM or maximum VCG stated in the approved stability booklet.

Such deviations could be accepted under the condition that all relevant stability requirements will be complied with by the results of the direct calculations.

3.4 Type 4

Software calculating damage stability associated with an actual loading condition and actual flooding case, using direct application of user defined damage, for the purpose of providing operational information for safe return to port (SRtP).

Damage stability of both Type 3 and Type 4 stability software shall be based on a hull form model, that is, directly calculated from a full three-dimensional geometric model.

4. Functional Requirements

4.1 General requirements for any type of stability software

4.1.1 The calculation program shall present relevant parameters of each loading condition in order to assist the master in his judgement on whether the ship is loaded within the approved limits. The following parameters should be presented for a given loading condition:

- Detailed deadweight data items including center of gravity and free surfaces, if applicable.
- Light ship data
- Trim and list.
- Draught at the draught marks and perpendiculars.
- Summary of loading condition displacement; VCG, LCG, if applicable TCG, VCB, LCB, TCB, LCF, GM and GM_L.
- Table showing the righting lever versus heeling angle including trim and draught.
- Down-flooding angle and corresponding down-flooding opening (not applicable for Type 2 software which uses limit curve for checking all the stability requirements. However, if intact stability criteria are given in addition to the limit curve, downflooding angle and the corresponding downflooding opening shall be indicated).
- Compliance with stability criteria: Listings of all calculated stability criteria, the limit values, the obtained values and the conclusions (criteria fulfilled or not fulfilled) (not applicable for Type 2 software which uses limit curve for checking all the stability requirements. However, if intact stability criteria are given in addition to the limit curve, the limit values, the obtained values and the conclusion shall be indicated).

Existing item F.4.2 was deleted as below:

~~4.2 If direct damage stability calculations are performed, the relevant damage cases according to the applicable rules should be pre-defined for automatic check of a given loading condition.~~

4.1.2 A clear warning shall be given on screen and in hard copy printout if any of the loading limitations are not complied with.

Loading limitations shall include, but may not be limited to:

- Trim, draught, liquid densities, tank filling levels, initial heel;

- Use of limit KG/GM curves in conjunction with above for Type 2;

- Restrictions to the stowage height for timber where timber load lines are assigned.

4.1.3 Type 3 software is to include pre-defined relevant damage cases according to the applicable rules for automatic check of a given loading condition.

4.1.4 The date and time of a saved calculation shall be part of the screen display and hard copy printout.

4.1.5 Each hard copy printout should contain identification of the calculation program including version number.

4.1.6 Units of measurement are to be clearly identified and used consistently within a loading calculation.

4.1.7 For Type 3 and Type 4 software, the system shall be pre-loaded with a detailed computer model of the complete hull, including appendages, all compartments, tanks and the relevant parts of the superstructure considered in the damage stability calculation, wind profile, down-flooding and up-flooding openings, cross-flooding arrangements, internal compartment connections and escape routes, as applicable and according to the type of stability software.

4.1.8 For Type 1 and Type 2 software, in case a full three dimensional model is used for stability calculations, the requirements of the computer model are to be as per paragraph 4.1.7 above to the extent as applicable and according to the type of stability software.

4.2 Further requirements for Type 4 stability software

4.2.1 The normal (Type 1, 2 and 3) and SRtP (Type 4) software need not be “totally separated”. Where the normal and SRtP software are not totally separated:

- the function of switching between normal software and Type 4 software shall be provided.
- the actual intact loading condition is to be the same for both functions (normal operation and SRtP); and
- the SRtP module needs only to be activated in case of an incident.

Approval of Type 4 (SRtP) software is for stability only.

4.2.2 In passenger ships which are subject to SRtP and have an onboard stability computer and shore-based support, such software need not be identical.

4.2.3 Each internal space shall be assigned its permeability as shown below, unless a more accurate permeability has been reflected in the approved stability information.

Spaces	Permeability			
	Default	Full	Partially filled	Empty
Container spaces	0,95	0,70	0,80	0,95
Dry cargo spaces	0,95	0,70	0,80	0,95
Ro-Ro spaces	0,95	0,90	0,90	0,95
Cargo liquids	0,95	0,70	0,80	0,95
Intended for consumable liquids	0,95	0,95	0,95	0,95

Stores	0,95	0,60	0,60	0,95
Occupied by machinery	0,85			
Void spaces	0,95			
Occupied by accommodation	0,95			

4.2.4 The system shall be capable of accounting for applied moments such as wind, lifeboat launching, cargo shifts and passenger relocation.

4.2.5 The system shall account for the effect of wind by using the method in SOLAS regulation II-1/7-2.4.1.2 as the default, but allow for manual input of the wind speed/pressure if the on-scene pressure is significantly different (P = 120 N/m^2 equates to Beaufort 6; approximately 13,8 m/s or 27 knots).

4.2.6 The system shall be capable of assessing the impact of open main watertight doors on stability (e.g. for each damage case provided for verification, additional damage stability calculation shall be done and presented, taking into account any watertight door located within the damaged compartment(s)).

4.2.7 The system shall utilize the latest approved lightship weight and centre of gravity information.

4.2.8 The output of the software is to be such that it provides the master with sufficient clear unambiguous

information to enable quick and accurate assessment of the stability of the vessel for any actual damage, the impact of flooding on the means of escape and the controls of devices necessary for managing and/or controlling the stability of the ship.

When the actual loading condition is input in the SRtP software, the following output (intact stability) shall be available:

- Deadweight data;
- Lightship data;
- Trim;
- Heel;
- Draft at the draft marks and perpendiculars;
- Summary of loading condition displacement, VCG, LCG and, if applicable, TCG;
- Downflooding angle and corresponding downflooding opening;
- Free surfaces;
- GM value;
- GZ values relevant to an adequate range of heeling (not less than 60°) available indicatively at the following intervals: 0, 5, 10, 15, 20, 25, 30, 40, 50, 60 deg;
- compliance with relevant intact stability criteria (i.e. 2008 IS Code): listing of all calculated intact stability criteria, the limiting values, the obtained values and the evaluation (criteria fulfilled or not fulfilled);

- GM/KG limiting curve according to SOLAS, Ch II-1, Regulation 5-1.

When the actual loading condition is associated to the actual damage case(s) due to the casualty, the following output (damage stability) shall be available:

- Trim;
- Heel;
- Draft at the draft marks and perpendiculars;
- Progressive flooding angle and corresponding progressive flooding openings;
- GM value;
- GZ values relevant to an adequate range of heeling (not less than 60°) available indicatively at the following intervals: 0 5 10 15 20 25 30 40 50 60 deg;
- Compliance with stability criteria: listing of all calculated stability criteria, the limit values, the obtained values and the conclusions (criteria fulfilled or not fulfilled);
- The survivability criteria for Type 4 software (SRtP) are left to the discretion of the Administration;
- Relevant flooding points (unprotected or weathertight) with the distance from the damage waterline to each point;
- List of all flooded compartments with the permeability considered;
- Amount of water in each flooded compartment;
- Escape route immersion angles;
- A profile view, deck views and cross-sections of the ship indicating the flooded waterplane and the damaged compartments.

4.2.9 For ro-ro passenger ships there shall be algorithms in the software for estimating the effect of water accumulation on deck (WOD) (e.g. **1.** In addition to the predefined significant wave height taken from the approved stability document, there shall be possibility for the crew to input manually the significant wave height of the ship navigation area in the system, **2.** In addition to the predefined significant wave height taken from the approved stability document, calculations with two additional significant wave heights shall be submitted for checking the correctness of the algorithms in the software for estimating the effect of WOD). *

** This paragraph applies to Ro-Ro Passenger ships subject to the Stockholm Agreement (IMO Circular Letter No. 1891)*

Sub-title of “Acceptance tolerances” was renumbered and subsequent items were renumbered and references were revised accordingly.

Renumbered item 6 was revised as below:

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- Verification of functional requirements under paragraph 4.1.2.

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Renumbered item 6.2.2 was revised as below:

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For Type 4 stability software for SRtP, **TL** shall examine at least three damage cases, each of them associated with at least three loading conditions taken from the ship's approved stability information. Output of the software is to be compared with results of corresponding load / damage case in the approved damage stability booklet or an alternative independent software source.

Table 26.7 was revised as below:

Hull Form Dependent	**Tolerances**
Displacement	+ / - 2%
Longitudinal centre of buoyancy from AP	+ / - 1% / 50 cm
Vertical centre of buoyancy	+ / - 1% / 5 cm
Transverse centre of buoyancy	+ / - 0.5% of B / 5 cm
Longitudinal centre of flotation from AP	+ / - 1% / 50 cm
Moment to trim 1 cm	+ / - 2%
Transverse metacentric height	+ / - 1% / 5 cm
Longitudinal metacentric height	+ / - 1% / 50 cm
Cross curves of stability	+ / - 5 cm
Compartment Dependent	**Tolerances**
Volume or deadweight	+ / - 2%
Longitudinal centre of gravity from AP	+ / - 1% / 50 cm
Vertical centre of gravity	+ / - 1% / 5 cm
Transverse centre of gravity	+ / - 0.5% of B / 5 cm
Free surface moment	+ / - 2%
Shifting moment	+ / - 5%
Level of contents	+ / - 2%
Trim and Stability	**Tolerances**
Draughts (forward, aft, mean)	+ / - %1/ 5 cm
GMT (both solid and corrected for free surface)	+ / - %1 / 5 cm
GZ values	+ / - 5% / 5 cm
Downflooding angles	+ / - 2^o
Equilibrium angles	+ / - 1^o
Distance from WL to unprotected and weathertight openings, or relevant point, if applicable	+/- 5% / 5 cm
Area under righting arm curve	+ / - 5 % or 0.0012 mrad
Notes:	

1. *Deviation in % =[(base value - applicant 's value)/ base value*]*100

The "base value" may be from the approved stability information or the ***TL*** *computer model.*

2. *When applying the tolerances in Table 26.7 having two values, the allowable tolerance is the greater of the two values.*

3. *Where differences in calculation methodology exist between the programs used in the comparison, this may be a basis for accepting deviations greater than that specified in Table 26.7 provided a software examination is carried out in sufficient detail to clearly document that such differences are technically justifiable.*

4. *Deviation from these tolerances shall not be accepted unless* ***TL*** *considers that there is a satisfactory explanation for the difference and that it is clearly evident from* ***TL's*** *stability calculations that the deviation does not impact compliance with the required stability criteria for the ship under consideration.*

Renumbered item 8.2.3 was revised as below:

8.2.3 Revise the above modified load condition to restore the initial test condition and compare the results. Confirm that the relevant input and output data of the approved test condition have been replicated.

PART A – CHAPTER 2 – MATERIAL

01. Section 3 – Rolled Steel Plates, Sections and Bars

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Items A.2.2.1, 2.2.2, 2.2.3, 2.2.4 and 2.2.6 were revised according to UR W11 Rev.9 as below:

2.2.1 As-Rolled, AR

This procedure involves steel being cooled as it is rolled with no further heat treatment. . The rolling and finishing temperatures are typically in the austenite recrystallization region and above the normalizing temperature. The strength and toughness properties of steel produced by this process are generally less than steel heat treated after rolling or than steel produced by advanced processes.

2.2.2 Normalising, N

Normalizing involves heating rolled steel above the critical temperature, Ac3 and in the lower end of the austenite recrystallization region for a specific period of time followed by air cooling. The process improves the mechanical properties of as- rolled steel by refining the grain size and homogenising the microstructure.

2.2.3 Controlled Rolling, CR (Normalizing Rolling, NR)

A rolling procedure in which the final deformation is carried out in the normalizing temperature range, allowed to cool in air, resulting in a material condition generally equivalent to that obtained by normalizing.

2.2.4 Quenching and Tempering, QT

Quenching involves a heat treatment process in which steel is heated to an appropriate temperature above the Ac3**,** held for a specific period of time**,** and then cooled with an appropriate coolant for the purpose of hardening the microstructure. Tempering subsequent to quenching is a process in which the steel is reheated to an appropriate temperature not higher than the Ac1**,** maintained at that temperature for a specific period of time to restore toughness properties by improving the microstructure and reduce the residual stress caused by the quenching process.

2.2.6 Accelerated Cooling, AcC

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The material properties conferred by TM and AcC cannot be reproduced by subsequent normalizing or other heat treatment. Where NR (CR) and TM with/without AcC are applied, the programmed rolling schedules are to be verified by **TL** at the time of the steel works approval, and are to be made available when required by the attending surveyor.

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Item B.7 was revised and B.8 was added as below and subsequent items were renumbered accrding to UR W11 Rev.9:

7. Surface Quality ~~Freedom from Defects~~

7.1 The steel is to be free from surface defects prejudicial to the use of the material for the intended application.

The finished material is to have a surface quality in accordance with a recognized Standard such as EN 10163 parts 1, 2 and 3, or an equivalent standard accepted by **TL**, unless otherwise specified in this section.

7.2 The responsibility for meeting the surface finish requirements rests with the manufacturer of the material, who is to take the necessary manufacturing precautions and is to inspect the products prior to delivery. At that stage, however, rolling or heat treatment scale may conceal surface discontinuities and defects. If, during the subsequent descaling or working operations, the material is found to be defective, **TL** may require materials to be repaired or rejected.

~~7.1 The steel is to be reasonably free from segregations and non-metallic inclusions. The finished material is to have a workmanlike finish and is to be free from internal and surface defects prejudicial to the use of the material for the intended application.~~

~~7.2 The acceptance criteria for surface finish and procedures for the repair of defects, as detailed in Recommendation, No 12, "Guidance for the Surface Finish of Hot Rolled Steel Plates and Wide Flats" are to be observed.~~

7.2.1 The surface quality inspection method shall be in accordance with recognized national or international standards agreed between purchaser and manufacturer, accepted by **TL**.

7.2.2 If agreed by the manufacturer and purchaser, steel may be ordered with improved surface finish over and above these requirements.

7.3 Acceptance Criteria

7.3.1 Imperfections

Imperfections of a harmless nature, for example pitting, rolled-in scale, indentations, roll marks, scratches and grooves, regarded as being inherent of the manufacturing process, are permissible irrespective of their number, provided the maximum permissible limits of Class A of EN 10163-2 or limits specified in a recognized equivalent standard accepted by **TL,** are not exceeded and the remaining plate or wide flat thickness remains within the average allowable minus thickness tolerance specified in UR W13.

Total affected area with imperfection not exceeding the specified limits are not to exceed 15 % of the total surface in question.

7.3.2 Defects

Affected areas with imperfections with a depth exceeding the limits of Class A of EN 10163-2 or the maximum permissible limits specified in a recognized equivalent standard accepted by **TL**, shall be repaired irrespective of their number.

Cracks, injurious surface flaws, shells (over lapping material with non-metallic inclusion), sand patches, laminations and sharp edged seams (elongated defects) visually evident on surface and/or edge of plate are considered defects, which would impair the end use of the product and which require rejection or repair, irrespective of their size and number.

7.4 ~~7.3~~ Repair ~~procedures~~

7.4.1 ~~7.3.1~~ Grinding repair

Grinding may be applied provided all the conditions below are adhered to:

.....

Defects or unacceptable imperfections are to be completely removed by grinding and the remaining plate or wide flat thickness shall remain within the average allowable minus thickness tolerance specified in UR W13. The ground areas shall be a smooth transition to the surrounding surface of the product. Complete elimination of the defect is to be verified by magnetic particle or by liquid penetrant testing ~~test procedure at the surveyor's discretion~~.

~~**7.3.1.4** Where necessary, the entire surface may be ground to a depth as given by the under thickness tolerances of the product.~~

7.4.2 ~~7.3.2~~ Welding repair

Weld repair procedures and the method are to be reported and be approved by **TL**. Repair of defects such as unacceptable imperfections, cracks, shells or seams shall be followed by magnetic particle or liquid penetrant testing.

Local defects which cannot be repaired by grinding as stated under 7.4.1 may be repaired by welding with the ~~surveyor's consent by chipping and/or grinding followed by~~ agreement of **TL** subject to the following conditions:

Sub paragraphs of welding repair was renumbered and sub item (d) was added as below:

(d) If weld repair depth exceeds 3 mm, UT may be requested by **TL**. If required, UT shall be carried out in accordance with an approved procedure.

Following existing sub paragraph were deleted:

~~7.3.2.4 All weldings are to be of reasonable length and must have at least 3 parallel welding beads. The deposited metal must be sound without any lack of fusion, undercut, cracks and other defects which could impair the workability or use of the product. Welding is to be performed with one layer of beads in excess, which is subsequently to be ground smooth to the surface level.~~

~~7.3.2.5 Products which are to be supplied in a heat treated condition are to be welded prior to the heat treatment; otherwise, a new heat treatment may be required. Products supplied in the controlled rolled or as-rolled condition may require a suitable heat treatment after welding. However, the post weld heat treatment may be omitted provided the manufacturer has demonstrated by a procedure test that the required properties will be maintained without heat treatment.~~

~~7.3.2.6 The finished products are to be presented to the surveyor for acceptance. The soundness of the repair may be verified by ultrasonic, magnetic particle or dye penetrant methods at the surveyor's discretion.~~

~~7.3.2.7 For every welding repair the manufacturer must provide the surveyor with a written report and a sketch showing sizes and location of the defects and full details of the repair procedure including the welding consumables, post weld heat treatment and non-destructive testing.~~

Item 7.5 was added as below:

7.5 The surface quality and condition requirement herein are not applied to products in forms of bars and tubulars, which will be subject to manufacturers' conformance standards.

8. Internal Soundness

8.1 If plates and wide flats are ordered with ultrasonic inspection, this is to be made in accordance with an accepted standard at the discretion of **TL**.

8.2 Verification of internal soundness is the responsibility of the manufacturer. The acceptance of internal soundness by **TL**'s surveyor shall not absolve the manufacturer from this responsibility.

Renumbered item 9.1 was revised as below:

Unless otherwise agreed or specially required the thickness tolerances in ~~A.6 (Reference~~ IACS UR W13 "~~Allowable under~~ Thickness tolerances of steel plates and wide flats"~~,)~~ are applicable.

Existing item 10.4 was deleted as below:

~~**10.4 Non-destructive testing**~~

~~10.4.1 Where plates and steel wide flats are ordered with an ultrasonic test certificate, the tests are to be executed in accordance with a standard approved by TL, e.g. EN 10160. The quality class is to be stipulated when the order is placed.~~

~~10.4.2 The seams of welded hollow sections of hull structural steel are to be subjected to non-destructive testing over their entire length.~~

~~10.4.2.1 Electrical welded hollow sections~~

~~The weld seam of hollow sections is to be examined according to one of the following European standards:~~

~~- EN ISO 10893-2, acceptance category E4, except that the technique of rotating pipes or with rotating saddle coils is not permitted~~

~~- EN ISO 10893-3, acceptance category F5, or EN ISO 10893-11, acceptance category U5~~

~~10.4.2.2 Submerged-arc welded hollow sections~~

~~The weld seam of hollow sections is to be examined according to acceptance category U4 in accordance with EN ISO 10893-6, image quality class R2.~~

~~Butt welds serving to connect strip or plate lengths by spiral submerged-arc welding have to be examined over their entire length according to the same test procedure and shall satisfy the same acceptance criteria as the main weld seam.~~

Existing item 10.5 was revised as below:

~~11.4 10.5 Surface inspection and~~ Dimensions

~~Surface inspection and~~ Verification of dimensions are the responsibility of the steel maker. The acceptance by **TL**'ssurveyor shall not absolve the steel maker from this responsibility.

Existing item 11.2.4 was revised as below:

12.2 (d) The ~~removal of~~ test samples ~~is subject to the rules laid down in~~ are to be taken according to A.8.1.2.4.

PART B – CHAPTER 4 – MACHINERY

01. Section 1 –General Rules and Instructions

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Items I was added according to UR M25 Rev.4 as below:

I. Tests and Trials

1. Machinery and its component parts shall be subject to constructional and material tests, pressure and

leakage tests, and trials.

In the case of parts produced in series, other methods of testing can be agreed instead of the tests prescribed, provided that the former are recognized as equivalent by **TL**.

2. **TL** reserves the right, where necessary, to increase the scope of the tests and also to test those parts which are not expressly required to be tested according to the rules.

3. After installation on board of the main and auxiliary machinery, the installation as well as the operational functioning of the machinery, including the associated ancillary equipment, shall be verified according to rule requirements in the following sections. Safety functions and safety equipment shall be tested as far as practically feasible. Tests for safety equipment that has formerly been performed and witnessed by **TL** need not to be repeated.

In addition, the entire machinery installation shall be tested during sea trials, as far as possible under the intended service conditions.

The tests shall be carried out according to approved test programmes, see Classification and Surveys, Section 2 item B.2.3.4.

4. Main propulsion systems shall undergo tests to demonstrate the astern response characteristics. The tests shall be carried out at least over the manoeuvring range of the propulsion system and from all control positions. A test plan shall be provided by the yard and accepted by the surveyor. If specific operational characteristics have been defined by the manufacturer these shall be included in the test plan. See also item D.1.2 and Section 3 item C.10.1.1.

5. The reversing characteristics of the propulsion plant, including the blade pitch control system of controllable pitch propellers, shall be demonstrated and recorded during trials.

02. Section 2 – Internal Combustion Engines and Air Compressors

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item D.1.5 were revised according to UR M53 Rev.4 as below:

.....

~~- For the cylinder with articulated-type connecting rod~~

~~• Charge air pressure [bar] (before inlet valves or scavenge ports, whichever applies)~~

~~• Nominal compression ratio [-]~~

~~• Digitalized gas pressure curve presented at equidistant intervals [bar/°CA]~~

.....

~~The minimum requirements of the Chapter 2 - Material and Chapter 3 - Welding must comply with:~~

.....

~~- Heat treatment~~

~~- Surface treatment of fillets, journals, oil bores and pins (induction hardened, flame hardened, nitrided, rolled, shot peened, etc. with full details concerning hardening)~~

~~• Hardness at surface [HV]~~

~~• Hardness as a function of depth of hardening~~

~~• Extension of surface hardening~~

Every surface treatment affecting fillets or oil holes shall be specified so as to enable calculation according to Appendix V

.....

Item D.3 was revised according to UR M53 Rev.4 as below:

3. ~~Calculation~~ Evaluation of Stress Concentration Factors

.....

When reliable measurements and/or calculations are available, which can allow direct assessment of stress concentration factors, the relevant documents and their analysis method have to be submitted to **TL** in order to demonstrate their equivalence to present rules evaluation. This is always to be performed when dimensions are outside of any of the validity ranges for the empirical formulae presented in 3.2 to 3.4.

Appendix III and VI describes how FE analyses can be used for the calculation of the stres concentration factors. Care should be taken to avoid mixing equivalent (von Mises) stresses and principal stresses.

.....

Figure 2.13 and 2.14 deleted and added as Appendix I and Appendix II and references to that figure was revised accordingly.

Item D.6 was revised according to UR M53 Rev.4 as below:

.....

When a surface treatment process is applied, it must be approved by **TL**. Guidance for calculation of surface treated fillets and oil bore outlets is presented in Appendix V.

.....

As an alternative the fatigue strength of the crankshaft can be determined by experiment based either on full size crankthrow (or crankshaft) or on specimens taken from a full size crankthrow. For evaluation of test results, see Appendix IV.

~~Where no results of the fatigue tests conducted on full size crank throws or crankshafts, which have been subjected to surface treatment, are available, the Kfactors for crankshafts without surface treatment are to be used.~~

~~In each case the experimental procedure for fatigue evaluation of specimens taken from a full size crankthrow or fatigue strength of crankshaft assessment carried out with full size crank throws or crankshafts are to be submitted to TL for special consideration. The procedure shall include information on method, type of specimens, number of specimens (or crankthrows), number of tests, survival probability, confidence number, etc.~~

~~The survival probability for fatigue strength values derived from testing is to be to the satisfaction of TL and in principle not less than 80 %.~~

Item D.8.1 was revised according to UR M53 Rev.4 as below:

.....

In the case where 8.2 condition cannot be fulfilled then 8.3 and 8.4 calculation methods of Z_{min} and Z_{max} are not applicable due to multizone-plasticity problems.

In such case Z_{min} and Z_{max} have to be established based on FEM calculations.

Appendices were added after section 2 according to UR M53 Rev.4.

03. Section 9 – Steering Gears and Thrusters

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item B.7.1 was revised according to UR M25 Rev.4 as below:

7.1 Thrusters and associated equipment are to be inspected, tested and certified by **TL**. Upon completion of the installation, performance tests are to be carried out in the presence of **TL** Surveyor in a sea trial. This is to include but not limited to running tests at intermittent or continuous rating, variation through design range of the magnitude and/or direction of thrust, vessel turning tests and ship manoeuvring tests. See also Section 1 item I for test and trials.

04. Section 11 – Windlass and Winches

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item A.1.1 was revised according to UR A3 New as below:

1.1 **~~Scope~~ Application**

~~The requirements in this section apply to bower anchor windlasses, stern anchor windlasses, combined anchor and mooring winches and chain stoppers.~~ A windlass used for handling anchors, suitable for the size of chain cable and complying with the following criteria is to be fitted to the ship. For anchors and chains, see Chapter 1 - Hull, Section 17.

Item A.1.2 was revised according to UR A3 New as below:

.....

Windlass design specifications; anchor and chain cable particulars; anchorage depth, performance criteria; standard of compliance,

.....

Hydraulic piping system diagram along with system design pressure, ~~relief~~ safety valves arrangement and setting, ~~bill of~~ material specification for pipes and equipment, typical pipe joints, as applicable, and technical data and details for hydraulic motors.

.....

Calculations demonstrating that the windlass prime mover is capable of attaining the hoisting speed, the required continuous duty pull, and the overload capacity are to be submitted if the “load testing” including “overload” capacity of the entire windlass unit is not carried out at the shop

Operation and maintenance procedures for the anchor windlass are to be incorporated in the vessel operations manual

Item A.1.3 was revised according to UR A3 New as below:

.....

- SNAME T & R Bulletin 3-15: Guide to the Design and Testing of Anchor Windlasses forMerchant Ships
- JIS F6714: Windlasses
- BS MA35: Specifications for Ship Deck Machinery Windlass

Name of item A.2 was revised to Materials and Fabrication and item “Materials” was renumbered as A.2.1 and subsequent sub paragraphs were renumbered accordingly.

Item A.2.2 was added as below:

2.2 Welded fabrication

Weld joint designs are to be shown in the construction plans and are to be approved in association with the approval of the windlass design. Welding procedures and welders are to be qualified in accordance with **TL** Rules, Chaper 3, Welding. Welding consumables are to be type-approved by **TL**. The degree of non-destructive examination of welds and post-weld heat treatment, if any, are to be specified and submitted for consideration

Item A.3.9 was divided into sub-paragraphs as below:

3.9.1 The electrical equipment is to comply with the Chapter 5 - Electric, Section 7, E.2.

3.9.2 Electric motors

Electric motors are to meet the requirements of TL and those rated 100 kW and over are to be certified. Motors exposed to weather are to have enclosures suitable for their location as provided for in the requirements of TL. Where gears are fitted, they are to meet the requirements of TL and those rated 100 kW and over are to be vertified.

3.9.3 Electrical circuits

Motor branch circuits are to be protected in accordance with the provisions of TL and cable sizing is to be in accordance with the requirements of TL. Electrical cables installed in locations subject to sea are to be provided with effective mechanical protection.

Item A.3.11 was added as below:

3.11 Protection of mechanical components

To protect mechanical parts included component housing, a suitable protection system is to be fittedto limit the speed and torque at the prime mover. Consideration is to be given to a means to contain debris consequent to a severe damage of the prime mover due to over-speed in the event of uncontrooled rendering of the cable, particularly when an axial piston type hydraulic motor forms the prime mover.

Sub paragraphs of item A.4 were renumbered and all references to these were revised accordingly.

Title of item A.4 was revised as below:

4. Performance Criteria and Design ~~Dimensioning~~

Sub-paragraphs "4.1 Mechanical design" and "4.1.1 Design loads" were added according to UR A3 New.

Renumbered item 4.1.2 Continuous duty pull was revised as below:

The windlass prime mover is to be able to exert for at least 30 minutes a continuous duty pull, ~~Zcont (see Table 11.2)~~ (e.g., 30-minute short time rating corresponding to S2-30 min. of IEC 60034-1), Z_{cont1} , corresponding to the grade and diameter, d, of the chain cables~~, for a specified design anchorage depths up to 100 meters,~~ as follows:

Table 11.1 Z_{cont1} corresponding to the grade of chain

Grade of chain	Z_{cont1}	
	N	kgf

K1	37,5 d^2	3,82 d^2
K2	42,5 d^2	4,33 d^2
K3	47,5 d^2	4,84 d^2
Unit of d	mm	mm

The values of the above table are applicable when using ordinary stockless anchors for anchorage depth down to 82.5 m.

For anchorage depth deeper than 82.5 m, a continuous duty pull Z_{cont2} is:

$Z_{cont2}[N] = Z_{cont1}[N] + (D – 82.5) \times 0.27d^2$

or

$Z_{cont2}[kgf] = Z_{cont1}[kgf] + (D – 82.5) \times 0.0275d^2$

where

D is the anchor depth, in metres.

The anchor masses are assumed to be the masses as given TL Rules, Chapter 1, Section 17. Also, the value of Z_{cont} is based on the hoisting of one anchor at a time, and that the effects of buoyancy and hawse pipe efficiency (assumed to be 70%) have been accounted for. In general, stresses in each torque-transmitting component are not to exceed 40% of yield strength (or 0.2% proof stress) of the material under these loading conditions.

~~$Z_{cont} = f \cdot g \cdot d^2$ (1)~~

~~Where;~~

~~d = Diameter of anchor chain [mm],~~

~~f = Nominal pull factor [-],~~

~~g = 9.80665, Gravity [m/s^2],~~

~~Z_{cont} = Nominal duty pull for anchorage depth up to 100 m [N].~~

~~Table 11.1 Continuous duty pull factor corresponding to the grade of chain~~

~~Grade~~	~~K1~~	~~K2~~	~~K3~~
~~f~~	~~3.75~~	~~4.25~~	~~4.75~~

~~The value of Z_{cont} is based on the hoisting of one anchor at a time, and that the effects of buoyancy and hawse pipe efficiency (assumed to be 70%) have been accounted for. In general, stresses in each torque-transmitting component are not to exceed 40% of yield strength (or 0.2% proof stress) of the material under these loading conditions.~~

~~**4.3.2** Depending on the grade of the chain cable and anchor depth, windlasses must be capable of exerting the following nominal pull Z at a mean speed of at least 9 meters per minute, for a specified design anchorage depth greater than 100 meters:~~

~~$$Z = d^2 \cdot [f \cdot g + 0.218 \cdot (h - 100)] \quad (2)$$~~

~~Where:~~

~~h = Specified design anchorage depth [m],~~

~~Z = Nominal duty pull for anchorage depth greater than 100 m [N].~~
~~The calculation of nominal pull is to be based on a minimum anchor depth of 100 m~~

~~Windlass prime mover must be met these conditions for 30 minutes without interruption~~

~~The pull of stern windlasses with an anchor rope can be determined by reference to the anchor weight and the diameter of the corresponding chain cable.~~

~~**4.3.3** Furthermore, the windlass prime mover is to have sufficient power to exert, over a period of at least two minutes, a pull (Z_{max}) equal to the greater of 1.5 times the continuous duty pull as defined in equation (2) for short term pull~~

~~$$Z_{max} = 1.5 \cdot Z \quad (3)$$~~

~~A short-time overload of up to 20% is allowed in the case of internal combustion engines at this specified maximum torque condition.~~

~~**4.3.4** An additional reduction gear stage may be fitted in order to achieve the maximum torque.~~

~~**4.3.5** With manually operated windlasses, steps are to be taken to ensure that the anchor can be hoisted at a mean speed of 0.033 m/s with the pull specified in 4.3.2. This is to be achieved without exceeding a manual force of 150 N applied to a crank radius of about 350 mm with the hand crank turned at about 30 rpm.~~

Renumbered item A.4.1.3 and 4.1.4 were revised as below:

4.1.3 Hoisting speed

The mean speed of the chain cable during hoisting of the anchor and cable is to be at least 0,15 m/sec. For testing purposes, the speed is to be measured over two shots of chain cable and initially with at least three shots of chain (82.5 m in length) and the anchor submerged and hanging free.

4.1.4 Overload capability

The windlass prime mover is to be able to provide the necessary temporary overload capacity for breaking out the anchor. This temporary overload capacity or “short term pull” is to be at least 1.5 times the continuous duty pull applied for at least 2 minutes.The speed in this period may be lower than normal.

Item A.4.1.7 was added as below:

4.1.7 Support Structure

For hull supporting structures of windlass and chain cable stoppers, see **TL** Rules, Chapter 1, Section 17,G.

Last paragraph of item A.5.3.5 was deleted item A. 5.3.6 was added as below:

Windlasses are to be inspected during fabrication at he manufacturer's facilities by a surveyor for conformance with the approved plans. Acceptance tests, as specified in the specified standard of compliance, are to be witnessed vy the surveyor and include the following tests as a minimum:

5.3.6.1 No-load test. The windlass is to be run wityout load at nominal speed in each direction for a total of 30 minutes. If the windlass is provided with a gear change, additional run in each direction for 5 minutes at each gear change is required.

5.3.6.2 Load test. The windlass is to be tested to verify that the continuous duty pull, overload capacity and hoisting speed as specified in 4.1 can be attained.

Where the manufacturing works does not have adequate facilities, the aforementioned tests including the adjustment of the overload protection can be carried out on board ship. In these cases, functional testing in the manufacturer's works is to be performed under no-load conditions.

5.3.6.3 Brake capacity test. The holding power of the brake is to be verified either through testing or by calculation.

Item A. 7 was added as below:

7. Marking

Windlass shall be permanently marked with the following information:

a) Nominal size of chain (e.g. 100/3/45 means chain dia./grade/breaking load)

b) Maximum anchorage depth [m].

PART C – CHAPTER 36 – OFFSHORE SERVICE VESSELS

01. Section 5 – Installation Protection and Power Distribution

Revision Date: February 2018

Entry into Force Date: 1 March 2018

Secction 5 was revised totally according to OSV Chemical Code adopted by resolution A.1122(30).

PART E – CHAPTER 101 – NAVAL SHIP TECHNOLOGY, CLASSIFICATION AND SURVEYS

01. Section 2 – Class Designation

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item C.2.1.2 was revised as below:

.....

CADET TRAINING SHIP

.....

Table 2.2 was revised as below:

Chapter 101	Chapter 102	Chapter 104	Chapter 105/106	Chapter 107
Classification and Surveys	Hull Structures and Ship Equipment	Propulsion Plants	Electrical Installations / Automation	Ship Operation, Installations and Auxiliary Systems

Ship type: **CORVETTE** **FRIGATE** **DESTROYER** **CRUISER** **MINE WARFARE VESSEL** **AMPHIBIOUS WARFARE SHIP** **AIRCRAFT CARRIER** **PATROL BOAT** **SUPPLY VESSEL** **RESEARCH VESSEL** **CADET TRAINING SHIP** **AMPHIBIOUS WARFARE SHIP** (LPD, LHD, LST, LCT, LCM, etc.) **MOSHIP** Submarine Rescue Mother Ship **RATSHIP** Rescue and Towing Ship **LCT** Landing Craft Tank **LCM** Landing Craft Mechanized **LST** Landing Ship Tank **LPD** Landing Platform Dock **PRODUCT TANKER** **TUG (4)** **ESCORT TUG (p,V) (5)** **SUBMARINE** **LHD** Landing Helicopter Dock Special types, e.g.: **HYDROFOIL** **CATAMARAN** **WATER JET** High speed craft: **HSC-N** **HSDE** Auxiliary ship-Navy: **AUX-NH** **AUX-NM** Certificate of Conformity: **CoC** IACS Common Structural Rules: **CSR** Naval Ship Code: **NSC** Submersible: **U**	Ambient conditions: **AC1** **ACS** Material: **(HIGHER STRENGTH HULL STRUCTURAL STEEL)** **ALUMINIUM** **FRP** Residual strength after military effects: **RSM** Rational ship design: **RSD (F25)** **RSD (F30)** **RSD (ACM)** In-water survey: **IWS** Structural fire protection: **SFP** Navigation in ice: **B** Bridge design: **NAV-O** **NAV-OC** Novel design: **EXP** Emergency response service: **ERS** Service range: **Y** **K50/K20** **K6** Towing arrangement: **TA1 (TA2, TA3)** Corrosion Protection **(1)**: **PCWBT** Loading Instrument **(2)**: **LI**	Condition monitoring: **CM1** **CM2** **CM3** **CM4** Redundant propulsion: **RP1** x % **RP2** x % **RP3** x % Dynamic positioning: **DK1** **DK2** **DK3** Fuel Cell Systems: **FC-xxx** **with FC** Navigation in ice: **B** Novel design: **EXP** Air Independent Power: **AIP-xxx** **with AIP** Manoeuvring Capability Assessment **(3)**: **MCA**	Automation: **AUT-N** **AUT-Nnh** **AUT-C(NS)** Degaussing: **DEG** Quality of Electrical Power Supplies: **ELS** Integrated Computer Control: **ICC**	Lifting appliances: **LA** **LA (CL)** **LA (CR)** **LA (PL)** Replenishment at sea: **RAS** Flight operation: **FO** NBC protection: **NBC** Diving systems: **DI** Environmental Passport: **EP (6)** Fire Fighting **(7)** : **FF0** **FF1** **FF2** **FF3** **FF1/2** **FF1/3**

(1) *For **PCWBT** Notation, see **TL** Rules Chapter 1 Hull Section 22 A.7.1.*
(2) *For **LI** Notation, see **TL** Rules Chapter 1 Hull Section 6 H. and Section 26 F.*
(3) *For **MCA** Notation, see IMO Res.MSC 137(76), IMO Res.A601(15) and MSC Circ.1053.*
(4) *For **TUG** Notation, see **TL** Rules Chapter 1 Hull Section 29.*
(5) *For **ESCORT TUG (p,V)** Notation, see **TL** Rules Chapter 1 Hull Section 29 and Chapter 13 Escort Tugs.*
(6) *For **EP** Notation, see **TL** Rules Chapter 76 Environmental Protection System.*
(7) *For **FF0, FF1, FF2, FF3, FF1/2, FF1/3** Notations, see **TL** Rules Chapter 11 Fire Fighting Ships.*

ADDITIONAL RULE – IMPLEMENTATION OF MARPOL ANNEX VI AND NOx TECHNICAL CODE

01. General

Revision Date: May 2018

Entry into Force Date: 1 July 2018

Item UI MPC51 was revised as below:

MPC

51

(July 2004)

(Rev.1 Jan 2017)

Resolution 2 of the 1997 MARPOL Conference Technical Code on Control of Emission of

Nitrogen Oxides from Marine Diesel Engines

Chapter 3.2.1 / Chapter 3.2

Test cycles and weighting factors to be applied

Chapter 3.2.1 reads as follows:

For every individual engine or parent engine of an engine family or engine group or family, one or more of the test cycles specified in 3.2.2 to 3.2.6 shall be applied for verification of compliance with the applicable NOx emission limits contained in ~~accordance with~~ regulation 13~~ of Annex VI~~.

Interpretation:

For application of this section it shall be interpreted that:

(a) For a parent engine of en engine family or engine group, one or more test cycles may be applied where an engine family or engine group may contain models which can be used solely for one application and engine models which can be used for another application. ~~One of the test cycles specified in Chapters 3.2.2 to 3.2.6, applicable to the application, shall be applied~~.

(b) Individual engine sor member engines of an engine family or engine group intended to be used for more than one application are to be certified fort he relevant test cycles. ~~Where more than one test cycle is to be applied the average cycle weighted NOx emission value (in g/kWh) for each cycle is to be stated on the EIAPP Certificate 1.15, together with the corresponding limit value, 1.14.~~

(c) In those instances where an engine as installed on board may be used simultaneously or separately for supplying energy to main propulsion that engine is to be certified to the test cycle only which represents the main purpose and takes precedence. This, for example, means that any-diesel-electric propulsion application only

requires E2 certification irrespective of whether energy can be distributed to the switchboard for other (auxiliary) purposes. Similarly, this applies to main engines which e.g. can also drive cargo pumps. ~~A Parent Engine test for a particular duty cycle is to follow the appropriate test cycle. A Parent Engine emission value shall not be 'constructed' by, for example, adding data from one test to emission values taken from another test.~~

~~(d) In those instances where a constant speed engine as installed can be used either solely for main propulsion or auxiliary purposes, then that engine should be certified to both the E2 and D2 cycles.~~

~~(e) Where a generator is also permanently fitted or coupled to main engine propulsion shafting then certification of that main engine using only the E2 or E3 cycle, as appropriate, is required.~~

Note:

1. This UI is to be uniformly implemented from 19 May 2005.
2. Rev.1 of this UI is to be uniformly implemented when an application for certification of an engine is dated on or after 1 July 2018.

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