TÜRK LOYDU RULE CHANGE SUMMARY

TL NUMBER: 02/2019 MAY 2019

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 2
02	Section 3
03	Annex A

CHAPTER 1 - HULL

No	Item
01	Section 03
02	Section 10
03	Section 14

04	**Section 15**
05	**Section 16**
06	**Section 18**
07	**Section 26**
08	**Section 28**
09	**Section 29**

CHAPTER 3 – WELDING

No	**Item**
01	**Section 2**
02	**Section 5**
03	**Section 12**

CHAPTER 4 - MACHINERY

No	**Item**
01	**Section 2**
02	**Section 16**
03	**Section 19**
04	**Section 20**

CHAPTER 5 – ELECTRICAL INSTALLATION

No	**Item**
01	**Section 1**
02	**Section 9**

CHAPTER 9 – RULES FOR CONSTRUCTION AND CLASSIFICATION OF YACHTS

No	**Item**
01	**Section 10**

CHAPTER 10 – LIQUEFIED GAS TANKERS

No	Item
01	Section 04
02	Section 05
03	Section 07
04	Section 08
05	Section 11
06	Section 13
07	Section 18

CHAPTER 11 – FIRE FIGHTING SHIPS

No	Item
01	Section 01

CHAPTER 25 – MACHINERY CONDITION MONITORING

No	Item
01	Section 01
02	Section 02
03	Section 03
04	Section 04

CHAPTER 35 – TENTATIVE RULES FOR SHIPS LESS THAN 500 GT

No	Item
01	Section B-5

CHAPTER 36 – OFFSHORE SERVICE VESSELS

No	Item
01	Section 01

CHAPTER 76 – ENVIRONMENTAL SERVICE SYSTEM

No	Item
01	Section 02

CHAPTER 78 – RULES FOR CLASSIFICATION OF SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUEL

No	Item
01	Section 11
02	Section 12
03	Section 15

CHAPTER 105 – Naval Ship Technology, Electrical Installations

No	Item
01	Section 04

CHAPTER 106 – Naval Ship Technology, Automation

No	Item
01	Section 03

ADDITIONAL RULE – SURVEY and CERTIFICATION RULES ON ENERGY EFFICIENCY OF SHIPS (MARPOL 73/78 ANNEX VI, CHAPTER 4)

No	Item
01	General

TL-I COLREG

No	Item
01	General

Note: *In addition to below indicated revisions, all IACS resolutions (UR, UI, PR) and recommendations referenced from TL Rules were replaced by TL equivalent resolutions (TL-R, TL-I, TL-PR) and guidelines (TL-G). It is important to note that these changes were not indicated in TL Rules and in this Rule Change Summary.*

CLASSIFICATION AND SURVEYS

01. Section 2 – Classification

Revision Date: May 2019

Entry into Force Date: 1 July 2019

A new paragraph was added as Item A.2.2.7 as below:

2.2.7 TL Requirements (TL-Rs), Interpretations (TL – Is) , Procedural Requirements (TL-PRs) and Guidelines (TL-Gs) referenced by TL Rules are prepared by embedding IACS Unified Requirements (IACS URs), IACS Unified Interpretations (IACS UIs), IACS Procedural Requirements (IACS PRs) and IACS Recommendations (IACS Recs). In order to have consistency, numbering of the above mentioned TL publications are therefore set as the same with IACS Resolutions and Recommendations.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.3.3.1.1.3 is revised according to PR1A Rev.6 as below:

3.3.1.1.3 ……. inspection of a representative number of ballast spaces and cargo spaces, except for: ~~holds and/or cargo tanks, as applicable.~~

- For gas carriers, in lieu of internal inspection of cargo spaces, the following applies:

  - Inspection of ~~representative~~ surrounding balast tank(s) and void spaces ~~surrounding cargo tanks~~, including external inspection of ~~the~~ independent cargo tank(s) and ~~its~~ associated supporting systems as far as possible;

  - Review of cargo log books and operational records to verify the correct functioning of the cargo containment system.

- For chemical carriers of 10 years of age and above but less than 15 years of age, in lieu of an internal inspection of cargo tanks without internal stiffening and framing, inspections of surrounding ballast tank(s) and void spaces and deck structure, are to be applied.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.2.13 is revised as below:

2.13 Recommendations and Memoranda

Recommendations

Any defect and/or deficiency affecting the class and to be dealt with within a specific period of time is indicated as a recommendation. Recommendation is pending until it is cleared. Where it is not cleared by its limit date, the recommendation is overdue.

Memoranda

Any defect and/or deficiency, not affecting the maintenance of class, or any other information deemed noteworthy is indicated as a memorandum. Memoranda are not to be regarded as recommendations.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.3.2.3 is revised as below:

3.2.3 Under "exceptional circumstances" as defined in 2.9, TL may grant an extension not exceeding three (3) months to allow for completion of the Class Renewal Survey provided that the vessel is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out:

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

A new item C.5.2.7 was added as below:

5.2.7 **TL** may suspend the ship's class with immediate effect in case repairs, alterations or conversions affecting the class are carried out either without requesting the attendance of **TL** or not to the satisfaction of the Surveyor.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

New paragraph was added to end of item D.1.1 as below:

For a vessel with purpose, function or feature not covered by existing notations, a descriptive notation may be given with no associated class requirements. The descriptive notation may be assigned upon request to the **TL** and identified by use of " symbol e.g. "FLOATING FACILITY".

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.5.5 was revised as D.3.5.6 and D.3.5.5 was added as below:

3.5.5 Battery systems

Class Notation	Description	Application	Rule Requirement, Design	Rule Requirement, Survey
Li-BATTERY	For ships, Lithium batteries used for propulsion and/or electric power supply purpose during ship operation.	Ships installed with Lithium batteries used for propulsion and/or electric power supply purpose.	Guidelines for the Certification, Installation and Testing of Lithium Batteries	

~~3.5.5~~ 3.5.6 Novel designs

02. Section 3 – Surveys

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items A.4.4.5, 4.4.6 and 4.4.7 were added and existing items renumbered accordingly as below:

4.4.5 **TL** may credit inspections presented by the qualified Chief Engineer based on documented maintenance history for Continuous Class Renewal (machinery).

4.4.6 Following items cannot be inspected by the Chief Engineer but to be exclusively surveyed by **TL** Surveyor:

- Tanks forming part of the vessel's hull structure
- Steam boilers, steam generators, thermal oil boilers, exhaust boilers
- Air bottles and other pressure vessels
- Reduction gears
- Propeller shafts, intermediate shafts
- CPP system OD box
- Line shafting bearings
- Stern tubes and bearings, metal liners, sealing arrangements
- NDT controls

4.4.7 During the period of class regardless of the types of inspections carried out by the Chief Engineer at least 50% of all identical machinery is to be presented to **TL** Surveyor in such a way that he is fully able to ascertain the condition of the components. As a matter of principle, same machinery items shall not be examined twice by the Chief Engineer during two consecutive five-year cycle.

4.4.8 Continuous Class Renewal (machinery) survey items may be postponed by attending surveyor subject to operational test and supporting documentation (i.e. PMS records) up to 3 months upon written request received from the owner.

Postponement of machinery items within the scope of Continuous Class Renewal (machinery) can only be accepted if following requirements are fulfilled:

- A running trial of machinery as witnessed by the surveyor (See note 1). In case this is not available due to missing spares, running trial of stand-by machinery is acceptable provided that a recommendation for non-functional machinery is raised. (See note 2)
- Verification of machinery logs against manufacturer's limits. (See note 2)

Note:

1. Postponement without attendance onboard may only be granted by TL Head Office with Head Office Statement.

2. In case the running trials of machinery are not found satisfactory or operation logs are outside the allowable limits by the manufacturer, a complete examination of machinery items shall be requested..

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.4.5 was revised according to UR Z20 Rev.1 as below:

~~**4.5 Continuous class renewal surveys based on preventive maintenance systems**~~

~~**4.5.1** On owners' application, an optimized continuous class renewal system may be agreed on as outlined below for ships the machinery of which is maintained with the aid of an approved, computerassisted maintenance system.~~

~~**4.5.2** Owners will introduce a preventive maintenance system (Planned Maintenance System) comprising at least the survey scopes/systems as covered by the normal continuous class renewal system.~~

~~**4.5.3** This maintenance system will have to be approved by TL, to this effect; owners will submit the following documentation, in English or Turkish:~~

~~- Detailed description of the system, indicating the information flows,~~

~~- List of components/systems to be covered by the optimized continuous class renewal system (Inventory Content),~~

~~- Indication of intervals for each of the maintenance measures in general,~~

~~- List of maintenance intervals and of the expected lifetime of the main and auxiliary machinery components essential for operation, taking into account manufacturers' recommendations and specific operational requirements,~~

~~- List of instructions (Maintenance Procedures) underlying the maintenance concept,~~

~~- Maintenance documentation (reports containing important operational information, component condition, offset sheets, measures carried out),~~

~~- Documentation on the maintenance strategy applied prior to filing of the application.~~

~~**4.5.4** Within the scope of a shipboard survey the TL Surveyor will have to confirm that:~~

~~- The current maintenance system complies with the approved documentation,~~

~~- The current maintenance system takes into account, without reservation, the specific service conditions,~~

~~- The maintenance documentation permits conclusions to be drawn as to be construction condition and operability of the machinery,~~

~~- The personnel in charge of operation of the machinery are properly qualified and hold the necessary qualification certificates.~~

4.5 Planned maintenance scheme (PMS) for machinery

4.5.1 General

4.5.1.1 Application

4.5.1.1.1 These requirements apply to an approved Planned Maintenance Scheme for Machinery (PMS) as an alternative to the Continuous Machinery Survey (CMS).

4.5.1.1.2 It considers surveys to be carried out on the basis of intervals between overhauls recommended by manufacturers, documented operator's experience and a condition monitoring system, where fitted.

4.5.1.1.3 This scheme is limited to components and systems covered by CMS.

4.5.1.1.4 Any items not covered by PMS shall be surveyed and credited in the usual way.

4.5.1.2 Maintenance Intervals

4.5.1.2.1 In general, the intervals for PMS shall not exceed those specified for CMS. However, for components where the maintenance is based on running hours longer intervals may be accepted as long as the intervals are based on the manufacturer's recommendations.

4.5.1.3 Onboard responsibility

4.5.1.3.1 The chief engineer shall be the responsible person on board in charge of the PMS.

4.5.1.3.2 Documentation on overhauls of items covered by the PMS shall be reported and signed by the chief engineer.

4.5.1.3.3 Access to computerized systems for updating of the maintenance documentation and maintenance program shall only be permitted by the chief engineer or other authorized person.

4.5.2 Procedures and conditions for approval of a PMS

4.5.2.1 System Requirements

4.5.2.1.1 The PMS shall be programmed and maintained by a computerized system. However, this may not be applied to the current already approved schemes.

4.5.2.1.2 The system shall be approved in accordance with a procedure of TL.

4.5.2.1.3 Computerized systems shall include back-up devices, such as disks/tapes, CDs, which are to be updated at regular intervals.

4.5.2.2 Documentation and information

4.5.2.2.1 The following documentation shall be submitted for the approval of the scheme:

(i) organization chart identifying areas of responsibility

(ii) documentation filling procedures

(iii) listing of equipment to be considered by classification in PMS

(iv) machinery identification procedure

(v) preventive maintenance sheet(s) for each machine to be considered

(vi) listing and schedule of preventive maintenance procedures

4.5.2.2.2 In addition to the above documentation the following information shall be available on board:

(i) all clauses in 4.5.2.2.1 in an up-to-date fashion

(ii) maintenance instructions (manufacturer's and shipyard's)

(iii) reference documentation (trend investigation procedures etc.)

(iv) records of maintenance including repairs and renewals carried out

4.5.2.3 Approval validity

4.5.2.3.1 When the PMS is approved a "Certificate of Approval for Planned Maintenance Scheme" is issued. However, other equivalent certification or class notation may be issued according to the procedure in use in TL. In any case, the certification is to be kept on board.

4.5.2.3.2 An implementation Survey shall be carried out to confirm the validity of the certificate/class notation (see 4.5.3.1).

4.5.2.3.3 An annual report covering the year's service, including the information as required under the clauses (iii) and (v) as well as the information on changes to other clauses in 4.5.2.2.1, shall be reviewed by TL.

4.5.2.3.4 An Annual Audit shall be carried out to maintain the validity of the PMS (see 4.5.3.2).

4.5.2.3.5 The survey arrangement for machinery under PMS can be cancelled by TL if PMS is not being satisfactorily carried out either from the maintenance records or the general condition of the machinery, or when the agreed intervals between overhauls are exceeded.

4.5.2.3.6 The case of sale or change of management of the ship or transfer of class shall cause the approval to be reconsidered.

4.5.2.3.7 The shipowner may, at any time, cancel the survey arrangement for machinery under PMS by informing TL in writing and for this case the items which have been inspected under the PMS since the last annual survey can be credited for class at the discretion of the attending surveyor.

4.5.3 Surveys

4.5.3.1 Implementation Survey

4.5.3.1.1 The Implementation Survey shall be carried out by TL's surveyor within one year from the date of approval of the PMS.

4.5.3.1.2 During the implementation survey the following shall be verified by a surveyor to ensure:

(i) the PMS is implemented according to the approval documentation and is adapted to the type and complexity of the components/system on board

(ii) the PMS is producing the documentation required for the Annual Audit and the requirements of surveys and testing for retention of class are complied with

(iii) the onboard personnel is familiar with the PMS

4.5.3.1.3 When this survey is carried out and the implementation is found in order, a report describing the PMS shall be submitted to TL and the approved PMS may replace the CMS.

4.5.3.2 Annual Audit *

4.5.3.2.1 An annual audit of the PMS shall be carried out by TL's surveyor and preferably concurrently with the annual survey of machinery.

4.5.3.2.2 The surveyor shall review the annual report or verify that it has been reviewed by TL.

4.5.3.2.3 The purpose of this survey shall be to verify that the scheme is being correctly operated and that the machinery has been functioning satisfactorily since the previous survey. A general examination of the items concerned shall be carried out.

4.5.3.2.4 The performance and maintenance records shall be examined to verify that the machinery has functioned satisfactorily since the previous survey or action has been taken in response to machinery operating parameters exceeding acceptable tolerances and the overhaul intervals have been maintained.

4.5.3.2.5 Written details of break-down or malfunction shall be made available.

4.5.3.2.6 Description of repairs carried out shall be examined. Any machinery part, which has been replaced by a spare one, due to damage, is to be retained on board - where possible - until examined by TL's Surveyor.

4.5.3.2.7 Upon satisfactory completion of the above requirements, TL shall retain the PMS.

Note: * The term audit , in this context, is not related to ISM audit.

4.5.3.3 Damage and repairs

4.5.3.3.1 The damage of components/machinery shall be reported to TL. The repairs of such damaged components / machinery shall be carried out to the satisfaction of TL's surveyor.

4.5.3.3.2 Any repair and corrective action regarding machinery under PMS system shall be recorded in the PMS logbook and repair verified by TL's surveyor at the Annual Audit.

4.5.3.3.3 In the case of overdue outstanding recommendations or a record of unrepaired damage which would affect the PMS the relevant items shall be kept out of the PMS until the recommendation is fulfilled or the repair is carried out

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.4.6 was revised according to UR Z18 Rev.8 as below:

Machinery or equipment, which is subject to a Condition Monitoring System, may be surveyed in line with the requirements and prerequisites described in "Chapter 25 - Machinery Condition Monitoring" (TL-R Z27). Prerequisite for this Class Renewal Survey Arrangement CM is the existence of a computerized Planned Maintenance System (PMS). The elements of the PMS considering the machinery components or part of them covered by Condition Monitoring are to be approved by **TL**. ~~For more details about "Planned Maintenance Scheme (PMS)" see also TL-R Z20.~~

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Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.8.5 was revised as below:

In any kind of survey, i.e. class renewal, intermediate, annual or other surveys having the scope of the foregoing ones, thickness measurements, when required ~~in general by Table 3.3 or~~ according to ship type by Table 3.6, Table 3.26, Table 3.10, Table 3.13, Table 3.18, Table 3.23, Table 3.17 of structures in areas where close-up surveys are required, shall be carried out simultaneously with close-up surveys.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 3.12 sheet 1 was revised as below:

Class renewal survey No.1 Age ≤ 5	**Class renewal survey No.2 5 < Age ≤ 10**	**Class renewal survey No.3 10 < Age ≤ 15**	**Class renewal survey No.4 and subsequent 15 < Age**
One transverse web with associated plating and longitudinals in two representative water ballast tanks of each type. (This is to include the foremost topside and double side water ballast tanks on either side). **(A)**	One transverse web with associated plating and longitudinals as applicable in each water ballast tank. **(A)** Forward and aft transverse bulkhead, including stiffening system in a transverse section including topside, hopper side and double side ballast tanks. on one side of the ship (i.e. port or starboard). **(A)** 25% of ordinary transverse ~~web~~ frames for transverse framing systems or 25% of longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in the foremost double-side tanks. **(B)**	All transverse webs with associated plating and longitudinals as applicable in each water ballast tank. **(A)** All transverse bulkheads, including stiffening system in each water ballast tank. **(A)** 25% of ordinary transverse ~~web~~ frames for transverse framing systems or 25% of longitudinals for longitudinal framing systems on side shell and inner side plating at forward, middle and aft parts in all double-side tanks. **(B)**	All transverse webs with associated plating and longitudinals as applicable in each water ballast tank. **(A)** All transverse bulkheads, including stiffening system in each water ballast tank. **(A)** All ordinary transverse ~~web~~ frames for transverse framing system or all of longitudinals for longitudinal framing system on side shell and inner side plating at forward, middle and aft parts, in all double side tanks. **(B)** Areas **(C) – (E)** as for age interval 10 to 15 years.
(A), (B), (C), (D) *and* **(E)** *are areas to be subjected to close-up surveys and thickness measurements.*			

(A) *Transverse web frame or watertight transverse bulkhead in topside, hopper side and double side ballast tanks. In fore and aft peak tanks transverse web frame means a complete transverse web frame ring including adjacent structural members.*

(B) *Ordinary transverse frame in double side tanks.*

(C) *Cargo hold transverse bulkhead plating, stiffeners and girders.*

(D) *Cargo hold hatch covers and coamings. Subject to cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures.*

(E) *Deck plating and underdeck structure inside line of hatch openings between cargo hold hatches.*

Note: *Close-up survey of transverse bulkheads to be carried out at four levels:*

Level (a) *Immediately above the inner bottom and immediately above the line of gusset (if fitted) and shedders for ships without lower stool.*

Level (b) *Immediately above and below the lower stool shelf plate (for those ships fitted with lower stools), and immediately above the line of the shedder plates.*

Level (c) *About mid-height of the bulkhead.*

Level (d) *Immediately below the upper deck plating and immediately adjacent to the upper wing tank, and immediately below the upper stool shelf plate for those ships fitted with upper stools, or immediately below the topside tanks.*

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Footnote (D) of Table 3.12 sheet 2 was revised as below:

(D) *Cargo hold hatch covers and coamings. Subject to cargo hold hatch covers of approved design which structurally have no access to the internals, close-up survey/thickness measurement shall be done of accessible parts of hatch covers structures.*

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item K.2.1.1 was revised as below:

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Intermediate surveys in floating docks will be carried out about 2.5 years (+/- 6 months), but not later than 3 years, 5 years after commissioning and after each class renewal.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item K.2.3 and 2.4 were added as below:

2.3 Bottom Survey

2.3.1 Floating Docks are generally to be subjected to a bottom survey once during the class period.

2.3.2 The Owner is to notify the TL whenever the outside of the ship's bottom and related items can be examined in drydock or on a slipway.

2.3.3 When a floating dock is in drydock or on a slipway, it is to be placed on blocks of sufficient height and with the necessary staging to permit the examination of elements such as bottom and shell plating.

2.3.4 Sea chests and their gratings, sea connections and overboard discharge valves and cocks and their fastenings to the hull or sea chests are to be examined.

2.3.5 Dry dockings or bottom surveys with the dock in inclined position will be confined to particular cases (averages, leakages, etc.) upon agreement between owners/operators and **TL**.

2.4 In-water surveys

2.4.1 Bottom surveys may in general be permitted while the ship is afloat.

2.4.2 The owner is to make a written request for bottom surveys to be carried out while the ship is afloat.

2.4.3 The final permission of in-water survey will be given by **TL** Head Office by taking into account floating dock's:

- age,
- current condition,
- previous survey reports and
- shell structure (e.g. rivetted)

2.4.4 The requirements set out in E.3 are to be applied for in-water surveys of floating docks.

03. Annex A – Applicable Sections for Bulk Carriers and Double Hull Oil Tankers with CSR Notation

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.5.5 was revised as D.3.5.6 and D.3.5.5 was added as below:

Sub-section	Paragraph	subparagraph	Sentence	Applicable to CSR Vessels	Remarks
SECTION 1: GENERAL TERMS AND CONDITIONS					
A. GENERAL	-			Y	
B. PROVISO	-			Y	
C. PROTECTIVE RIGHTS	-			Y	
D. FEES	-			Y	
E. PAYMENT OF INVOICES	-			Y	
F. CONFIDENTIALITY	-			Y	

Sub-section	Paragraph	subparagraph	Sentence	Applicable to CSR Vessels	Remarks
G. RESPONSIBILITY AND LIABILITY	-			Y	
H. APPLICABLE LAW AND JURISDICTION	-			Y	
I. RULES	-			Y	
SECTION 2: CLASSIFICATION					
A. GENERAL PRINCIPLES	1. Definitions			Y	
	2. Classification Process			Y	
B. ASSIGNMENT AND TRANSFER OF CLASS	1. General			Y	
	2. Assignment of Class to a New Ship			Y	
	3. Transfer of Class			Y	
	4. Register			Y	
	5. Transfer of Class at Vessel's Delivery			Y	
C. RETENTION OF CLASS	1. General Requirements			Y	
	2. Definitions			Y	
	3. Survey Procedure			Y	
	4. Class Certificate			Y	
	5. Suspension, Reinstatement and Withdrawal of Class			Y	
	6. Change of Ownership			Y	
	7. Lay-up and Re-Commissioning			Y	
D. CLASSIFICATION NOTATIONS	1. General	1.1		Y	
		1.2		Y	
	2. Mandatory Class Notations	2.1 General		Y	
		2.2 Construction symbols	2.2.1	Y	
			2.2.2	Y	
			2.2.3	Y	
			2.2.4	Y	
		2.3 Character of class	2.3.1 Hull	Y	
			2.3.2 Machinery	Y	
		2.4 Service area notations		N	.
		2.5 Ship types		N	Table 2.4a and Table 2.7 as applicable are to be applied
		2.6 Survey scheme		Y	
		2.7 Damage stability		Y	
		2.8 Yachts		N	
		2.9 Multi-point mooring system		N	
	3. Optional Class	3.1 General		Y	

Sub-section	Paragraph	subparagraph	Sentence	Applicable to CSR Vessels	Remarks
	Notations	3.2 Class notations related to cargo	3.2.1 Carriage of dangerous goods	Y	
			3.2.2 Special strengthening	N	
		3.3 Class notations related to service area		Y	
		3.4 Class notations related to survey schemes		Y	
		3.5 Class notations related to design features	3.5.1 Material	N	
			3.5.2 Bridge design on seagoing ships	Y	
			3.5.3 Environmental standards	Y	
			3.5.4 Fuel cell systems	Y	
			3.5.5 Battery systems	Y	
			3.5.6 Novel designs	N	
		3.6 Class notations related to equipment and systems		Y	
		3.7 Class notations related to helicopter operations		Y	
		3.8 Class notations related to habitability		Y	
		3.9 Laid-Up Ships		Y	
		3.10 Domestic Service		N	
		3.11 Maximum permissible draught		N	
		3.12 Compliance with relevant rules or directives		N	
		3.13 Selective Catalytic Reduction Systems		Y	
		3.14 Ships Using Gases or Other Low-Flashpoint Fuels		Y	
		3.15 Additional Notations (Offshore Service Vessels)		N	
E. CERTIFICATION OF MATERIALS, MACHINERY AND EQUIPMENT	1. General			Y	
	2. Requirements to be Met by the Manufacturer			Y	

Sub-section	Paragraph	subparagraph	Sentence	Applicable to CSR Vessels	Remarks
	3. Certification Procedure			Y	
F. ALTERNATIVE CERTIFICATION SCHEME	1. General			Y	
	2. Scope			Y	
	3. Conditions			Y	
	4. Information to be Submitted			Y	
	5. Audit Procedure			Y	
SECTION 3: SURVEYS					
A. GENERAL REQUIREMENTS	1. Definitions			Y	
	2. Periodical Surveys			Y	
	3. Documentation			Y	
	4. Survey Schedules			Y	
	5. Conditions and Preparations for Surveys and Maintenance of Surveys			Y	
	6. Access to Structures			Y	
	7. Work at Height			Y	
	8. Survey Extent			Y	
	9. Repair of Structural Damage			Y	
	10. Surveys in Accordance With Flag State Regulations			Y	
	11. External Service Suppliers			Y	
	12. Calibration of measuring equipment			Y	
	13. Survey Programme			Y	
	14. Remote Inspection Techniques (RIT)			N	
B. ANNUAL SURVEYS	1. General			Y	
	2. Review of Documentation			Y	
	3. Hull and Equipment			Y	
	4. Machinery and Systems			Y	
C. INTERMEDIATE SURVEYS	1. General			Y	
	2. Documentation on Board Ships			Y	
	3. Hull and Equipment			Y	
	4. Machinery and Systems			Y	
D. CLASS RENEWAL SURVEYS	1. General			Y	
	2. Hull and Equipment			Y	
	3. Machinery and Systems			Y	
E. BOTTOM SURVEY	1. General			Y	
	2. In-Water Surveys			Y	
F. PROPELLER SHAFT SURVEY	1. Propeller Shafts and Tube Shafts			Y	
	2. Propellers			Y	

Sub-section	Paragraph	subparagraph	Sentence	Applicable to CSR Vessels	Remarks
	3. Other Systems			Y	
G. BOILER SURVEY	1. External Inspection			Y	
	2. Internal Inspection			Y	
	3. Extraordinary Inspection			Y	
	4. Steam Pipes			Y	
H. THERMAL OIL HEATER SURVEY	1. External Inspection			Y	
	2. Internal Inspection			Y	
I. SURVEY AND TESTING OF PRESSURIZED SYSTEMS	1. General			Y	
	2. Supplementary Testings			Y	
	3. CO2 Low-Pressure Fire Extinguishing Systems			Y	
J. THICKNESS MEASUREMENTS AND CORROSION TOLERANCES	1. General			Y	
	2. Authorization			Y	
	3. Scope of Measurements			Y	
	4. Corrosion and Wear Tolerances	4.1		N	
		4.2 Longitudinal strength		N	
		4.3 Local strength		N	
		4.4. Anchor equipment		Y	
		4.5 High Speed craft		N	
K. SURVEYS FOR SPECIAL SHIP TYPES	(All)	(All)		N	
L. ADDITIONAL SAFETY MEASURES FOR BULK CARRIERS	1. Strength Evaluation of the Foremost Cargo Hold			N	
	2. Damage Stability Requirements			N	
	3. Cargo Hold Hatch Cover Securing Arrangements			N	
	4. Side Shell Frames and Brackets			N	
	5. Strength and Securing of Small Hatches on Exposed Fore Deck			N	
	6. Strength of for Deck Fittings and Equipment			N	
	7. Restriction from Sailing With any Hold Empty			N	
M. SURVEY OF ELECTRIC EQUIPMENT INSTALLED IN HAZARDOUS AREAS ON TANKERS	1. Application			Y	
	2. General Requirements			Y	
	3. Surveys on New Construction			Y	
	4. Surveys on Ships in Service			Y	

Y :Yes
N : No
CSR : TL Common Structural Rules for Bulk Carriers and Oil Tankers

PART A – CHAPTER 1 - HULL

01. Section 3 – Design Principles

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.2.3.4.2 was revised according to IACS UR S6 Rev.9 as below:

2.3.4.2 For ships intended to operate permanently in areas with low air temperatures (below ~~and including~~ -10°C, e.g. regular service during winter seasons to Arctic or Antarctic waters), the materials in exposed structures are to be selected based on the design temperature t_D, to be taken as defined in 2.3.4.5.

Materials in the various strength members above the lowest ballast water line (BWL) exposed to air (including the structural members covered by the Note (6) of Table 3.10) and materials of cargo tank boundary plating for which 2.3.4.6 is applicable are not to be of lower grades than those corresponding to Classes I, II and III, as given in Table 3.10, depending on the categories of structural members (SECONDARY, PRIMARY and SPECIAL). For non-exposed structures (except as indicated in Note (6) of Table 3.10) and structures below the lowest ballast water line, 2.3.2 and 2.3.3 apply.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 3.10 was revised according to IACS UR S6 Rev.9 as below:

Structural member category	Material class	
	Within 0.4L amidships	Outside 0.4L amidships
SECONDARY : - Deck plating exposed to weather, in general - Side plating above BWL **(5)** - Transverse bulkheads above BWL **(5)(6)** - Cargo tank boundary plating exposed to cold cargo **(7)**	I	I
PRIMARY: - Strength deck plating **(1)** - Continuous longitudinal members above strength deck, excluding longitudinal hatch coamings - Longitudinal bulkhead above BWL **(5) (6)** - Top wing tank plating above BWL **(5) (6)**	II	I
SPECIAL : - Sheer strake at strength deck **(2)** - Stringer plate in strength deck **(2)**	III	II

- Deck strake at longitudinal bulkhead **(3)** - Continuous longitudinal hatch coamings **(4)**		

(1) *Plating at corners of large hatch openings to be specially considered. Class III or grade E/EH to be applied in positions where high local stresses may occur.*

(2) *Not to be less than grade E/EH within 0.4L amidships in ships with length exceeding 250 meters.*

(3) *In ships with breadth exceeding 70 meters at least three deck strakes to be of class III.*

(4) *Not to be less than grade D/DH..*

(5) *BWL = ballast water line.*

(6) *Applicable to plating attached to hull envelope plating exposed to low air temperature. At least one strake is to be considered in the same way as exposed plating and the strake width is to be at least 600 mm.*

(7) *For cargo tank boundary plating exposed to cold cargo for ships other than liquefied gas carriers, see 2.3.4.6*

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.2.3.4.6 was added according to IACS UR S6 Rev.9 as below:

2.3.4.6 For ships other than liquefied gas carriers, intended to be loaded with liquid cargo having a temperature below -10° C, e.g. loading from cold onshore storage tanks during winter conditions, the material grade of cargo tank boundary plating is defined in Table 3.11 based on the following:

- t_c design minimum cargo temperature in °C
- steel grade corresponding to Class I as given in Table 3.10

The design minimum cargo temperature, tc is to be specified in the loading manual.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 3.11 was revised according to IACS UR S6 Rev.9 as below:

Class I					
Plate thickness [mm]	**t_D -11 / -15 °C**	**t_D -16 / -25 °C**	**t_D -26 / -35 °C**	**t_D -36 / -45 °C**	**t_D -46 / -55 °C**
t ≤ 10	A / AH	A / AH	B / AH	D / DH	D / DH
10 < t ≤ 15	A / AH	B / AH	D / DH	D / DH	D / DH
15 < t ≤ 20	A / AH	B / AH	D / DH	D / DH	E / EH
20 < t ≤ 25	B / AH	D / DH	D / DH	D / DH	E / EH
25 < t ≤ 30	B / AH	D / DH	D / DH	E / EH	E / EH
30 < t ≤ 35	D / DH	D / DH	D / DH	E / EH	E / EH
35 < t ≤ 45	D / DH	D / DH	E / EH	E / EH	FH

45 < t ≤ 50	D / DH	E / EH	E / EH	FH	FH
Class II					
Plate thickness [mm]	**t_D -11 / -15 °C**	**t_D -16 / -25 °C**	**t_D -26 / -35 °C**	**t_D -36 / -45 °C**	**t_D -46 / -55 °C**
t ≤ 10	A / AH	B / AH	D / DH	D / DH	E / EH
10 < t ≤ 20	B / AH	D / DH	D / DH	E / EH	E / EH
20 < t ≤ 30	D / DH	D / DH	E / EH	E / EH	FH
30 < t ≤ 40	D / DH	E / EH	E / EH	FH	FH
40 < t ≤ 45	E / EH	E / EH	FH	FH	
45 < t ≤ 50	E / EH	E / EH	FH	FH	
Class III					
Plate thickness [mm]	**t_D -11 / -15 °C**	**t_D -16 / -25 °C**	**t_D -26 / -35 °C**	**t_D -36 / -45 °C**	**t_D -46 / -55 °C**
t ≤ 10	B / AH	D / DH	D / DH	E / EH	E / EH
10 < t ≤ 20	D / DH	D / DH	E / EH	E / EH	FH
20 < t ≤ 25	D / DH	E / EH	E / EH	E / FH	FH
25 < t ≤ 30	D / DH	E / EH	E / EH	FH	FH
30 < t ≤ 35	E / EH	E / EH	FH	FH	
35 < t ≤ 40	E / EH	E / EH	FH	FH	
40 < t ≤ 50	E / EH	FH	FH		

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 3.25 was revised as below:

Table 3.25 Calculated shear stress, in [N/mm^2]

Ships without effective longitudinal bulkheads

for side shell

$$\tau_a = \frac{50\left|Q_s + Q_w\right|}{t}.\frac{S}{I} \quad N/mm^2$$

Ships with two effective longitudinal Bulkheads

for side shell

$$\tau_a = \frac{100\left|(0.5-\varphi)(Q_s + Q_w) + \Delta Q_{sh}\right|}{t}.\frac{S}{I} \quad N/mm^2$$

for longitudinal bulkheads

$$\tau_a = \frac{100\left|\varphi(Q_s + Q_w) + \Delta Q_{bl}\right|}{t}.\frac{S}{I} \quad N/mm^2$$

where,

Q_s = Still water shear forces

Q_w = The wave shear forces,

ΔQ_{sh} = Shear force acting upon the side shell plating due to local loads

ΔQ_{bl} = Shear force acting upon the longitudinal bulkhead plating due to local loads

t = The thickness of side shell/longitudinal bulkhead

S = First moment in cm^3, about the neutral axis, of the area of the effective longitudinal members between the vertical level at which the shear stress is being determined and the vertical extremity of effective longitudinal members, taken at the section under consideration

φ = $0.34 - 0.08 \cdot A_S/A_L$

Ratio of shear force shared by the longitudinal bulkhead to the total shear force

A_S = Area of cross section of the shell within depth **H** $[m^2]$

A_L = Area of cross section of longitudinal bulkhead within the depth **H** $[m^2]$.

I = Moment of inertia in cm^4 about the horizontal neutral axis at the section under consideration

02. Section 10 – Stern Frame

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.6.3 was revised according to IACS UR S10 Rev.5 as below:

.....

$$\tau_T = \frac{10^{-3} \cdot M_T}{2 \cdot F_T \cdot t_H}$$

.....

$$\tau_T = \frac{10^{-3} \cdot M_T}{2 \cdot F_T \cdot t_H}$$

03. Section 14 – Ice Strengthening

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.2.2 was revised according to the Finnish-Swedish Ice Class Rules as below:

2.2 The requirements for the ice class notations **ICE-B4** ÷ **ICE-B1** embody all necessary conditions to be complied with for assignment of the ice classes IC – IA Super according to the Finnish-Swedish Ice Class Rules as amended (14.11.2017 TRAFI / 494131 / 03.04.01.00 / 2016). ~~2010 (23.11.2010 TRAFI / 31298 / 03.04.01.00 / 2010). Reference is also made to the Guidelines for the Application of the Finnish-Swedish Ice Class Rules (see 20.12.2011 TRAFI / 21816 / 03.04.01.01 / 2011).~~

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.2.1, 2.2 and 2.3 were revised according to the Finnish-Swedish Ice Class Rules as below:

2.1 The maximum and minimum ice class draughts at the forward perpendicular ~~amidships~~ and at the aft perpendicular are to be determined in accordance with the upper/lower ice waterlines and ~~are to be stated in the drawings submitted for approval~~ the draught of the ship at fore and aft perpendiculars, when ice conditions require the ship to be ice-strengthened, shall always be between the upper and lower ice waterlines. The ice class draughts, the minimum propulsion machinery output, P, according to C.2, as well as the corresponding ice class, will be stated in the Technical File to the Class Certificate.

.....

2.2 .....

The ship is always to be loaded down at least to the draught of LIWL amidships when navigating in ice. The LIWL is to be agreed upon with the owners. Any ballast tank adjacent to the side shell and situated above the LIWL, and needed to load the ship down to this waterline, is to be equipped with devices to prevent the water from freezing. In determining the LIWL, regard is to be paid to the need for ensuring a reasonable degree of ice-going capability in ballast. The highest point of the propeller is to be ~~fully~~ submerged and if possible at a depth of at least h_i ~~entirely~~ below the ~~ice, if possible~~ water surface in all loading conditions.

2.3 .....

$$T_{min} = h_{\theta i} \cdot (2 + 2.5 \cdot 10^{-4} \cdot D) \quad [m] \quad \text{or}$$

$$T_{min} = 4 \cdot h_{\theta i} \quad [m]$$

D = Displacement of the ship in [t] ~~on the maximum ice class draught according to 2.1~~ determined from waterline on the UIWL. Where multiple waterlines are used for determining the UIWL, the displacement must be determined from the waterline corresponding to the greatest displacement.

$h_{\theta i}$ = Design ice thickness according to D.2.2.1.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

1. Definition of Propulsion Machinery Output

The propulsion machinery output P is the total maximum output the propulsion machinery can continuously deliver to the propeller(s). If the output of the machinery is restricted by technical means or by any regulations applicable to the ship, P is to be taken as the restricted output. If additional power sources are available for propulsion power (e.g. shaft motors), in addition to the power of the main engine(s), they shall also be included in the total engine output.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.2.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

The required propulsion machinery output, P, is to be calculated for ships on both the **UIWL** and the **LIWL**. The propulsion machinery output shall not be less than ~~the greater of these two outputs~~.

.....

C_1, C_2 = Factors to take into account of a consolidated upper layer of the brash ice and can be taken as zero for ice class notations **ICE-B3, ICE-B2, ICE-B1.**

For ice class **ICE-B4**:

$$C_1 = f_1 \frac{\mathbf{B} \cdot L_{PAR}}{2\frac{\mathbf{T}}{\mathbf{B}} + 1} + \left(1 + 0.021\varphi_1\right)$$

$$\cdot (f_2 \cdot B + f_3 \cdot L_{BOW} + f_4 \cdot B \cdot L_{BOW})$$

$$C_2 = (1 + 0.063\varphi_1) \cdot (g_1 + g_2 \cdot \mathbf{B}) + g_3 \left(1 + 1.2\frac{T}{B}\right) \frac{\mathbf{B}^2}{\sqrt{L_{pp}}}$$

C_3 = 845 [kg/m^{2}sn^2]

C_4 = 42 [kg/m^{2}sn^2]

C_5 = 825 [kg/~~m^2~~sn^2]

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.3 was revised according to the Finnish-Swedish Ice Class Rules as below:

3. Other Methods of Determining K_e or R_{CH}

For an individual ship, in lieu of the K_e or R_{CH} values defined in 2, the use of K_e values based on more ~~exact~~ precise calculations or R_{CH} values based on model tests may be approved. The model test report is to be submitted to **TL**.

Such an approval will be given on the understanding that they can be revoked if ~~warranted by the actual~~ experience of the ship's performance ~~of the ship in ice~~ provides ground for this in practice.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.1.4 was revised according to the Finnish-Swedish Ice Class Rules as below:

1.1.4 Forefoot region

Fore foot is (for ice class ICE-B4 only) the shell plating below the ice belt from the stem to a position five main frame spacings abaft of the point where the bow profile departs from the keel line.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.2 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

The frame spacing and spans are normally to be measured in a vertical plane parallel to the centreline of the ship. However, if the ship's side deviates more than 20 ° from this plane, the frame spacing and spans are to be measured along the side of the ship (~~also refer to~~ see Finnish-Swedish Ice Class Rules ~~2010~~ 2017, item 4~~.1~~).

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.2.1.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

2.1.1 The method for determining the hull scantlings is based on certain assumptions concerning the nature of the ice load on the structure. These assumptions are ~~from~~ based on full scale observations made in the northern Baltic.

It has thus been observed that the local ice pressure on small areas can reach rather high values.

This pressure may be well in excess of the normal uniaxial crushing strength of sea ice. ~~The explanation is~~ This is explained by the fact that the stress field is in fact ~~is~~ multiaxial.

Furthermore, it has been observed that the ice pressure on a frame can be higher than on the shell plating at the midspacing between frames. ~~The explanation for~~ This is due to the different flexural stiffness of frames and shell plating. The load distribution is assumed to be as shown in Figure 14.3.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items D.2.1.2 and 2.1.3 were revised according to the Finnish-Swedish Ice Class Rules as below:

.....

Direct analyses are to be carried out using the load patch defined in D.2.2 (p, h and ℓ_a). The pressure to be used is 1.8 p where p is determined according to D.2.2.2. The load patch ~~is to~~ must be applied at locations where the capacity of the structure under the combined effects of bending and shear ~~are~~ is minimized. In particular, the structure ~~is to~~ must be checked with the load centered on the UIWL, $0.5 \cdot h_0$ (Depth of the propeller centreline from lower ice waterline LIWL [m]) below the LIWL, and positioned at several vertical locations in between. Several horizontal locations are also to be checked, especially the locations centered at the mid-span or mid-spacing. Furthermore, if the load length ℓ_a cannot be determined directly from the arrangement of the structure, several values of ℓ_a are to be checked using corresponding values for c_a.

The acceptance criterion for designs is that the combined stresses from bending and shear, when using the von Mises yield criterion, are lower than the yield strength ReH. When the direct calculation is ~~performed using~~ based on beam theory, the allowable shear stress ~~is to~~ must not be greater than $0.9\tau_y$, where $\tau_y = R_{eH} / 3$.

2.1.3 If scantlings derived from the requirements of this section are less than those required for a ship that has not been ice strengthened ~~ship~~, the latter are to be used.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.2.2.1 and Table 14.4 were revised according to the Finnish-Swedish Ice Class Rules as below:

An ice strengthened ship is assumed to operate in open sea conditions corresponding to a level ice thickness not exceeding h_{0i}. The design height h of the area actually under ice pressure at any particular point of time is, however, assumed to be only a fraction of the ice thickness. The values for h_{0i} and h are given in Table 14.4.

Table 14.4 Ice thickness and height of load area

Ice class notation	h_{0i} [m]	h [m]
ICE-B4	1.0	0.35
ICE-B3	0.8	0.30

ICE-B2	0.6	0.25
ICE-B1	0.4	0.22
ICE-B	0.4	0.22

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.2.2.2 and Tables' name of 14.6 and 14.7 were revised according to the Finnish-Swedish Ice Class Rules as below:

.....

$p = c_d \cdot c_{1p} \cdot c_a \cdot p_0$ [N/mm^2]

.....

P = ~~Total maximum output [kW] the propulsion machinery can continuously deliver to the propeller(s), see also C.2.~~ the actual continuous engine output of the ship [kW] available when sailing in ice. If additional power sources are available for propulsion power (e.g. shaft motors) in addition to the power of the main engine(s), they shall also be included in the total engine output used as the basis for hull scantling calculations. The engine output used for the calculation of the hull scantlings shall be clearly stated on the shell expansion drawing. In case of ice class notation ICE-B the maximum output need not to be taken greater than 740 kW.

c_{1p} = A factor which takes account of the probability that the design ice pressure occurs in a certain region of the hull for the ice class in question. The value of c_{1p} is given in the Table 14.6.

Table 14.6 Coefficient c_{1p}

Table 14.7 ~~Effective length~~ Values of ℓ_a for different structural elements

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items D.3.1.2, 3.1.4 and 3.1.4 were revised according to the Finnish-Swedish Ice Class Rules as below:

3.1.2 Side scuttles are not to be situated in the ice belt. If the weather deck ~~in~~ on any part of the ship is situated below the upper limit of the ice belt, see D.1.2 (e.g. in way of the well of a raised quarter decker), the bulwark is to have at least the same strength as is required for the shell in the ice belt. Special consideration has to be given to the design of the freeing ports.

3.1.3 For ships with the ice class notation ICE-B4, the forefoot region according to D.1.1.4 is to ~~have at least the thickness of the midbody~~ be ice-strengthened in the same way as the bow region.

3.1.4 For ships with the ice class notation ICE-B3 or ICE-B4, and with a speed $v_0 \geq 18$ knots, the upper bow ice belt region according to D.1.1.5 is to ~~have at least the thickness of~~ be ice-strengthened in the same way as the

midbody region. A similar strengthening of the bow region is also advisable for a ship with a lower service speed when it is evident that the ship will have a high bow wave, e.g. on the basis of model tests.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

t_c = Allowance for abrasion and corrosion [mm]. Normally t_c is to be 2 mm; if a special surface coating, ~~by experience~~ shown by experience to be capable ~~to~~ of withstanding ~~the~~ abrasion ~~of~~ by ice, is applied and maintained, lower values may be approved.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.4.1.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

4.1.1 Within the ice strengthened area all frames are to be effectively attached to all of the supporting structures.

Longitudinal frames are generally to be attached by brackets to all supporting web frames and bulkheads ~~by brackets~~. Brackets may be omitted with an appropriate increase in the section modulus of the frame (see D.4.4) and with the addition of heel stiffeners (heel stiffeners may be omitted on the basis of direct calculations, subject to approval by TL).

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.4.1.2.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

4.1.2.1 Frames which are asymmetrical, and frames are not at right angles to shell (web less than 90 degrees to the shell) is to be supported against tripping by brackets, intercostals, stringers or similar at a distance not exceeding 1300 mm. For frames with spans greater than 4 m, the extent of antitripping supports must be applied to all regions and for all ice classes.

If the span is less than or equal to 4.0 m, the extent of the supports against tripping are to be applied in the following regions:

ICE-B4 All hull regions
ICE-B3 Bow and midbody regions
ICE-B2 Bow region

ICE-B1 Bow region

Direct calculation methods may be applied to demonstrate the equivalent level of support provided by alternative arrangements.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.4.2 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

Where an upper bow ice belt is required, the ice-strengthened part of the framing shall be extended to at least the top of this ice belt.

Where the ice strengthening would go beyond a deck, the top or bottom plating of a tank or ~~a~~ tank top ~~(or tank bottom)~~ by no more than 250 mm, it can be terminated at that deck, top or bottom plating of a tank or tank top.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

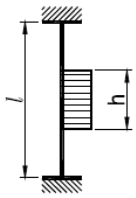
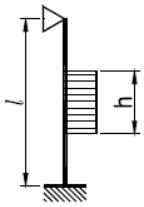
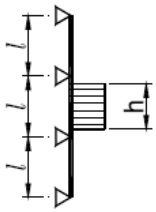
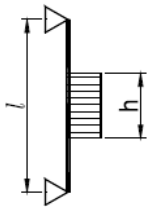
Table 14.8 was revised according to the Finnish-Swedish Ice Class Rules as below:

Ice class notation	Hull region	Above UIWL [m]	Below LIWL [m]
ICE-B4	Bow	1.2	Down to ~~double bottom~~ tank top or below top of floors
	Midbody		2.0
	Stern		1.6
	Upper bow ice belt **(1)**	Up to top of ice belt	
ICE-B3, ICE-B2, ICE-B1	Bow		1.6
	Midbody		1.3
	Stern		1.0
	Upper bow ice belt **(1)**		
ICE-B		1.0	1.0
(1) *If required according to D.1.1.5*			

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 14.9 was revised according to the Finnish-Swedish Ice Class Rules as below:

Boundary condition	m_o	Example
	7	Frames in a bulk carrier with top wing tanks
	6	Frames extending from the tank top to ~~a sigle~~ the main deck of a single-decked vessel
	5.7	Continuous frames between several decks or stringers
	5	Frames extending between two decks only

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items D.4.3.2.1, 4.3.2.2, 4.3.3.1 and 4.3.3.2 were revised according to the Finnish-Swedish Ice Class Rules as below:

4.3.2.1 The upper end of the strengthened part of all frames is to be attached to a deck ~~tanktop (or tank bottom)~~, top or bottom plating of a tank or an ice stringer as per item 5.

4.3.2.2 Where a frame terminates above a deck or stringer which is situated at or above the upper limit of the ice belt, the part above the deck or stringer may have the scantlings required for an unstrengthened ship and the upper end of the intermediate frames may be connected to the adjacent frames by a horizontal member ~~of~~ with the same scantlings as the main frame.

4.3.3.1 The lower end of the strengthened part of all frames is to be attached to a deck, top or bottom plating of a tank, tank top ~~(or tank bottom)~~ or an ice stringer as per item 5.

4.3.3.2 Where an intermediate frame terminates below a deck, top or bottom plating of a tank, tank top ~~(or tank bottom)~~ or ice stringer which is situated at or below the lower limit of the ice belt the lower end may be connected to the adjacent main frames by a horizontal member of the same scantlings as the frames. Note that the main frames below the lower edge of the ice belt is to be ice strengthened, see item D.1.3.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.4.4 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

In calculating the actual shear area of the frames, the shear area of the brackets ~~is~~ should not ~~to~~ be taken into account.

f_4 = 1 – 0.2 h/**a**, Factor which accounts for the distribution of load ~~to~~ over adjacent frames

f_5 = 2,16 Factor which takes into account of the maximum shear force versus the load location and the shear stress distribution

m = Factor to take boundary conditions into account,

= 13,3 for a continuous beam with ~~double end~~ brackets

~~= 11.0 for a continuous beam without double end brackets~~.

Where, e.g. at the ends, the boundary conditions are considerable different from those of a continuous beam with brackets a smaller factor m may be ~~taken~~ required.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.6.2 was revised according to the Finnish-Swedish Ice Class Rules as below:

The section modulus and shear area of the web frames shall be calculated by the formulae:

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 14.10 was revised according to the Finnish-Swedish Ice Class Rules as below:

A_f/A_W	**0.00**	**0.20**	**0.40**	**0.60**	**0.80**	**1.00**	**1.20**	**1.40**	**1.60**	**1.80**	**2.00**
α	1.50	1.23	1.16	1.11	1.09	1.07	1.06	1.05	1.05	1.04	1.04
γ	0.00	0.44	0.62	0.71	0.76	0.80	0.83	0.85	0.87	0.88	0.89
A_f = *Actual cross sectional area of free flange* A_w = *Actual cross sectional area of web plate*											

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.7 was revised according to the Finnish-Swedish Ice Class Rules as below:

.....

The stem and the part of a blunt bow defined above are to be supported by floors or brackets spaced not more than 0.6 m apart and ~~having~~ with a thickness of at least half the plate thickness. The reinforcement of the stem shall extend from the keel to a point 0.75 m above UIWL or, in case an upper bow ice belt is required (D.1.1.5), to the upper limit of this.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.8 was revised according to the Finnish-Swedish Ice Class Rules as below:

8. Stern

8.1 The introduction of new propulsion arrangements with azimuthing ~~or "podded" propellers,~~ thrusters which provide an improved manoeuvrability, will result in increased ice loading of the Stern region and the stern area. This fact is to be considered in the design of the aft/stern structure.

8.2 In order to avoid very high loads on propeller blade tips, the minimum distance between the propeller(s) and the hull (including stern frame) should not be less than h_0 (see D.2.2.1).

8.3 On twin and triple screw ships the ice strengthening of the shell and framing is to be extended to the ~~double bottom~~ tank top for 1,5 m forward and aft of the side propellers.

8.4 Shafting and stern tubes of side propellers are normally to be enclosed within plated bossings. If detached struts are used, due consideration shall be taken of their design, strength and attachment to the hull ~~are to be duly considered~~.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.9.1 was revised according to the Finnish-Swedish Ice Class Rules as below:

9.1 The scantlings of the rudder post, rudder stock, pintles, steering engine, etc. as well as the capability of the steering engine are to be determined according to the requirements for main class. The maximum service speed of the ship to be used in these calculations is not to be given a value lower taken ~~as less~~ than that stated below:

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.9.3 was revised according to the Finnish-Swedish Ice Class Rules as below:

9.3 The local scantlings of rudders are to be determined assuming that the whole rudder belongs to the ice belt (according to D.1.1). Furthermore, the rudder plating and frames are to be designed using the ice pressure p for the plating and frames in the midbody region (refer to item D.2.2.2).

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items D.9.5 and 9.6 were revised according to the Finnish-Swedish Ice Class Rules as below:

9.5 For ice classes **ICE-B4** and **ICE-B3**, due regard is to be paid to the large loads that arise when the rudder is forced out of the midship position ~~while going~~ when sailing astern in ice or into ice ridges. Suitable arrangement such as rudder stoppers shall be installed to absorb ~~these~~ such loads.

9.6 Relief valves for the hydraulic pressure in rudder turning mechanism(s) shall be installed. The components of the steering gear (e.g. rudder stock, rudder coupling, rudder horn etc.) shall be dimensioned to withstand loads causing yield stresses ~~in~~ within the required diameter of the rudder stock.

.....

04. Section 15 – Hatchways

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.1.1 was revised according to IACS UR S21A Rev.1 Corr.2 as below:

1.1 This section is applicable to all ships except bulk carriers, self-unloading bulk carriers, ore carriers and combination carriers (see Section 27, G), as defined in Classification and Surveys, Section 2 item D.2.6 (Table 2.14), and are for all cargo hatch covers and coamings on exposed decks. Special requirements of National Administrations regarding hatchways, hatch covers, tightening and securing arrangements are to be observed.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 15.1 was revised as below:

Application	Structure	t_K [mm]
Weather deck hatches of container ships, car carriers, paper carriers, passenger vessels	Hatch covers	1,0
	Hatch coamings	according to Section 3, B.9
Weather deck hatches of all other ship types (e.g. multi-purpose dry cargo ships)	Hatch covers in general:	2,0
	Weather exposed plating and bottom plating of double skin hatch covers	1,5 ~~(2,0)~~
	Internal structure of double skin hatch covers and closed box girders	1,0 ~~(1,5)~~
	Hatch coamings not part of the longitudinal hull structure	1,5
	Hatch coamings part of the longitudinal hull structure	according to Section 3, B.9
	Coaming stays and stiffeners	1,5
Hatches within enclosed spaces	Hatch covers:	
	- Top plating	1,2
	- Remaining structures	1,0
	Hatch coamings	according to Section 3, B.9 to B.9.3
(1) *The t_K values for load cases 2.3, 2.4 ve 2.5, respectively are to be indicated in the drawings.* ~~**(2)** *The t_K values in brackets are to be applied to bulk carriers according to the definition of IACS Common structural Rules.*~~		

05. Section 16 – Hull Outfittings

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item G.4.9 was revised as below:

.....

Means for safe operation and rigging of such equipment to and from and within the spaces are to be clearly described in the Ship Structure Access Manual. Refer to TL-G90 for the preparation of Ship Structure Access Manual as a guidance.

.....

06. Section 18 – Rudder and Manoeuvring Arrangement

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.3.3.2 was revised according to IACS UR S10 Rev.5 as below:

.....

$$M_{CR1} = C_{R2} \cdot (\ell_{10} - CG_{2z}) \quad [Nm]$$

$$M_{CR2} = C_{R1} \cdot (CG_{1z} - \ell_{10}) \quad [Nm]$$

.....

CG_{1Z} = Vertical position of the centre of gravity of the rudder blade area A_1 from base

CG_{2Z} = Vertical position of the centre of gravity of the rudder blade area A_2 from base

$C_R = C_{R1} + C_{R2}$

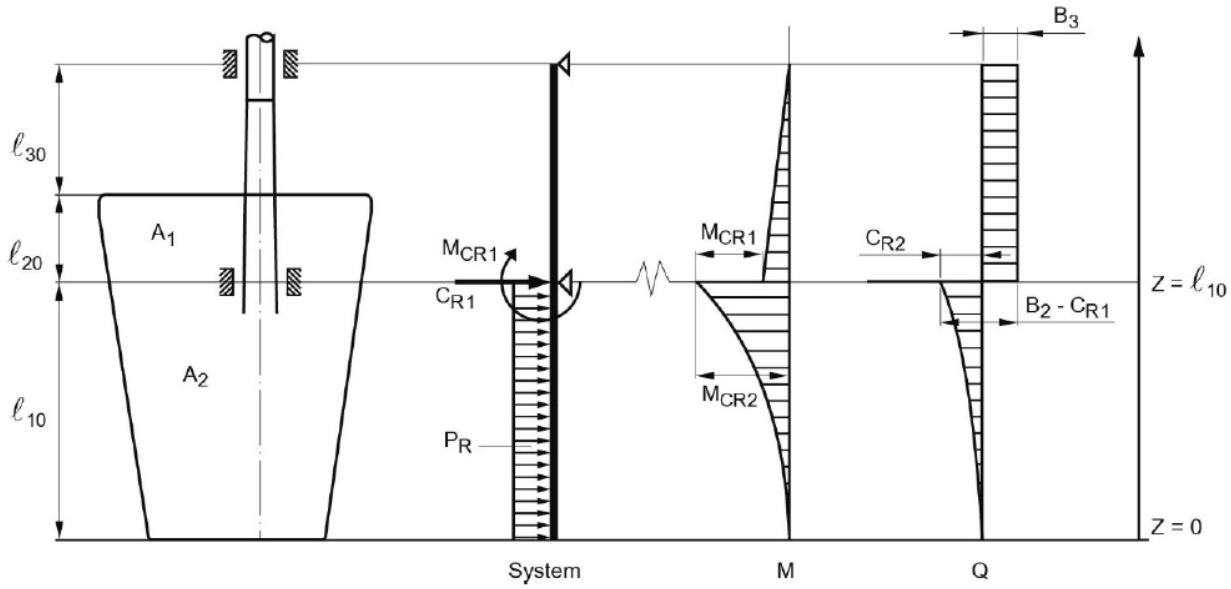
~~$M_B = C_{R2} \cdot (\ell_{10} - CG_{2Z})$~~

$$B_3 = \frac{\text{~~}M_B\text{~~} + M_{CR2} - M_{CR1}}{\ell_{20} + \ell_{30}} \quad [N]$$

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Figure 18.4 was revised according to IACS UR S10 Rev.5 as below:



Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.4.1.1 was revised according to IACS UR S10 Rev.5 as below:

1 The steel used for the rudder trunk is to be of weldable quality, with a carbon content not exceeding 0.23% on ladle analysis ~~and~~or a carbon equivalent C_{EQ} not exceeding 0.41%.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2.3.1 was revised according to IACS UR S10 Rev.5 as below:

.....

$$p_{perm} = \frac{0.95 \cdot R_{eH}(1-\alpha^2)}{\sqrt{3+\alpha^4}} - p_b \quad [N/mm^2]$$

$$p_b = \frac{3.5 \cdot M_b}{d_b l^2} 10^3 \quad [N/mm^2]$$

R_{eH} = Yield point [N/mm^2] of the material of the gudgeon,

α = d_m / d_a

The outer diameter of the gudgeon in mm should not be less than 1.25 d_0, with d_0 defined in Figure 18.9.

~~$d_a = 1{,}5 \cdot d_m$ [mm].~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2.3.2 was revised according to IACS UR S10 Rev.5 as below:

.....

$$\Delta\ell_2 = \frac{p_{perm} \cdot d_m}{E\left[\frac{1-\alpha^2}{2}\right]c} + 0.8\frac{R_{tm}}{c} \quad [mm]$$

Where;

R_{tm} = Mean roughness [mm],

R_{tm} ≈ 0.01 mm,

c = Taper on diameter ~~according to~~ defined in 3.1.1,

E = Young's modulus ($2.06 \cdot 10^5$ N/mm^2).

~~Notwithstanding the above, the push-up length is not to be less than 2 mm.~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2.4 was revised according to IACS UR S10 Rev.5 as below:

3.2.4 The required push-up pressure for pintle ~~bearings~~ is to be determined by the following formula:

.....

B_1 = Supporting force in the pintle ~~bearings~~ [N], see also E.4.3

.....

The push up length is to be calculated similarly as in 3.2.3.2, using required push-up pressure and properties for the pintle ~~bearing~~.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item E.1.5 was revised as below:

1.5 In rudder bodies with cut-outs (semi-spade rudders) the following stress values, applied equally to high tensile and ordinary steels, are not to be exceeded:

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item E.4.1 was revised according to IACS UR S10 Rev.5 as below:

4.1 Solid parts in forged or cast steel, which house the rudder stock or the pintle, are ~~normally~~ to be provided with protrusions, except where not required as indicated below.

07. Section 26 – Stability

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.2.8 was revised as below:

2.8 Ships intended to carry timber deck cargoes

The loading conditions which should be considered for ships carrying timber deck cargoes are specified in 2.7. The stowage of timber deck cargoes should comply with the provisions of Chapter 2 of the Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 2011 (Resolution A.1048(27)).

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.6.4.1 was revised as below:

6.4.1 The deviation of lightship displacement should not exceed 2%. When deviation is evaluated, the 2% should be considered the total of added and removed masses with their positions.

08. Section 28 – Oil Tankers

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.1.1.2 was revised according to IACS UR M76 Rev.1 as below:

1.1.2 On oil and chemical tankers, Carrying liquid cargoes having a flashpoint not exceeding 60°C and/or toxic liquid cargoes*, fuel tanks located with a common boundary to cargo or slop tanks shall not be situated within nor extend partly into the cargo tank block. Such tanks may, however, be situated aft and/or forward ~~at the forward and aft ends~~ of the cargo tank block ~~instead of cofferdams. Fuel tanks shall extend neither fully nor partly into cargo or slop tanks~~. They may ~~however~~ be accepted when located as independent tanks on open deck in the cargo area subject to spill and fire safety considerations. ~~Fuel tanks are not permitted to extend into the protective area of cargo tanks required by MARPOL Annex I and the IBC code. For chemical tankers due attention has to be paid to restrictions on cargoes that can be located adjacent to fuel tanks.~~

The arrangement of independent fuel tanks and associated fuel piping systems, including the pumps, can be as for fuel tanks and associated fuel piping systems located in the machinery spaces. For electrical equipment, requirements to hazardous area classification must however be ~~taken into account~~ met.

(*) For the purpose of this UR, toxic liquid cargoes include those for which toxic vapour detection is specified in column "k" of the table of chapter 17 of the IBC Code

.....

09. Section 29 – TUGS

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.2 was revised as below:

2. Emergency Exits From Machinery Space

~~Emergency exit are to be arranged from engine room to weather deck. The emergency exit is to be capable of being used at extreme angles of inclination. The escape hatch coaming height on the weather deck is to be not less than 600 mm above the deck surface.~~

~~Escape hatch covers are to have hinges fitted such that the predominant direction of green seas will cause the cover to close and are to be capable of being opened and closed watertight from either side.~~

In the engine room an emergency exit is to be provided on or near the centerline of the vessel, which can be used at any inclination of the ship. The cover shall be weather tight and is to be capable of being opened easily from outside and inside. The axis of cover hinges is to run in athwart ship direction.

PART A – CHAPTER 3 - WELDING

01. Section 2 – Requirement for Welding Shops, Approval

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.1.1 was revised as below :

1.1 Shipyards and welding shops, including branches and subcontractors, wishing to perform welding work covered by these Rules are to fulfill welding requirements stated in TL-R Z23 or must have been approved for this work by **TL**. (See Section 12, 13, 14, 15, 16). The preconditions for this approval are that the shops satisfy the requirements under B., have been inspected by **TL** in accordance with C. and, where necessary, have carried out welding procedure tests in accordance with D.

02. Section 5 – Welding Consumables and Auxiliary Materials

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Content of Section 5 was revised as below:

.....

B. COVERED ELECTRODES FOR MANUAL METAL-ARC WELDING

1. General

2. Deposited Metal Tests

3. Butt Weld Tests

4. Hot-Cracking Test

5. Hydrogen Test

6. Covered Electrodes for Manual Fillet Welding

7. Covered Electrodes for Gravity or Contact Welding

8. Annual Tests and Upgrading

C. WIRES and WIRE-GAS COMBINATIONS FOR METAL ARC WELDING
5-24

1. General

2. Approval for Semi-automatic Multi-run Welding

3. Approval for Automatic Multi-run Welding

4. Approval for Automatic Two-run Welding

5. Annual Tests and Up-grading

D. WIRE-FLUX COMBINATIONS FOR SUBMERGED-ARC WELDING

1. General

2. Approval Tests for Multi-run Technique

3. Approval Tests for Two-run Techniques

4. Annual Tests **- Upgrading**

E. CONSUMABLES FOR USE IN ELECTROGAS AND ELECTROSLAG VERTICAL WELDING

1. General

2. Butt Weld Tests

3. Annual Tests and Up-grading

F. APPROVAL OF WELDING CONSUMABLES FOR HIGH STRENGTH STEELS FOR WELDED STRUCTURES

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A was revised according to UR W17 Rev.5 as below :

Requirements of this section give the conditions of approval and inspection of welding consumables used for hull structural steel ~~welding~~ according to TL- R W11 as follows:

- Normal strength steels Grades A, B, D and E ,
- Higher strength steels Grades A32, D32, E32, A36, D36 and E36,
- Higher strength steels with minimum yield strength 390 N/mm^2: Grades A40, D40 and E40,
- Higher strength steels for low temperature application: Grades F32, F36 and F40.

Welding consumables for high strength ~~quenched and tempered~~ steels for welded structures ~~according to Chapter 2 Material Section 3, C are subject to special consideration by the TL~~ are to comply with the requirements of TL- R W23.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.4.1 was revised according to UR W17 Rev.5 as below :

.....

- Grades 2Y 40, 3 Y 40, ~~and~~ 4 Y 40 and 5 Y 40 for higher strength filler metals for steels up to 390 N/mm^2 yield strength.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item A.8.2.3 was revised according to UR W17 Rev.5 as below :

.....

A set of three test specimens is to be prepared and tested. The average absorbed energy value is to comply with the requirements of subsequent sections. One individual value may be less than the required average value provided that it is not less than 70% of this value. The test temperature for Grades 2, 2Y, 2Y 40, 3, 3Y, 3Y 40, 4Y, ~~and~~ 4Y 40 and 5Y 40 test pieces is to be controlled to within ±2°C of the prescribed temperature.

Title of item B was revised according to UR W17 Rev.5 as "B.Covered Electrodes for Manual Metal-Arc Welding ~~of Hull Structural Steels~~".

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.1.1 was deleted and following items were revised, and renumbered item B.1.1 was revised according to UR W17 Rev.5 as below :

~~1.1 The following provisions apply to covered electrodes for manual metal-arc welding of hull structural steels, including the corresponding grades of steel forgings and castings, and of comparable structural steels. Covered electrodes for semimechanized gravity welding and spring-loaded welding processes are treated in the same way as those for manual metal-arc welding.~~

1.1 Grades

Depending on the results of the Charpy V-notch impact tests, electrodes are divided into the following grades:

- For normal strength steel: Grades 1, 2 and 3.
- For higher strength steel with minimum yield strength up to 355 N/mm^2: Grades 2Y and 3Y and 4Y (Grade 1Y not applicable for manual welding).
- For higher strength steels with minimum yield strength up to 390 N/mm^2: Grades 2Y 40, 3Y40, ~~and~~ 4Y 40 and 5Y 40. ~~In special cases, e.g. when the electrodes are also used for steels tough at subzero temperatures, approval may be granted with a higher quality grade, as with welding consumables and auxiliary materials for high-strength (quenched and tempered) structural steels (see F. and Table 5.14). Regarding added symbols, inclusions and exclusions, see A.4.1.~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Titles were added to Item B.2.1 and 2.2 according to UR W17 Rev.5 as below :

2.1 Preparation of Deposited Metal Test Assemblies

2.2 Chemical Analysis

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.2.3 was revised according to UR W17 Rev.5 as below :

2.3 Execution of Tests

~~Following the recommended radiographic examination, one round tensile test specimen and three ISO V-notch impact test specimens conforming to~~ One tensile and three impact test specimens are to be taken from each test assembly as shown in Figure 5.1 ~~shall be machined from each weld metal test piece. The longitudinal axis of the round tensile specimen shall be located in the centre of the weld at the mid-point of the plate thickness~~. Care is to be taken that the axis of the tensile test specimen coincides with the centre of the weld and the mid-thickness of the plates. Tests are to be performed according to A.8 Mechanical Testing Procedures. ~~The upper lateral surface of the~~

~~impact test specimens shall lie 5 mm below the surface of the plate with the notch also located in the centre of the weld.~~

Name of Figure 5.1 was revised according to UR W17 Rev.5 as below :

~~Weld~~ Deposited metal test assembly ~~piece~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.2.4 and Table 5.3 were revised and items B.2.5 and 2.6 were deleted according to UR W17 Rev.5 as below :

2.4 Results of Tests and Requirements

The mechanical properties of the weld metal must meet the requirements stated in Table 5.3. ~~If the tensile strength exceeds the upper limit, approval of the electrode will be granted only after careful consideration of its other technological properties and the chemical analysis of the weld metal. The mean value for the notch impact energy must meet the requirements of the following sections; an individual value may be below the required mean value but not less than 70% of this value.~~

Quality grade ~~(1)~~	Minimum yield strength [N/mm^2]	Tensile strength [N/mm^2]	Minimum elongation (L_o=5·d_o) [%]	Charpy V-notch impact tests	
				~~Minimum notch impact~~ Average Energy [J] ~~(2)~~ minimum	Test temperature [°C]
1	305	400 - 560	22	47 ~~(33)~~	+ 20
2					0
3					- 20
2Y	375	490 - 660	22	47 ~~(33)~~	0
3Y					- 20
4Y					- 40
2Y40	400	510 ~~(3)~~ - 690	22	47 ~~(33)~~	0
3Y40					- 20
4Y40					- 40
5Y40					- 60

~~(1) For possible higher quality grades, see 1.2.~~

~~(2) Mean value of three specimens; ( ) for minimum individual values; for this and retests, see 2.4 and 2.5.~~

~~(3) A tensile strength of 500 [N/mm2] is acceptable if adequate values are achieved in the welded joint.~~

~~**2.5** For the carrying out of retests, see A.7.6.~~

~~**2.6** Further repeat tests require the consent of TL in each individual case; see also A.7.6. Such tests, however, shall without exception comprise the welding of a new test piece and the testing of all the specimens originally required, even if some of them gave satisfactory results in the first test.~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Items B.3 and 3.1 were revised according to UR W17 Rev.5 as below :

3. ~~Testing on Welded Joints (~~Butt weld tests~~)~~

3.1 Preparation of butt weld test assemblies

Butt-welded test pieces in accordance with Figure 5.2 shall be welded in the each welding positions (downhand, horizontal-vertical, vertical-upward,vertical-downward and overhead) ~~and with the electrode diameters shown in Table 5.4 according to the welding positions covered by the approval application (see A.4.9 and Table 5.1),~~ for which the electrode is recommended by the manufacturer, except that electrodes satisfying the requirements for downhand and vertical-upward positions will be considered as also complying with the requirements for the horizontal-vertical position subject to the agreement of **TL**. Where covered electrode is to be approved only ~~for fillet welding (e.g. for gravity welding), fillet-welded test pieces as shown in Figure 5.3 instead of butt-welded test pieces shall be welded and subjected to test. In special cases, TL may call for fillet welded as well as butt welded test pieces, e.g. for vertical-down welding~~ in the downhand position, an additional test assembly is to be prepared in that position.

For the preparation of the test assemblies one of the steel grades as listed below for the individual electrode grades shall be used:

- Grade 1 electrodes : A
- Grade 2 electrodes : A, B, D
- Grade 3 electrodes : A, B, D, E
- Grade 2Y electrodes : A32, A36, D32, D36
- Grade 3Y electrodes : A32, A36, D32, D36, E32, E36.
- Grade 4Y electrodes : A32, A36, D32, D36, E 32, E36, F32, F36
- Grade 2Y40 electrodes : A40, D40
- Grade 3Y 40 electrodes : A40, D40, E40
- Grade 4Y 40 electrodes : A40, D40, E40, F40
- Grade 5Y 40 electrodes : A40, D40, E40, F40

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Name of Figure 5.2 was revised according to UR W17 Rev.5 as below :

Figure 5.2 Butt-weld test ~~piece~~ assembly

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 5.5 was revised according to UR W17 Rev.5 as below :

Quality grade	Tensile strength (transverse test) N/mm^2	Charpy V-notch impact tests		
		Test Temperature °C	Average energy - J minimum	
			Downhand, horizontal-vertical, overhead	Vertical (upward and downward)
1	400	20	47	34
2		0	47	34
3		-20	47	34
2Y	490	0	47	34
3Y		-20	47	34
4Y		-40	47	34
2Y 40	510	0	47	39
3Y 40		-20	47	39
4Y 40		-40	47	39
5Y40		-60	47	39

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item B.5.1 was revised according to UR W17 Rev.5 as below :

5.1 Hydrogen marks

~~The hydrogen test to determine the diffusible hydrogen content of the weld metal should, where possible, be conducted according to the mercury method prescribed in DIN 8572 Part 1 and ISO standard 3690 or, with TL's consent, according to other comparable methods. For an interim period and with TL's consent, the glycerin method described in 5.3 may continue to be used as an alternative for the added symbols H15(H) and H10(HH). Depending on the added symbols H15(H), H10(HH) or H5(HHH) to be appended to the quality grade specified in the approval~~

~~(see A.4.1), the hydrogen content of the weld metal shall not exceed the limits indicated in Table 5.7.~~ At the request of the manufacturer, electrodes may be submitted to a hydrogen test. A suffix H15, H10 or H 5 will be added to the grade number to indicate compliance with the requirements of this test.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Title of item 8 was revised according to UR W17 Rev.5 as "8. Annual ~~Repeat~~ Tests and upgrading".

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.1.2.1 was revised according to UR W17 Rev.5 as below:

- For higher strength steels with minimum yield strength up to 390 N/mm^2: Grades 2Y 40, 3Y 40, ~~and~~ 4Y 40 and 5 Y40.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 5.9 was revised according to UR W17 Rev.5 as below:

~~Symbol (1)~~ Group		~~Components in percent volume~~ Gas composition (Vol. %)						~~Typical applications~~	~~Remarks~~
~~Group~~	~~Identification No.~~	~~0xidizing~~		~~Inert~~		~~Reducing~~	~~Unreactive~~		
		C02	02	Ar	~~He~~	H2	~~N2~~		
~~R~~	~~1~~ ~~2~~			~~balance (2)~~ ~~balance (2)~~		~~> 0 to 15~~ ~~>15 to 35~~		~~TIG, plasma arc welding, plasma arc cutting, back shielding~~	~~reducing~~
~~I~~	~~1~~ ~~2~~ ~~3~~			~~100~~ ~~-~~ ~~balance~~	~~-~~ ~~100~~ ~~> 0 to 95~~			~~MIG, TIG, plasma arc welding, back shielding~~	~~inert~~

M1	1 2 3 4	> 0 to 5 > 0 to 5 - > 0 to 5	- - > 0 to 3 > 0 to 3	~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)**		> 0 to 5 - - -		~~MAG~~	~~slightly oxidizing~~
M2	1 2 3 4	> 5 to 25 - > 0 to 5 ~~> 5 to 25~~	- > 3 to 10 > 0 to 8	~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)** ~~balance~~ **(2)**					
M3	1 2 3	>25 to 50 - > 5 to 50	- > 10 to 15 > 8 to 15	~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)** ~~balance~~ Rest **(1)** **(2)**					~~More pronounced oxidation~~
c	1 2	100 ~~balance~~ Rest	- > 0 to 30						
~~F~~	~~1~~ ~~2~~					~~> 0 to 50~~	~~100~~ ~~balance~~	~~plasma arc cutting, back shielding~~	~~unreactive~~ ~~reducing~~

(1) ~~*Where components not listed are added to one of the groups in this Table, the gas mixture is designated as a special gas mixture and carries the preflix S. Details of the S designation are given in clause 4 of ISO 14175*~~ *Argon may be substituted by Helium up to 95% of the Argon content.*

(2) ~~*Argon may be replaced by up to 95 % helium. The helium content is designated by an additional identification number*~~ *Approval covers gas mixtures with equal or higher Helium contents only* .

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.2 was revised according to UR W17 Rev.5 as below:

.....

- For higher strength steels with minimum yield strength up to 390 N/mm^2: Grades 2Y40, 3Y40, ~~or~~ 4Y40 or 5Y40.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.2.1 was revised according to UR W17 Rev.5 as below:

.....

- Grade 5Y40 wire-flux combinations : A40, D40, E40, F 40

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Tables 5.10a, b and c were revised according to UR W17 Rev.5 as below:

M (multi-run technique)		**T (two-run technique)**		**TM (two-run and multi-run technique)**			
Deposited metal assembly	**Butt weld assembly**	**Butt weld assembly (minimum thickness)**	**Butt weld assembly (maximum thickness)**	**Deposited metal assembly**	**Butt Weld Assembly**		
					Multi-run technique	**Two-run technique**	
						(Minimum thickness)	**(Maximum thickness)**
- - 3CV 2 LT	2 TT 4 TB 3 CV -	2 TT 2 TB 3 CV ~~1 LT~~ -	2 TT 2 TB 3 CV 1 LT	- - 3 CV 1 LT	2 TT 4 TB 3 CV -	2 TT 2 TB 3 CV -	2 TT 2 TB 3 CV 1 LT

Symbol Definition:
TT: Transverse Tensile Test on the butt weld assembly
TB : Transverse Bend Test on the butt weld assembly
CV : Charpy-V Impact Test in the axis of the weld
LT : Longitudinal Tensile Test in the weld

Grade	**Yield stress N/mm^2 minimum**	**Tensile Strength N/mm^2**	**Elongation on 50 mm gauge length (Lo = 5 d) % minimum**	**Charpy V-notch impact tests**	
				Test Temperature °C	**Average Energy J minimum**
1 2 3	305	400 - 560	22	20 0 -20	34 34 34
1Y 2Y 3Y 4Y	375	490 - 660	22	20 0 -20 -40	34 34 34 34

2Y 40 3Y 40 4Y 40 5Y 40	400	510 - 690	22	0 -20 -40 -60	39 39 39 39

Grade	Tensile strength (transverse test) N/mm^2	Charpy V-notch impact tests	
		Test temperature °C	Average energy J minimum
1 2 3	400	20 0 -20	34 34 34
1Y 2Y 3Y 4Y	490	20 0 -20 -40	34 34 34 34
2Y40 3Y40 4Y40 5Y40	510	0 -20 -40 -60	39 39 39 39

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.1 was revised according to UR W17 Rev.5 as below:

.....

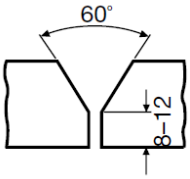
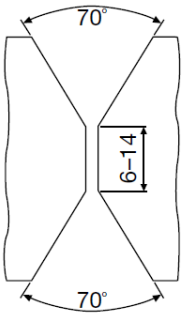
- For Grades 2Y 40, 3Y 40, ~~and~~ 4Y 40 and 5Y 40 : 20 to 25 mm and 30 to 35 mm

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Figure 5.9 was revised according to UR W17 Rev.5 as below:

Plate thickness [mm]	Recommended preparation [mm]	Maximum diameter of wire [mm]	Grade of wire-flux combination	Grade of normal strength steel	Grade of higher strength steel
about 12 – 15		5	1	A	-
			1Y	-	A32 A36
about 20 – 25		6	1	A	-
			1Y	-	A 32, A 36
			2	A, B or D	-
			2Y	-	A 32, A 36, D 32, D 36
			2Y 40	-	A 40, D 40
			3	A, B, D or E	-
			3Y	-	A 32, A 36, D 32, D 36, E 32, E 36
			3Y 40	-	A 40, D 40, E 40
			4Y	-	A 32, A 36, D 32, D 36, E 32, E 36, F 32, F 36
			4Y 40	-	A 40, D 40, E 40, F 40
			5Y 40	-	A 40, D 40, E 40, F 40
about 30 – 35		7	2	A, B or D	-
			2Y	-	A 32, A 36, D 32, D 36
			2Y 40	-	A 40, D 40
			3	A, B, D or E	-
			3Y	-	A 32, A 36, D 32, D 36, E 32, E 36
			3Y 40	-	A 40, D 40, E 40
			4Y	-	A 32, A 36, D 32, D 36, E 32, E 36, F 32, F 36
			4Y 40	-	A 40, D 40, E 40, F 40
			5Y 40	-	A 40, D 40, E 40, F 40

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item E.1.2 was revised according to UR W17 Rev.5 as below:

1.2 For Grades 1Y, 2Y, 3Y, 4Y, 2Y40, 3Y40, ~~and~~ 4Y40 and 5Y40 approval of the consumables may be restricted for use only with specific types of higher strength steel. This is in respect of the content of grain refining elements, and if general approval is required, a niobium treated steel is to be used for the approval tests.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Title of item F was revised according to UR W23 Rev.2 as "F. Approval of Welding Consumables for High Strength ~~Quenched and Tempered~~ Steels for Welded Structures"

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item F.1.1.1 was revised according to UR W23 Rev.2 as below:

1.1.1 These requirements supplements the previous parts in this section and give the conditions of approval and inspection of welding consumables used for high strength ~~quenched and tempered or TMCP~~ steels for welded structures according to TL- R W16 (**TL** Rules, Chapter 2, Section 3, C) with yield strength levels from 420 N/mm^2 up to ~~690~~ 960 N/mm^2 and impact grades A, D, E and F except that impact grade F is not applicable for 890 N/mm^2 and 960 N/mm^2 yield strength levels.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item F.1.2.1 was revised according to UR W23 Rev.2 as below:

1.2.1 Based on the yield strength of the weld metal, the welding consumables concerned are divided into ~~six~~ eight (yield) strength groups :

.....

- Y89 - for welding steels with minimum yield strength 890 N/mm^2
- Y96 - for welding steels with minimum yield strength 960 N/mm^2

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item F.1.2.3 was revised according to UR W23 Rev.2 as below:

1.2.3 Analogously to the designation scheme used in previous parts in this section the welding consumables for high strength ~~quenched and tempered~~ steels are subject to classification designation and approval as follows:

.....

- With the added symbol Y and an appended code number designating the minimum yield strength of the weld metal corresponding 1.2.1: Y42, Y46, Y50, Y55, Y62, ~~and~~ Y69, Y89 and Y96.

.....

- With the added symbol M designating multi-run technique **(2)** and is applicable only to welding consumables for fully mechanised welding,

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item F.1.2.4 was revised according to UR W23 Rev.2 and UR W23 Corr.1 as below:

.....

Welding consumables with grade Y89 are considered suitable for welding steels in the same strength level only. Welding consumables with grade Y96 are also considered suitable for welding steels in the one strength level below that for which they have been approved.

For grade Y89 and Y96, where the design requirements permit undermatching weld joint, then welding consumables within the scope of this subsection can be considered subject to TL discretion and Manufacturer's recommendations.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item F.3.2 was revised according to UR W23 Rev.2 as below:

3.2 Depending on the type of the welding consumables (and according to the welding process), the butt-weld test pieces called for in 3.1 shall be welded in a manner analogous to that prescribed in TL-R W17 (**TL** Rules, Chapter 3, Section 5 and Section 12, E). The base metal used shall be a high-strength fine-grained structural steel with ~~an appropriate~~ minimum yield strength and tensile strength matching the comsumable grade being approved and compatible with the added symbol for which application is made.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Tables 5.11a, b, c and d were revised according to UR W23 Rev.2 as below:

Qality grade	Test temperature [°C]	Minimum notch impact energy [J] (1)
3	-20	Y42: ≥ 47 Y46: ≥ 47 Y50: ≥ 50 Y55: ≥ 55 Y62: ≥ 62 Y69: ≥ 69 Y89: ≥ 69 **(2)** Y96: ≥ 69 **(2)**
4	-40	
5	-60	

(1) *Charpy V-notch impact test specimen, mean value of three specimens; for requirements regarding minimum individual values and retests, see TL- R W17 (**TL** Rules, Chapter 3, Section 5 and Section 12, E), section 3.3.2*

(2) *Quality grade 5 is not applicable for Y89 and Y96 grade consumables.*

Symbols added to quality grade	Minimum yield strength or 0.2% proof stress [N/mm^2]	Tensile Strength ~~(1)~~ [N/mm^2]	Minimum elongation [%]
Y42	420	~~530~~ 520-680	20
Y46	460	~~570~~ 540-720	20
Y50	500	~~610~~ 590-770	18
Y55	550	~~670 830~~ 640-820	18
Y62	620	~~720~~ 700-890	18
Y69	690	770-940	17
Y89	890	940-1100	14
Y96	960	980-1150	13

~~***(1)** The tensile strength of the weld metal may be up to 10% below the requirements, provided that the results obtained with the transverse tensile specimens taken from the welded joints meet the minimum tensile strength requirements stated in Table 11c. The elongation is to be stated in the test report.*~~

~~**Note:**~~

~~*For welding very large plate thicknesses where the "supporting effect" of the base material on either side of the weld no longer applies and the tensile strength of the weld metal also determines the tensile strength of the welded joint, it may be necessary, when applying footnote (1), to choose welding consumables of the next higher strength category (next higher added Symbol)*~~

Quality grade	Added symbol	Minimum tensile strength [N/mm^2]	Minimum notch impact energy, test temperature	Minimum bending angle (1)	Bend ratio D/t (2)
3 to 5 accordance with Table 11.a	Y42	~~530~~ 520	Depending on the quality grade & yield strength in accordance Table 11.a	120°	4
	Y46	~~570~~ 540			4
	Y50	~~610~~ 590			4
	Y55	~~670~~ 640			5
	Y62	~~720~~ 700			5
	Y69	770			5
	Y89	940			6
	Y96	980			7

(1) *Bending angle attained before the first incipient crack, minor pore exposures up to a maximum length of 3mm allowed.*

(2) *D = Mandrel diameter, t = specimen thickness*

Yield strength group	Hydrogen symbol	Maximum hydrogen content [cm^3/ 100 g deposited weld metal]
Y42 Y46 Y50	~~(HH)~~ H 10	10
Y55 Y62 Y69	~~(HHH)~~ H 5	5
Y89 Y96	H 5	5

03. Section 12 – Welding of Hull Structures

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Table 12.1 was added under item E according to UR W17 Rev.5 as below:

Table 12.1 Correlation of welding consumables and auxiliary materials to hull structural steel quality grades

Quality grades of welding consumables and auxiliary materials (see also E.3.)	Hull structural steel quality grades											
	TL-A	TL-B	TL-D	TL-E	TL-A32/36	TL-D32/36	TL-E32/36	TL-F32/36	TL-A40	TL-D40	TL-E40	TL-F40
1, 1S, 1T, 1M, 1TM, 1V	X											
1YS, 1YT, 1YM, 1YTM, 1YV	X				(2)							
2, 2S, 2T, 2M, 2TM, 2V	X	X	X									
2Y, 2YS, 2YT, 2YM, 2YTM, 2YV	X	X	X		X	X						
2Y40, 2Y40S, 2Y40T, 2Y40M, 2Y40TM, 2Y40V	(1)	(1)	(1)		X	X			X	X		
3, 3S, 3T, 3M, 3TM, 3V	X	X	X	X								
3Y, 3YS, 3YT, 3YM, 3YTM, 3YV	X	X	X	X	X	X	X					
3Y40, 3Y40S, 3Y40T, 3Y40M, 3Y40TM, 3Y40V	(1)	(1)	(1)	(1)	X	X	X		X	X	X	
4Y, 4YS, 4YT, 4YM, 4YTM, 4YV	X	X	X	X	X	X	X	X				
4Y40, 4Y40S, 4Y40T, 4Y40M, 4Y40TM, 4Y40V	(1)	(1)	(1)	(1)	X	X	X	X	X	X	X	X
5Y40, 5Y40S, 5Y40T, 5Y40M, 5Y40TM, 5Y40V	(1)	(1)	(1)	(1)	X	X	X	X	X	X	X	X

(1) See note d) (2) See note e)

NOTES:

(a) When joining normal to higher strength structural steel, consumables of the lowest acceptable grade for either material being joined may be used.

(b) When joining steels of the same strength level but of different toughness grade, consumables of the lowest acceptable grade for either material being joined may be used.

(c) It is recommended that controlled low hydrogen type consumables are to be used when joining higher strength structural steel to the same or lower strength level, except that other consumables may be used at the discretion of TL when the carbon equivalent is below or equal to 0.41%. When other than controlled low hydrogen type electrodes are used appropriate procedure tests for hydrogen cracking may be conducted at the discretion of TL.

(d) The welding consumables approved for steel Grades A40, D40, E40 and/or F40 may also be used for welding of the corresponding grades of normal strength steels subject to the special agreement with TL.

(e) When joining higher strength steels using Grade 1Y welding consumables, the material thicknesses should not exceed 25 mm.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item 13 was added under item E according to UR W17 Rev.5 as below:

13. Hydrogen Marks

Welding consumables of Grades 2 and 3 and Grades 2Y, 3Y and 4Y and of Grades 2Y40,3Y40, 4Y40 and 5Y40, for which the hydrogen content has been controlled in accordance with Section 5, B.5.3.5 are identified by the mark H15, H10 or H5.

PART B – CHAPTER 4 – MACHINERY

01. Section 2 – Internal Combustion Engines and Air Compressors

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item M.1 was revised according to MEPC 307(73) as below:

1. General

Exhaust gas cleaning systems shall comply with the applicable statutory requirements. In case of sea going ships requirements stipulated in the MARPOL Convention are to be observed. In case of wet exhaust gas cleaning systems (scrubber systems) IMO Resolution MEPC 259(68) applies.

In case of Exhaust Gas Recirculation (EGR) method is used Resolution MEPC 307(73)* should be considered. In case of engines fitted with Selective Catalytic Reduction system, Resolution MEPC.291(71) should be taken into account in addition to NOx Technical Code 2008.

(*) The resolution should apply to a marine diesel engine fitted with an EGR device having a bleed-off water discharge arrangement, for which the EIAPP Certificate is first issued on or after 1 June 2019.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item M.5.1 was revised according to MEPC 291(71) as below:

For more details see TL- I MPC 105 ~~and Resolution MEPC198(62) as amended by MEPC 260(68)~~

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item "O. Safety of Internal Combustion Engines Supplied with Low Pressure Gas (up to 10 bar)" was added to Section 2 according to UR M78 New.

02. Section 16 – Pipe Lines, Valves, Fittings And Pumps

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item P.1.6 was revised according to MEPC 300(72) as below:

1.6 Ballast water treatment plants

Ballast water treatment plants are to be approved by a flag administration acc. to Code for Approval of Ballast Water Management Systems (BWMS Code) ~~Guidelines for approval of ballast water management systems (G8)~~ (Res. MEPC 300(72))* . ~~The obligation to~~ All ships shall install a ballast water treatment plant to provide standards in Regulation D-2 of ~~depends on the ballast water capacity and keel lying date of the ship (See also~~ International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 ~~– Regulation B-3 and~~ (See also **TL** Additional Rule for Installation of Ballast Water Management Systems.)

(*) *BWMS approved taking into account Guidelines for approval of ballast water management systems (G8) adopted by resolution MEPC.279(70) shall be deemed to be in accordance with the BWMS Code.*

03. Section 19 – Machinery for Ice Class Notation

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Section 19 were revised generally according to Finnish–Swedish ice class rules.

04. Section 20 – Tankers

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2 was revised and Item D.1.9 was added according to UI SC284 New as below:

3.2 Paragraphs 2.2.2.2 (See also TL-I SC284), 2.2.2.4, 2.2.4.2, 2.2.4.3, 2.2.4.5.1.1, 2.2.4.5.1.2, 2.2.4.5.4, 2.4.1.1, 2.4.1.2, 2.4.1.3, 2.4.1.4, 2.4.2.1 and 2.4.2.2 of Ch.15 of the FSS Code, as amended by MSC.367(93), as applicable apply to the systems.

1.9 Automatic shutdown of the inert gas system and its components parts are to be arranged on predetermined limits being reached, taking into account the provisions of FSS Code paragraphs 15.2.2.4, 15.2.3.2 and 15.2.4.2., and are to be in accordance with TL-I SC284.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.10 is added according to UI SC285 New as below:

1.10 The inert gas main is to be fitted with branch piping leading to the cargo tank. Branch piping for inert gas is to be fitted with either stop valves or equivalent means of control for isolating each tank. Where stop valves are fitted, they are to be provided with locking arrangements. The control system is to provide unambiguous information (position indicators providing open/intermediate/closed status information) of the operational status in accordance with TL-I SC285 of such valves to at least the control panel required in paragraph 15.2.2.4 of FSS Code.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.11 is added as below:

1.11 Connections between the inert gas main and the cargo piping system, taking into account of FSS Code paragraphs 15.2.2.3.2.7 and 15.2.2.3.2.8, and are to be equipped with suitable isolating means in accordance with TL-I SC62.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.12 is added according to UI SC286 New below:

1.12 The operation status of the inert gas system is to be indicated in a control panel as required by FSS Code Chapter 15.2.2.4.1, and is to be in accordance with TL-I SC286.

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.1.13 is added according to UI SC287 New as below:

1.13 Audible and visual alarms as required by FSS Code Chapter 15.2.2.4.5 is to be in accordance with TL-I SC287.

PART B – CHAPTER 5 – ELECTRICAL INSTALLATION

01. Section 1 –General Requirements and Instructions

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note under item E.1.1 was revised according to UI SC6 Rev.1 as below:

Note:

~~Attention is drawn to~~ The following additional survival requirements are to be taken into account:

1. IMO IGC Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, clause 2.7.2.2.

02. Section 9 – Control, Monitoring and Ship's Safety Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.8.1 was revised according to MEPC 300(72) as below:

8. Ballast water treatment plants

8.1 Ballast water treatment plants are to be approved by a flag administration acc. to Code for Approval of Ballast Water Management Systems (BWMS Code) (Res. MEPC 300(72))*. All ships shall install a ballast water treatment plant to provide standards in Regulation D-2 of of ~~Guidelines for approval of ballast water management systems (G8) (Res. MEPC 279(70)). The obligation to install a ballast water treatment plant depends on the ballast water capacity and keel laying date of the ship. Refer to~~ International Convention "For The Control And Management of Ship's Ballast Water and Sediments", 2004. ~~Regulation B-3.~~

(*) *BWMS approved taking into account Guidelines for approval of ballast water management systems (G8) adopted by resolution MEPC.279(70) shall be deemed to be in accordance with the BWMS Code.*

PART C – CHAPTER 9 RULES FOR CONSTRUCTION AND CLASSIFICATION OF YACHTS

01. Section 10 – Fire Protection

Revision Date: May 2019

Entry into Force Date: 1 July 2019

ItemB2.3.1 was revised as below:

.....

In addition when the pump is discharging at full capacity through two adjacent fire hydrants, is to be capable of maintaining a water pressure of 0,1 N/mm^2 at any hydrant.

PART C – CHAPTER 10 LIQUFIED GAS TANKERS

01. Section 04 – Cargo Containment

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item 4.18.2.2 was revised according to updated standart "ASTM E399" as below:

.....

The fracture mechanical properties are to be documented for the various thicknesses of parent material and weld metal alike, possibly by experiment according to ASTM E 399 ~~70T~~.

.....

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note was added under item 4.19.1.6.3 according to IACS UI GC23 New as below:

Note: 1. Heating system referred to on 4.19.1.6.1 is to be such that in case of a single failure of a mechanical or electrical component in any part of the system, heating can be maintained at not less than 100% of the theoretical heat requirement.

2. Where the above requirements are met by duplication of the system components, i.e., heaters, glycol circulation pumps, electrical control panel, auxiliary boilers etc., all electrical components of at least one of the systems are to be supplied from the emergency switch board.

3. Where duplication of the primary source of heat, e.g., oil-fired boiler is not feasible, alternative proposals such as an electric heater capable of providing 100% of the theoretical heat requirement provided and supplied by an individual circuit arranged separately on the emergency switchboard. Other solutions may be considered towards satisfying the requirements of 4.19.1.6.1 provided a suitable risk assessment is conducted to the satisfaction of the Administration. The requirement in paragraph 2 continues to apply to all other electrical components in the system.

02. Section 05 – Process Pressure Vessels and Liquid, Vapour and Pressure Piping Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note was added under item 5.13.1.1.4 according to IACS UI GC24 New as below:

Note: Emergency shutdown valves, with materials having melting temperatures lower than 925°C does not include emergency shutdown valves which use materials having melting temperatures lower than 925°C in components such as rubber handle covers where failure would not cause deterioration of shell or seat tightness intrinsically.

03. Section 07 – Cargo Pressure/Temperature Control

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Footnote on item 7.8 and Note under item 7.8.3 were deleted according to IACS UI GC10 Rev.1 as below:

7.8 Availability ~~(1)~~

~~**(1)** UI GC10 shall also be applied as applicable.~~

~~Note: A stand-by LNG/refrigerant heat exchanger need not be provided and the fitted LNG/refrigerant heat exchanger will not be required to have 25% excess capacity over that for normal requirements. Other heat exchangers utilizing water cooling should have a stand-by or have at least 25 per cent excess capacity. The reason for this relaxation is that corrosion and fouling problems are not expected in LNG/refrigerant heat exchangers.~~

04. Section 08 – Vent Systems For Cargo Containment

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Footnote on item 8.2.2 was deleted according to IACS UI GC9 Rev.1 as below:

8.2.2 Interbarrier spaces shall be provided with pressure relief devices ~~**(1)**~~. For membrane systems, the designer shall demonstrate adequate sizing of interbarrier space PRVs.

~~**(1)** Refer to IACS Unified Interpretation GC9 entitled "Guidance for sizing pressure relief systems for interbarrier spaces", 1988.~~

05. Section 11 – Fire Protection and Extinction

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note and footnote was added under item 11.3.1.7 according to IACS UI GC22 New and Rec.152 New as below:

.7 exposed lifeboats, liferafts and muster stations facing the cargo area, regardless of distance to cargo area **(4)**; and

Note: Survival crafts protection;
With reference to sub-paragraph .7 of 11.3.1, the survival crafts on board including remote survival crafts (ref. SOLAS III/Reg. 31.1.4) facing the cargo area shall be protected by a water-spray system taking into consideration cargo area extension for fire-fighting purposes as stated in 11.1.4.
Remote liferafts located in areas covered by water-spray protection as required in subparagraph .6 may be considered as adequately protected.

(4) *Water spray protection should be considered for exposed embarkation stations and exposed launching routes from the life rafts stowage location to the ship side unless the life rafts are located and ready for launching at both sides.*

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note and footnote was added under item 11.3.3.1 according to IACS UI GC22 New as below:

Note: *Tank groups in cargo area;*
Expression "two complete athwartship tank groupings" in sub-paragraph .1 of IGC Code 11.3.3 means any two groups of tanks where one group is defined as tanks located in transverse direction from ship side to ship side. Where there is only one cargo tank occupying a hold space from ship side to ship side, it will be considered as a "grouping" for the purpose of this interpretation.
"Any two complete athwartship tank groupings" represents an area equal to the combined area of the two largest tank groupings including any gas process units within these areas

06. Section 13 – Instrumentation and Automation Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note under item 13.2.2 was deleted according to IACS UI GC2 Rev.1 as below:

~~*Note: In order to assess whether or not one level gauge is acceptable in relation to 13.2.2 "any necessary maintenance" means that any part of the level gauge can be overhauled while the cargo tank is in service*~~

07. Section 18 – Operating Requirements

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item 18.6.2 and 18.10.5 were revised according to IACS Rec. 114 Rev.1 as below:

18.6.2 Essential cargo handling controls and alarms shall be checked and tested prior to cargo transfer operations (See TL-G 114).

18.10.5 Pre-operations testing

Cargo emergency shutdown and alarm systems involved in cargo transfer shall be checked and tested before cargo handling operations begin (see TL-G 114).

PART C – CHAPTER 11 FIRE FIGHTING SHIPS

01. Section 01 – Equipment on Fire Fighting Ships

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Some new paragraphs were added in Item C as below:

C. Fire Protection and Extinguishing Equipment

.....

~~Windows in boundary of superstructure/deckhouse, including bridge shall comply with A-0 class.~~

.....

Windows/portlights in the structural exterior boundaries are to be constructed to "A-0" class standard or be protected by external, steel deadlights or shutters, except in the navigation bridge.

For all vessels receiving FF1, FF2 or FF3 notations that are equipped with a water-spray system meeting the requirements of C.2 of this section, standard-type(non-fire rated) windows and portlights in the structural exterior boundaries are acceptable without external steel deadlights or shutters.

As a minimum, the frames are to be metallic and effectively secured to the adjacent structure. The glazing is to be set into the frames in a suitable, approved packing or compound, using metallic clips.

.....

~~On FF2 and FF3 which are provided with water spray systems, steel deadlights or shutters are not to be provided on all windows and port lights, except in the navigation bridge.~~

PART C – CHAPTER 25 –MACHINERY CONDITION MONITORING

01. Section 1 – General

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Section 1 was generally revised according to UR Z27 New.

02. Section 2 – Requirements for the Design of Condition Monitoring Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Section 2 was generally revised according to UR Z27 New.

03. Section 3 – Requirements for Operation

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item E was revised according to UR Z27 New as below:

The following documentation shall be available on board:

.....

- All clauses in Section 1 C.2.2 in an up-to-date fashion
- Maintenance instructions (manufacturer's and shipyard's)
- Condition monitoring data including all data since last opening of the machine and the original base line data
- Reference documentation (trend investigation procedures etc.)
- Records of maintenance including repairs and renewals carried out
- Records of changes to software systems and parameters
- Sensors calibration records / certification / status

04. Section 4 – Surveys

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Section 4 was generally revised according to UR Z27 New.

PART C – CHAPTER 35-B – TENTATIVE RULES FOR SHIPS LESS THAN 500 GT - MACHINERY

01. Section 5 –Hull Operational Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item D.3.2 was revised according to MEPC 300(72) as below:

3.2 Ballast water treatment plants

Ballast water treatment plants are to be approved by a flag administration acc. to ~~IMO Resolution MEPC 279(70)~~ Code for Approval of Ballast Water Management Systems (BWMS Code) (Res. MEPC 300(72))*. ~~The obligation to~~ All ships shall install a ballast water treatment plant ~~depends on the ballast water capacity and keel lying date of the ship (Refer~~ to provide standards in Regulation D-2 of International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004~~– Regulation B-3)~~.

(*) *BWMS approved taking into account Guidelines for approval of ballast water management systems (G8) adopted by resolution MEPC.279(70) shall be deemed to be in accordance with the BWMS Code.*

PART C – CHAPTER 36 – OFFSHORE SERVICE VESSELS

01. Section 1 – General, Definitions

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item H.6 was revised as below:

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- IMO Resolution A.1122(30), ~~as amended by MEPC.158(55), MSC.184(79), MSC.236(82): Guidelines for the transport and handling of limited amounts of hazardous and noxious liquid substances in bulk in offshore support vessels~~ Code for the Transport and Handling of Hazardous and Noxious Liquid Substances in Bulk on Offshore Support Vessels (OSV Chemical Code).

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PART D – CHAPTER 76 – ENVIRONMENTAL SERVICE SYSTEM

01. Section 2 – Environmental Passport

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Section 2 was generally revised due to entry into force of amended/new International Conventions and updates of IMO resolutions.

PART D – CHAPTER 78 RULES FOR CLASSIFICATION OF SHIPS USING GASES OR OTHER LOW-FLASHPOINT FUEL

01. Section 11 – Fire Safety

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note was added under item 11.3.1 according to IACS UI GF13 New as below:

Note: Fire protection in 11.3.1 means structural fire protection, not including means of escape.

Enclosed spaces containing equipment for fuel preparation such as pumps or compressors or other potential ignition sources are to be provided with a fixed fire-extinguishing system complying with the provisions of SOLAS II-2/10.4.1.1 and the FSS Code and taking into account the necessary concentrations / application rate required for extinguishing gas fires.

02. Section 12 – Explosion Prevention

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note was added under footnote (24) according to IACS UI GF14 New as below:

Note: For the purposes of hazardous area classification, fuel storage hold spaces containing Type C tanks with all potential leakage sources in a tank connection space and having no access to any hazardous area, shall be considered non-hazardous. Where the fuel storage hold spaces include potential leak sources, e.g. tank connections, they shall be considered hazardous area zone 1. Where the fuel storage hold spaces include bolted access to the tank connection space, they shall be considered hazardous area zone 2.

03. Section 15 – Control, Monitoring and Safety Systems

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Note was added under item 15.10.1 according to IACS UI GF15 New as below:

Note: Acceptable means to confirm that the ventilation system has the "required ventilating capacity" in operation are, but not limited to:

- *Monitoring of the ventilation electric motor or fan operation combined with underpressure indication ; or*
- *Monitoring of the ventilation electric motor or fan operation combined with ventilation flow indication ; or*
- *Monitoring of ventilation flow rate to indicate that the required air flow rate is established.*

PART E – CHAPTER 105 – Naval Ship Technology, Electrical Installations

01. Section 4 – INSTALLATION PROTECTION AND POWER DISTRIBUTION

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item I.8.6 was revised as below:

8.6 The navigation lights may ~~shall~~ be fitted with a range adjustment device for common and continuous range reduction from 100 % to 5 % according to the requirements of the Naval Authority.

PART E – CHAPTER 106 – Naval Ship Technology, Automation

01. Section 3 – BASIC SYSTEM REQUIREMENTS

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item C.2.2 was corrected as below:

~~2.2~~ 2.1.5 The acknowledgement or non-acknowled-gement of the machinery alarms shall be recognizable independently of the acknowledgement of the collective and individual alarms on the bridge.

ADDITIONAL RULE – SURVEY and CERTIFICATION RULES ON ENERGY EFFICIENCY OF SHIPS (MARPOL 73/78 ANNEX VI, CHAPTER 4)

01. General

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item 1 was revised as below:

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"Industry guidelines" means guidelines issued by PR 38 and MEPC 68/INF.30

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Item 5 was revised as below:

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That falls into one or more of the categories defined in Regulation 2.25 to 2.35, 2.38 and 2.39 of MARPOL 73/78 ANNEX VI. Attained EEDI shall be calculated in accordance with IMO Resolution MEPC 308(73) "2018 GUIDELINES ON THE METHOD OF CALCULATION OF THE ATTAINED ENERGY EFFICIENCY DESIGN INDEX (EEDI) FOR NEW SHIPS" and Part II of Industry Guidelines.

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For ensuring the quality of tank tests, ITTC quality system should be taken into account. **TL** is to familiarize with the towing tank test organization test facilities, measuring equipment, standard model-ship extrapolation and correlation method (applied method and tests description) and quality system for consideration of complying with the requirements of 15.6 of Industry guidelines prior to the test attendance when **TL** has no recent experience with the tank test facilities.

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- Copies of the following documents are to be provided to **TL**, with due consideration given to the protection of the Intellectual Property Rights (IPR) as indicated under paragraph 14 of Industry guidelines:

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- Electric Power Table, if applicable

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- Speed trial conditions, including weather conditions, sea conditions, draught, trim and displacement; ~~and~~
- Ship speed and output of the main engine; and
- The machinery characteristics of some important electric load consumers and producers included in the EPT, if applicable.

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Revision Date: May 2019

Entry into Force Date: 1 July 2019

Annex 2 was revised according to MARPOL amended by MEPC 301(72) as below:

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Ship Type	Reference line
Bulk carrier	$961.79 \times DWT^{-0.477}$
Gas carrier	$1120.00 \times DWT^{-0.456}$
Tanker	$1218.80 \times DWT^{-0.488}$
Container ship	$174.22 \times DWT^{-0.201}$
General cargo ship	$107.48 \times DWT^{-0.216}$
Refrigerated cargo carrier	$227.01 \times DWT^{-0.244}$
Combination carrier	$1219.00 \times DWT^{-0.488}$
Ro-ro cargo ship (vehicle carrier)	DWT/GT<0.3 $(DWT/GT)^{-0.7} \times 780.36 \times DWT^{-0.471}$ DWT/GT>0.3 $1812.63 \times DWT^{-0.471}$
Ro-ro cargo ship	$1405.15 \times DWT^{-0.498}$
	where DWT≤17,000* $1686.17* \times DWT^{-0.498}$ where DWT > 17,000* $1686.17* \times 17{,}000^{-0.498}$
Ro-ro passenger ship	$752.16 \times DWT^{-0.381}$
	where DWT≤10,000* $902.59* \times DWT^{-0.381}$ where DWT > 10,000* $902.59* \times 10{,}000^{-0.381}$
LNG Carrier	$2253.7 \times DWT^{-0.474}$
Cruise passenger ship having non-conventional propulsion	$170.84 \times GT^{-0.214}$

* to be used from phase 2 and thereafter

Revision Date: May 2019

Entry into Force Date: 1 July 2019

Annex 2 was revised as below:

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IACS PR38/Rev.2: PROCEDURE FOR CALCULATION AND VERIFICATION OF THE ENERGY EFFICIENCY DESIGN INDEX (EEDI).

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TL-I COLREG

01. General

Revision Date: May 2019

Entry into Force Date: 1 July 2019

IACS UI COLREG 5 was incorporated into TL-I COLREG as a new TL interpretation.

For further information:
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