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Working Party on Inland Water Transport

Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation

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Item 7(b) of the provisional agenda

Resolution No. 61, Recommendations on Harmonized Europe-Wide Technical Requirements for Inland Navigation Vessels

Special provisions applicable to river-sea navigation vessels

Proposal submitted by the Group of Volunteers on Resolution No. 61

Note by the secretariat

1. At its thirty-eighth session, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) was informed that the Group of Volunteers on Resolution No.61 had reviewed the draft Chapter 20B “Special provisions applicable to river-sea navigation vessels” (ECE/TRANS/SC.3/WP.3/2010/6/Add.1) at its last meeting in December 2011 and was planning to finalize the draft at its fourth meeting in Spring 2011.
2. Presented in this document is the proposal of the Group of Volunteers on draft Chapter 20 B, finalized at the fourth meeting of the group on 18-20 April 2011. The minutes of the fourth meeting are contained in Informal document No.12.
3. The Working Party may wish to take note of the draft proposal and issue further instructions to the group or the secretariat.

DRAFT CHAPTER 20B

SPECIAL PROVISIONS APPLICABLE TO RIVER-SEA NAVIGATION VESSELS

20B-1 GENERAL PROVISIONS

20B-1.1 PURPOSE AND SCOPE

20B-1.1.1 For the purpose of this Chapter, the following zones and conditions of sea navigation shall be established:

- i) Restricted zone between ports of the same country (domestic voyages) where inland navigation vessels are allowed to navigate with season and wave height restrictions provided that specific requirements of the Administration or a recognized classification society concerning seaworthiness, stability, hull structure, machinery, electrical equipment, navigation equipment and communication facilities are met.
- ii) zone RS 2,0 (wave height up to 2.0 m¹): sea areas within specified geographical borders where river-sea navigation vessels are allowed to navigate with season restrictions;
- iii) zone RS 3,0 (wave height up to 3.0 m): sea areas within specified geographical borders where river-sea navigation vessels are allowed to navigate with season restrictions;
- iv) zone RS 3,5 (wave height up to 3.5 m): sea areas within specified geographical borders where river-sea navigation vessels are allowed to navigate with season restrictions;
- v) zone RS 4,5 (wave height up to 4.5 m): sea areas where river-sea navigation vessels are allowed to navigate in closed seas away from shelter at a distance up to 100 miles (distance between shelters up to 200 miles); in open seas away from shelter at a distance up to 50 miles (distance between shelters up to 100 miles);
- vi) zone RS 6,0 (wave height up to 6.0 m): sea areas where river-sea navigation vessels are allowed to navigate in closed seas away from shelter at a distance up to 100 miles (distance between shelters up to 200 miles); in open seas away from shelter at a distance up to 50 miles (distance between shelters up to 100 miles).

20B-1.1.2 Unless specified otherwise, the provisions of the present Chapter apply to new vessels.

20B-1.2 DEFINITIONS

1. "River-sea navigation vessel": a vessel intended for navigation on inland waterways and suitable for restricted navigation at sea.
2. "International voyage": a voyage from a port of a country to which international conventions apply to a port outside such country or conversely.
3. "Coastal voyage": any voyage other than international voyage.

¹ In the present Chapter wave height means a wave height of 3 % probability

4. “Closed seas”: inland and mediterranean isolated seas communicating with ocean high-seas through straits and different from high seas in salinity and temperature of water, nature of currents, tides, wind- and wave conditions.

5. “Main seas (open seas)”: off-lying seas with ample communication to ocean high-seas and water closely resembling that of high-seas in its salinity and temperature of water, nature of currents, tides, wind- and wave conditions.

20B-1.3 CLASSIFICATION

River-sea vessels navigation vessels shall be built under the supervision of a recognized Classification Society in accordance with its classification requirements. The class assigned by the Classification Society shall be maintained for the whole operation period of the vessel.

20B-2 DOCUMENTS

20B-2.1 River-sea navigation vessels involved in international voyages shall be covered by SOLAS 1974 or the International Convention on Load Lines of 1966 and shall carry a valid corresponding international certificate.

20B-2.2 River-sea navigation vessels involved in coastal voyages must carry the certificates required by the laws of their state of registry.

20B-2.3 River-sea navigation vessels involved in international voyages shall be covered by MARPOL 73 and shall carry a valid international sea pollution prevention certificate (IOPP certificate).

20B-2.4 River-sea navigation vessels involved in coastal voyages shall carry a valid sea pollution prevention certificate as required by the laws of their flag state.

20B-2.5 In addition to Chapter 8A river-sea navigation vessels involved in international voyages shall be covered by Annex VI of MARPOL 73 and shall carry a valid international air prevention pollution certificate (IAPP Certificate).

20B-2.6 River-sea navigation vessels involved in coastal voyages shall comply with the requirements of the international conventions and IMO instruments as given below:

i) all types of vessels for navigation in all zones except restricted zones:

In addition to Chapter 3A, the structural fire protection shall comply with Chapter II-2 of SOLAS 1974 and International Code for Fire Safety Systems;

In addition to Chapter 4, the load line shall comply with International Convention on Load Lines, 1966;

In addition to Chapter 6, the electrical equipment shall comply with Part D Chapter II-1 of SOLAS 1974;

ii) self-propelled vessels for navigation in all zones except restricted zone::

the composition of communication equipment shall comply with Chapter IV of SOLAS 1974 to ensure participation in Global Maritime Distress and Safety System (GMDSS);

the composition of navigation equipment shall comply with Chapter V of SOLAS 1974;

iii) passenger vessels in zone RS 3,0 and all vessels when navigating in zones RS 4,5, RS 6,0:

in addition to Chapters 3 and 15, the subdivision of the vessel shall comply with SOLAS 1974;

the minimal summer freeboard for navigation at sea shall comply with International Convention on Load Lines, 1966;

in addition to the Chapters 10 and 15, life-saving appliances shall comply with SOLAS 1974 and the International Life-Saving Appliance Code, 1996;

in addition to the ADN liquid cargo systems of oil tankers, air- and gas outlet ducts, ventilation, fire extinguishing, fuel and oil systems shall comply with SOLAS 1974 and the International Code for Fire Safety Systems.

20B-3 HULL

20B-3.1 STRENGTH

20B-3.1.1 In addition to Chapter 3 the hull shall be designed in accordance with the rules of a recognized classification society and constructed under its supervision. The classification certificate shall specify for which zone(s) the vessel is fit.

20B-3.1.2 The bow draft of cargo vessels for any loading conditions shall not be less than specified in the Table:

Zone	Length of the vessel, m	Bow draft not less than, m
RS 2,0	≤ 25	0.5
	≥ 60	0.9
RS 3,0	≤ 25	0.75
	≥ 60	1.4
RS 3,5	≤ 25	0.9
	≥ 60	1.7
RS 4,5	≤ 25	1.2
	≥ 60	2.2
RS 6,0	≤ 25	1.6
	≥ 60	2.9
Note. Minimal permissible bow draft for vessels of transitional lengths shall be determined from linear interpolation.		

20B-3.2 DESIGN REQUIREMENTS

20B-3.2.1 Without prejudice to MARPOL 73 and the ADN, motor vessels, lighters and barges shall have double sides and a double bottom. The double sides shall extend over the length of the cargo holds. The double bottom shall extend from the collision bulkhead till the aft peak bulkhead.

20B-3.2.2 Tankers for transportation of oil products, liquid dangerous goods and liquefied gases shall be fitted with facilities which enable safe access to the bow area.

20B-3.3 STABILITY

20B-3.3.1 In addition to 3-3.2.3 a vessel engaged in international voyages shall carry the Stability Booklet in English.

20B-3.3.2 In addition to 3-5.1.6 stability shall be checked under most adverse loading conditions with due regard of 3-5.1.5, at least for the following cases:

- i) with full cargo and full stores,
- ii) with full cargo and 10 % stores,
- iii) with no cargo yet with ballast and full stores.

20B-3.3.3 In addition to 3-3.2.1 each vessel after restoring repair, major repair or modernization shall undergo a heeling test.

20B-3.4 SUBDIVISION

20B-3.4.1 Vessels shall comply with 20B-2.6.

20B-3.4.2 For vessels involved in coastal voyages it shall be ensured that the deck will not be submerged in any of the following situations:

- i) for passenger vessels in zone RS 2,0, when any two compartments are flooded;
- ii) for self-propelled flush-deck vessels, flush-deck barges and lighters in zones RS 3,5, RS 3,0 and RS 2,0, when any single compartment is flooded;
- iii) for motor cargo vessels in zone RS 3,5, when the forepeak, the afterpeak or any single double-bottom or double-side compartment is flooded.

20B-3.4.3 In addition to 3-4.1.3, the collision bulkhead shall be fitted at a distance of at least half of the hull width, aft of the forward perpendicular. For vessels more than 14 m wide this distance may be reduced on approval of the Administration or a recognized Classification Society.

20B-3.4.4 River sea vessels shall be provided with a Stability Booklet and a damage control plan approved by the Administration or a recognized Classification Society.

20B-3.5 STABILITY CRITERIA. WEATHER CRITERION

20B-3.5.1 The vessel's stability is regarded as sufficient as regards weather criterion if, at combined effect of wind and rolling the requirements of "Code on Intact Stability for all types of ships" are met with due regard of 20B-3.5.2.

20B-3.5.2 The initial metacentric height corrected for the free-surface effect of liquid cargo shall be at least 0.15 m for all types of vessels at any options of loading (except "unladen vessel").

The minimal corrected metacentric height may have another value as in cases specified in 20B-3.6.

20B-3.6 ADDITIONAL STABILITY REQUIREMENTS FOR SPECIFIC VESSEL TYPES

20B-3.6.1 Motor cargo vessels

i) The stability of vessels which carry cargo on deck shall be checked with additional loading options:

- with holds filled by homogeneous cargo which have a draft according to the summer load line, with cargo on deck, full stores and liquid ballast, if necessary,

- loaded as in the previous case yet with 10 % stores.

ii) The metacentric height of vessels which carry cargo in bulk or on deck shall be at least 0.2 m.

iii) As long as there no data on the stowage rate μ , the stability of vessels which carry timber in holds or on deck shall be determined at minimal value $\mu=2.32 \text{ m}^3/\text{t}$.

20B-3.6.2 Vessels carrying containers

The stability of vessel carrying containers shall be checked for the following additional loading conditions:

- with the maximum number of containers each having a weight equal to 0.6 of the maximal gross weight for each type of container, and with full stores and liquid ballast, if necessary;

- loaded as in the previous case yet with 10 % stores;

- with the maximum number of empty containers, with ballast and full stores;

- loaded as in the previous case yet with 10 % stores.

20B-3.6.3 Tugs

i) In addition to 3-5.3.3.1 the stability of tugs shall be checked at the following loading conditions:

- with full stores,

- with 10 % stores.

ii) Tug shall be checked for stability under dynamic effect of towline jerk with due account of rolling, i.e. the following condition shall be met:

$$\Delta g(d_{perm} - d_k) \geq M_p,$$

where M_p – heeling moment, kNm, from dynamic effect of towline jerk; M_p is determined as per requirements set by the Administration or a recognized Classification Society;

Δ –displacement, t;

g – gravity acceleration, $g = 9,81 \text{ m/s}^2$;

d_{perm} – lever of permissible moment taken from the dynamic stability curve, at the admissible heeling angle, m;

d_k – lever of permissible moment taken from the dynamic stability curve under estimated roll amplitude.

iii) Tugs shall be checked for stability against towline jerks with no account taken of free-surface effects from liquid cargo.

20B-3.6.4 Towed barges

(left void)

20B-3.6.5 Icing

For vessels operating in subzero weather conditions icing shall be taken into account in the stability calculations.

20B-4 FIRE PROTECTION

20B-4.1 Vessels shall comply with 20B-2.6.

20B-4.2 Fire-protection diagrams shall be provided on self-propelled vessels in the central control station, wheelhouse and on prominent places in the corridors. A second copy of fire-protection diagram or a booklet with such diagrams shall be kept outside the deckhouse in an assigned place protected against sea impact.

20B-5 FREEBOARD AND LOAD LINE

20B-5.1 FREEBOARD

20B-5.1.1 When assigning the minimum summer freeboard the requirements of 20B-2.6 shall be met.

20B-5.1.2 For vessels engaged in coastal voyages in zones RS 3,5 (other than passenger vessels), RS 3,0, and RS 2,0 the minimum freeboard shall be assigned according to the requirements of the Administration or a recognized classification society.

20B-5.1.3 For vessels also designated for zones 1, 2 and 3, in addition the minimum freeboard shall be assigned in accordance with 4-4.2 and 4-4.4.

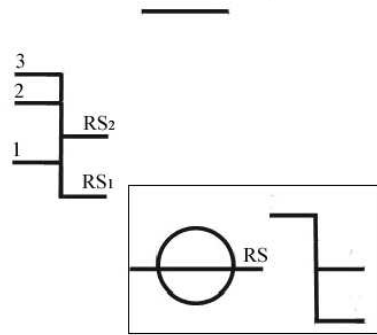
20B-5.1.4 Vessels navigating at sea shall carry a load line mark according to the International Convention on Load Lines, 1966.

Sternwards off the draught mark the following marks shall be placed:

i) marks for navigation on inland waterways of zones 1, 2 and 3 in accordance with 4-4.1.2;

- ii) a measurement mark in accordance with the requirements of the Convention on the Measurement of Inland Navigation Vessels, if the vessel is measured in accordance with it;
- iii) marks for navigation in sea areas with seawater, where the vessel is allowed for navigation with a wave height lower than in the given zones, e. g. for a vessel in zone RS 3,5 – zones RS 3,0 and 2,0.

The diagram of the load line is shown on the figure:



(Load line according to International Convention on Load Lines, 1966)

RS₁, RS₂ — lines corresponding to the maximum draught for navigation in sea areas with a wave height lower than in the main navigation zone;

1, 2, 3 — lines corresponding to maximum draught for navigation on inland waterways of zones 1, 2 and 3 respectively.

20B-5.2 HATCHWAYS AND COVERS OF VESSEL OPENINGS

20B-5.2.1 Hatchway covers shall be designed to withstand wave loads depending on the navigation zone, length of the vessel and the load from cargo to be stowed on these enclosures.

Minimal design loads for hatchway covers shall comply with requirements of the Administration or a recognized Classification Society.

20B-6 SHIP MACHINERY AND ARRANGEMENTS

20B-6.1 STEERING GEAR AND THRUSTER UNIT

20B-6.1.1 Steering gear and thruster unit shall comply with Chapter 6.

20B-6.1.2 Self-propelled passenger and cargo vessels with area of lateral projection over the center plane in excess of 800 m², shall be provided with a bow and/or stern thruster additionally to the steering gear.

Note. Lateral projection area includes the vessel's wet and dry parts as well as area of on-deck cargo.

20B-6.2 ANCHOR EQUIPMENT

20B-6.2.1 Vessels shall be supplied with anchors and chains according to the equipment number N . For vessels in zones RS 2,0, RS 3,0, RS 3,5, RS 4,5 N (in m^2) shall be determined according to 10-1.2.2.

For vessels in zone RS 6,0 the equipment number N (dimensionless value) is calculated by the following formulae:

for passenger vessels, motor cargo vessels and tankers:

$$N = 0.85 \nabla^{2/3} + 1.7B_{WL}h + 0.085A_w;$$

for non-self-propelled vessels

$$N = 1.0625 \nabla^{2/3} + 2.125B_{WL}h + 0.10625A_w;$$

for tugs

$$N = 0.85 \nabla^{2/3} + 1.7(B_{WL}a + \sum h_i b_i) + 0.085A_w;$$

where ∇ is water displacement corresponding to the summer load line in m^3 ;

B_{WL} — breadth of waterline of the vessel in m;

A_w — lateral plane within the vessel's length L_{WL} as per summer load waterline in m^2 . When calculating A_w only the lateral plane of the hull, as well as superstructures and deckhouses with width over $0.25 B_{WL}$ should be considered;

h — distance from the summer load waterline to the upper edge of the deck plating of the highest deckhouse calculated by the formula in m:

$$h = a + \sum h_i,$$

a — distance from the summer load waterline to the upper edge of the deck plating of the upper deck near the side amidships in m;

h_i — height of each layer of superstructure or deckhouse having a width over $0.25 B_{WL}$ at the centre line of the vessel. In case of two or more superstructures or deckhouses in the given layer only the superstructure or deckhouse of the biggest width should be considered. In the lowest layer h_i is measured in the centre line from the upper deck or, if the upper deck is stepped, from horizontal line being the prolongation of the upper deck;

b_i — width of each (i^{th}) layer of the superstructure or deckhouse having a width over $0.25 B_{WL}$ in m.

Sheer and trim may not be considered in calculations of h . Masts, cargo derricks, rigging, guard rails and similar structures as well as bulwark and hatch coamings less than 1.5 m high may be omitted in calculations of h and A . If the height of bulwark or hatch coamings is over 1.5 m, they shall be considered as a deckhouse or superstructure.

20B-6.2.2 Vessels with N exceeding $75 m^2$ shall be fitted with two bow anchors. For vessels with N of $75 m^2$ or less one bow anchor is permitted.

20B-6.2.3 Total mass P , in kg, of bow anchors is calculated in accordance with the table, but in any case they shall not be less than N :

Zone	Vessel type	N	P , kg
RS 2,0	Motor cargo and passenger vessels	from 50 to 5200	$1.90971 \cdot N^{0.912368} - 11.1760$
	non-self-propelled	from 150 to 5200	$1.8253 \cdot N^{0.9174657} - 0.5589$
	tugs	from 50 to 1600	$\exp(0.78894 + 0.9164 \cdot \ln N)$
RS 3,0	Motor cargo and passenger vessels	less than 1000	$1/(0.000248 + 0.5997 / N)$
		1000 and over	$234.5 + 1.097 N$
	non-self-propelled	from 200 to 1000	$18.72 + 2.9996 \cdot N^{0.868}$
		1000 and over	$63.803 + 1.828 \cdot N^{0.943}$
tugs	from 50 to 2000	$1/(0.1061 \cdot \ln N / N - 7.42 \cdot 10^{-5})$	
RS 3,5 RS 4,5	The same as for zone RS 3,0	The same as for zone RS 3,0	20 % greater than the value calculated as for zone RS 3,0
RS 6,0	All vessels	from 10 to 2500	$1/(1.997 \cdot 10^{-6} + 0.1625 / N)$

20B-6.2.4 Total length l_A , in m, of anchor chains of bow anchors is calculated in accordance with the table:

Zone	Vessel type	N	l_A , m
RS 2,0	Motor cargo and passenger vessels	from 50 to 5200	$1/(0.0036455 + 0.22895 \cdot \ln N / N)$
	non-self-propelled	from 150 to 5200	$(928.5287 \cdot (\ln N)^2 - 16660.441)^{0.5}$
	tugs	from 50 to 1600	$1/(0.0035 + 1.13/N)$
RS 3,0	Motor cargo and passenger vessels	less than 1000	$1/(0.002565 + 0.1826 \cdot \ln N / N)$
		1000 and over	$1 / (0.00277 + 1.3056 / N)$
	non-self-propelled	from 200 to 1000	$(15.972 - 959.209 / N)^2$
		1000 and over	$1/(0.00297 + 1.563 / N)$
tugs	from 50 to 2000	$1/(0.0024 + 0.18 \ln N / N)$	
RS 3,5 RS 4,5	The same as for zone RS 3,0	The same as for zone RS 3,0	25 % greater than l_A calculated as for zone RS 3,0
RS 6,0	All vessels	from 10 to 2500	$57.19 + 9.12 (\ln N)^2$

The calculated value of l_A shall be rounded up or down to the nearest multiple of a shackle length. Values of l_A shall not be less than those specified in 10-1.4.1. If the total anchor chain length is a multiple of an uneven number of shackles, the length of one of the anchor chains shall be increased by 1 shackle.

20B-6.2.5 Stern anchors for vessels in zones RS 2,0, RS 3,0, RS 3,5, RS 4,5 shall be provided in accordance with 10-1.3 where P is calculated according to 20B-6.2.3.

20B-6.2.6 For vessels in zone RS 6,0 with N from 35 to 205 the mass P of the stern anchor is taken as N . When $N > 205$, the mass of the stern anchor shall be at least 75 % of the mass of one bow anchor.

The stern anchor chain length for vessels in zone RS 6,0 is determined according to 20B-6.2.6; here for vessels with N from 35 to 205

$$l_A = 92 - 11504 \cdot \ln N / N^2,$$

and for vessels with N over 205 the chain length of stern the anchor is equal to half the total length of the chain of the bow anchors.

20B-6.3 MOORING EQUIPMENT

20B-6.3.1 The number and length of mooring lines for vessels in zone RS 2,0 shall comply with the provisions of 10-1.4.5. Vessels in zones RS 3,0, RS 3,5 and RS 4,5 with a length up to 85 m shall be equipped with at least 3 mooring lines each at least 100 m long. Vessels in zones RS 3,0, RS 3,5 and RS 4,5 with a length over 85 m shall be provided with at least 4 mooring lines each of at least 120 m long.

20B-6.3.2 The number and length of mooring lines for vessels in zone RS 6,0 shall be determined on the basis of N (calculated in accordance with 20B-6.2.1) as follows:

N	Number and length of mooring lines
$10 < N \leq 25$	at least two mooring lines at least 30 m long
$25 < N \leq 50$	at least two mooring lines at least 50 m long
$50 < N \leq 205$	at least three mooring lines having a length not less than: 80 m at $N \leq 70$; 100 m at $70 \leq N \leq 90$; 110 m at $90 \leq N \leq 130$; 120 m at $130 \leq N \leq 205$
$205 < N \leq 1480$	at least four mooring lines having a length not less than: 120 m at $205 \leq N \leq 280$; 140 m at $280 \leq N \leq 500$; 160 m at $500 \leq N \leq 720$; 170 m at $720 \leq N \leq 980$; 180 m at $980 \leq N \leq 1480$
$1480 < N \leq 2500$	at least five mooring lines having a length not less than: 190 m at $1480 \leq N \leq 2080$; 200 m at $2080 \leq N \leq 2500$

20B-6.3.3 For vessels in zone RS 6,0 with A_w/N over 0.9 the number of mooring lines as given in 20B-6.3.2 shall be increased by:

- (i) 1 — for vessels with $0.9 < A_w/N \leq 1.1$;
- (ii) 2 — for vessels with $1.1 < A_w/N \leq 1.2$;
- (iii) 3 — for vessels with $A_w/N > 1.2$.

20B-6.4 LIFE-SAVING APPLIANCES

20B-6.4.1 Vessels shall comply with the requirements of the present section with due regard of 20B-2.6.

20B-6.4.2 Life-saving appliances shall be certified by a competent body authorized by the Administration or a recognized classification society.

20B-6.4.3 A vessel shall be provided with a rescue boat. One of lifeboats or a ship's boat can be used as a rescue boat if this boat and its launching and recovery appliances meet the requirements .

20B-6.4.4 Tankers for transportation of oil products, liquid dangerous goods and liquefied gases less than 85 m in length and engaged in coastal voyages may be equipped with one lifeboat with a seating capacity sufficient to accommodate 100 % of people onboard if the lifeboat can be launched from either side of the vessel..

20B-6.4.5 Marine evacuation systems are recommended for passenger vessels over 30 m in length engaged in coastal voyages in zone RS 2,0, and fitted with free-fall launching liferafts.

20B-6.4.6 If a passenger vessel engaged in coastal voyage in zone RS 2,0 is fitted with free-fall launching liferafts and there are no marine evacuation systems, it shall be equipped with immersion suits for all persons to be accommodated in these liferafts.

20B-6.4.7 Passenger vessels engaged in coastal voyage in zone RS 2,0 shall be fitted with motorized lifeboats.

20B-6.4.8 Tankers in zones RS 3,0 and RS 2,0 intended for transportation of dangerous goods with a flashpoint not over 60° C, which are not covered by SOLAS 74, shall be fitted with fireproof lifeboats.

20B-6.5 WHEELHOUSE

20B-6.5.1 In addition to Chapter 7 unobstructed searchlight-aided view shall be provided from windows of the wheelhouse at night time.

20B-6.5.2 Arrangement and the colour of signal lights when navigating on inland waterways shall comply with CEVNI.

20B-6.6 FIRE FIGHTING EQUIPMENT

20B-6.6.1 Vessels shall comply with 20B-2.6.

20B-7 POWER PLANT AND SYSTEMS

20B-7.1 GENERAL

20B-7.1.1 Power plant components, vessel systems and equipment shall be designed for operation at ambient air temperature in closed spaces from 0 to +50 °C, and on the open deck, from -25 to +50 °C.

The assumption shall be made that outboard water temperature is 20 °C (32 °C for vessels operating in tropic areas).

20B-7.1.2 Power plants shall operate under all normal operating conditions, with a permanent list up to 15° with concurrent permanent trim up to 5°, and rolling up to 22.5° with simultaneous pitching up to 7.5°.

20B-7.2 INTERNAL COMBUSTION ENGINES

20B-7.2.1 The duration of main engines reversing shall not exceed the following values depending on the vessel speed:

- (i) 25 s at full speed;
- (ii) 15 s at low speed.

20B-7.3 CORROSION PROTECTION OF PROPELLER SHAFTS

20B-7.3.1 Propeller shafts made of corrosion-sensitive materials shall be protected against corrosion either with metal coatings or other coatings approved by Administration or recognized Classification Society.

20B-7.4 ALARM SYSTEM

20B-7.4.1 Vessel shall be fitted with an alarm to call up an engineer to the machinery space which can be activated:

- i) manually from the central control station or from a local control station of the main engines;
- ii) automatically, if the power plant faulty alarm is not confirmed within a given time.

The alarm signal shall be indicated inside the spaces that may be attended by the power plant servicing personnel.
