GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use 2019 AMENDMENT NO.2

Notice No.86 27 December 2019
Resolved by Technical Committee on 22 July 2019

ClassNK
NIPPON KAIJI KYOKAI

Notice No.86 27 December 2019
AMENDMENT TO THE GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

"Guidance for the approval and type approval of materials and equipment for marine use" has been partly amended as follows:

Amendment 2-1

Part 6 MACHINERY

Chapter 6 APPROVAL OF USE OF PLASTIC PIPES

6.1 General

Paragraph 6.1.1 has been amended as follows.

6.1.1 Scope

The requirements of this chapter apply to testing and inspection for approval of use of ~~plastic pipes~~ piping systems on ships, including pipe joints and fittings, made predominately of materials other than metal, in accordance with the requirements of **12.1.6, Part D of the Rules for the Survey and Construction of Steel Ships**.

6.2 Approval Application Procedures

Paragraph 6.2.3 has been amended as follows.

6.2.3 Documents to be Attached

The documents to be attached to the appropriate application form specified in the preceding **6.2.1** are to contain the following items:

((1) and (2) are omitted.)

(3) Materials (as applicable):
   (a) The resin type.
   (b) Catalyst and accelerator types, and concentration employed in the case of reinforced polyester resin pipes or hardeners where epoxide resins are employed.
   (c) A statement of all reinforcements employed where the reference number does filament winding process, these are to be detailed.
   (d) Full information regarding the type of gel-coat or thermoplastic liner employed during construction, as appropriate.
   (e) Cure and post-cure conditions (including the cure and post-cure temperatures and times).
   (f) Resin/reinforcement ratio.
   (g) Winding angle and orientation.

((4) and (12) are omitted.)

6.6 Announcement of Approval

Paragraph 6.6.1 has been amended as follows.

6.6.1 Announcement of Approval

The plastic pipes approved by the Society are to be marked with the following.

(1) Type of product or trade name

(2) Mark to prove that the product is approved by the Society. It may be marked simply by *NK*.

(3) Nominal pressure, the design standards that the pipe or fitting is manufactured in accordance with, [G] for these complying with low flame spread test and surface flammability test, [D] for those with electric conductivity, [S] for those complying with smoke generation and toxicity tests, material of which pipe or fitting is made

(4) Fire endurance level for those with fire endurance

6.9 Testing Procedures and Criteria

Paragraph 6.9.1 has been amended as follows.

6.9.1 Criteria for Approval Test for Process of Manufacture

The requirements and the criteria for the approval tests are, in principle, referred to **Table 6.6**. For application of the tables, see below:

(1) Those asterisked in the column of criteria represent the items where acceptance criteria do not apply. These data are for reference only for shop test, piping design, etc.

(2) The representative samples of pipes and fittings are to be selected to the satisfaction of the Society.

(3) The strength of the pipes against internal pressure and external pressure in **Table 6.6** is to be determined by a hydrostatic test failure pressure of a pipe specimen under the standard conditions: atmospheric pressure equal to 100 *kPa*, relative humidity equal to 30%, and environmental and carried fluid temperature equal to 298 *K* (25°C).

(4) After the impact resistance test in **Table 6.6**, the specimen is to be subjected to hydrostatic pressure equal to 2.5 times the design pressure for at least 1 hour.

~~(2)~~(5) Flame spread and surface flammability, fire endurance, durability against chemicals, smoke generation and toxicity test in **Table 6.6** are to be carried out, where they are required in the **Annex D12.1.6-2, Part D of the Guidance for the Survey and Construction of Steel Ships**.

~~(3)~~(6) Where testing method other than those given in **Table 6.6** is employed, it may be judged as deemed appropriate by the Society in consideration of the equivalency.

~~(4)~~(7) Judgements for acceptance are to be made in accordance with the following procedures and criteria:

(a) For fire endurance, at least largest and smallest diameter or wall thickness are to be tested for approval.

(b) For flame spread, smoke generation and toxicity, at least largest and smallest wall thicknesses are to be tested for approval.

(c) For heat dependence of material and electric conductivity, the acceptance criteria are to be satisfied by the mean value of the three specimens or at least that of two test specimens.

(d) For other test items, the number of specimen and the way for judgment are to be in accordance with each testing standard.

Table 6.6 has been amended as follows.

Table 6.6 Requirements and Criteria of Approval Test for Process of Manufacture of Plastic pipes

Test item	Testing method	Criteria
Strength against internal pressure of pipe (Short-time and long-time hydraulic failure pressure)	*ASTM D*1599, *ASTM D*2992, *ISO* 15493	*
Strength against external pressure of pipe （collapse pressure）	*ASTM D* 2924, *ISO* 15493	*
Tensile strength	*ASTM D*2105, *ASTM D*2990	*
Load deformation	*ASTM D*2412	*
Impact resistance	*ISO* 9854, *ISO* 9653, *ISO* 15493, *ASTM D*2444	*
Heat dependence of material	*ISO* 75 Method A (*JIS K* 7191 Method A), *ISO* 306 (*JIS K* 7206), *ISO* 2507 *ASTM D*648	Minimum heat distortion/deflection temperature ≥ 80°C Permissible working temperature depending on the working pressure ≤（Minimum heat distortion/deflection temperature -20°C）
Aging	Manufacturer's standard or *ISO* 9142	*
Fatigue	Manufacturer's standard or service experience	*
Fluid absorption	*ISO* 8361	*
Flame spread and surface flammability	*IMO Res. A.*753(18) Appendix 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))	Comply with the criteria stipulated by *IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))
	ASTM D 635	HB Maximum burning rate < 60 *mm/min*
Fire endurance	*IMO Res. A.*753(18) Appendix 1, 2 (including any amendments due to *IMO Res. MSC.*313(88)) and *IMO Res. MSC.*399(95))	L1: Pipes without leakage during pressure tests as a result of fire endurance tests (for more than one hour) and pressure tests (for more than 15 minutes) in dry conditions L1W: For the piping systems which do not carry flammable fluid or any gas, pPipes with negligible leakage, i.e. not exceeding 5% flow loss, during pressure tests as a result of fire endurance tests (for more than one hour) and pressure tests (for more than 15 minutes) in dry conditions L2: Pipes without leakage during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in dry conditions L2W: Pipes with negligible leakage, i.e. not exceeding 5% flow loss, during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in dry conditions L3: Pipes without significant leakage, i.e. not exceeding 0.2 *l*/*min*., during pressure tests as a result of fire endurance tests (for more than 30 minutes) and pressure tests (for more than 15 minutes) in wet conditions

Smoke generation and toxicity	*IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))	Comply with the criteria stipulated by *IMO Res. A.*753(18) *Appendix* 3 (including any amendments due to *IMO Res. MSC.*313(88) and *IMO Res. MSC.*399(95))
Electric conductivity	*ASTM F* 1173, *ASTM D* 257, *NS* 6126 para. 11.2	Surface electrical resistance less than 1*MΩ*
Material compatibility	*ASTM C*581 or Manufacturer's standard	*

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 1 January 2020.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to plastic piping systems other than those which fall under the following:

(1) plastic piping systems for which the application for approval of use is submitted to the Society on or after the effective date;

(2) plastic piping systems for which the date of renewal of approval of use is on or after the effective date; or

(3) plastic piping systems used on ships for which the date of contract for construction* is on or after 1 July 2021.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

Amendment 2-2

Part 6 MACHINERY

Chapter 9 APPROVAL OF USE OF MECHANICAL JOINTS

9.1 General

Paragraph 9.1.1 has been amended as follows.

9.1.1 Scope

The requirements of this chapter apply to testing and inspection for approval of use of mechanical joints ~~on ships~~ in accordance with the requirements of **12.3.3-~~1~~2**, **Part D of Rules for the Survey and Construction of Steel Ships**.

Table 6.9-1 has been amended as follows.

Table 6.9-1 Testing Requirements for Mechanical Joints

Tests		Types of mechanical joints		
			Slip-on joints	
		Compression couplings and pipes unions	Grip type &machine grooved type	Slip type
1	Tightness test	+	+	+
2	Vibration (fatigue)test	+	+	-
3	Pressure pulsation test(1)	+	+	-
4	Burst pressure test	+	+	+
5	Pull-out test	+	+	-
6	Fire endurance test(4)	+	+	+
7	Vacuum test(5)	+(3)	+	+
8	Repeated assembly test	+(2)	+	-

Notes:

+ : Test is required, - : Test is not required

(1) For use in those systems where pressure pulsation other than water hammer is expected.

(2) Except press type.

(3) Except joints with metal-to-metal tightening surfaces.

(4) If required approved fire resistant types by **12.3.3-~~1~~6, Part D of Rules for the Survey and Construction of Steel Ships**.

(5) For use in suction lines.

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 January 2020.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to mechanical joints used on ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

Amendment 2-3

Part 7 CONTROL AND INSTRUMENTATION EQUIPMENT AND ELECTRICAL INSTALLATIONS

Chapter 1 APPROVAL OF USE OF AUTOMATIC DEVICES AND EQUIPMENT

1.3 Environmental Test

1.3.1 Approval Test

(1) After the drawings and documents submitted in accordance with **1.2.1** have been examined, tests are to be carried out in accordance with the testing condition and method of **Table 7.1-1** in the presence of the Society's surveyor, and they are to be proven to satisfy the criteria of **Table 7.1-1**.

(2) Where tests which do not fully comply with the testing condition and methods, and the criteria of **Table7.1-1,** they may comply with a standard deemed appropriate by the Society such as *IEC* 60092-504 (*Electrical installations in ships - Special features, Control and instrumentation, Section* 3: *Environmental and supply conditions and testing*), *IEC* 60945 (*Maritime Navigation and Radiocommunication Equipment and Systems - General Requirements - Methods of Testing and Required Test Results*), *IEC* 60533 (*Electrical and electronic installations in ships - Electromagnetic compatibility*), *JIS F* 0807 (*General Rules for Environmental Tests of Control and Instrumentation Equipment for Marine Use*).

(3) In case the documents in **1.2.1(11)** are deemed appropriate, a part of tests may be exempted.

(4) Tests are to be carried out under normal temperature ($25^{\circ}C \pm 10^{\circ}C$), normal humidity ($60\% \pm 30\%$), normal atmospheric pressure ($96\ kPa \pm 10\ kPa$), rated electrical source voltage and rated electrical source frequency unless otherwise specified. The number of test sample is, as a rule, to be one for each type. However, additional test sample may be required when deemed necessary by the Society.

Table 7.1-1 has been amended as follows.

Table7.1-1 Environmental Test Items, Testing Conditions, Methods, and Criteria

<table>
<tr><th>Test Item</th><th colspan="2">Testing condition and method</th><th>Criteria</th></tr>
<tr><td colspan="4">(Omitted)</td></tr>
<tr><td rowspan="4">Dry heat test</td><td colspan="2">For non-heat dissipating equipment</td><td rowspan="4">- No abnormality is observed.
- The equipment operates satisfactory.</td></tr>
<tr><td colspan="2">- The equipment is at an operating condition and apply the environmental condition of +70 $^{\circ}C$ ± 2 $^{\circ}C$ for 16 hours. And check the operation of the equipment during the last hour at the test temperature and after recovery.
- For ~~the~~ equipment ~~except ones~~ other than that subject to a high degree of heat (e.g. installed in consoles, housing etc. together with other heat dissipating power equipment), the environmental condition of +55 $^{\circ}C$ ± 2 $^{\circ}C$ for 16 hours may be applied.
- For the equipment specified for more severe temperature conditions, tests are to be carried out at agreed test temperatures and durations.
- Detailed test methods are ~~referred to~~ according to Test Bb of IEC 60068-2-2.</td></tr>
<tr><td colspan="2">For heat dissipating equipment</td></tr>
<tr><td colspan="2">- The equipment is at an operating condition and apply the environmental condition of +70 $^{\circ}C$ ± 2 $^{\circ}C$ for 16 hours with cooling system on (if provided). In addition, the operation of the equipment during the last hour at the test temperature and after recovery is to be checked.
- For equipment other than that subject to a high degree of heat (e.g. installed in consoles, housing etc. together with other heat dissipating power equipment), the environmental condition of +55 $^{\circ}C$ ± 2 $^{\circ}C$ for 16 hours may be applied.
- For equipment specified for more severe temperature conditions, tests are to be carried out at agreed test temperatures for agreed durations.
- Detailed test methods are according to Test Be of IEC 60068-2-2.</td></tr>
<tr><td colspan="4">(Omitted)</td></tr>
<tr><td rowspan="6">Radiated radio frequency immunity test</td><td colspan="3">- Check the operation of the equipment when the radiated radio frequency immunity test is carried out according to the following condition.</td><td rowspan="6">- Performance Criterion A(*1)</td></tr>
<tr><td>Frequency range</td><td>80 MHz - ~~2~~6 GHz</td></tr>
<tr><td>Modulation</td><td>80% AM at 1 kHz</td></tr>
<tr><td>Field strength</td><td>10 V/m</td></tr>
<tr><td>Frequency sweep rate</td><td>≤ 1.5×10^{-3}decades/sec.
(or 1% / 3sec.)</td></tr>
<tr><td colspan="2">- If for tests of equipment an input signal with a modulation frequency of 1 kHz is necessary a modulation frequency of 400 Hz may be chosen.
- If equipment is intended to receive radio signals for the purpose of radio communication (e.g. wifi router, remote radio controller), then the immunity limits at its communication frequency do not apply, subject to the provisions in 5.2 of Annex D18.1.1, Part D of the Rules for the Survey and Construction of Steel Ships.
- Detailed test methods are ~~referred~~ according to Level 3 of IEC 61000-4-3.</td></tr>
<tr><td colspan="4">(Omitted)</td></tr>
</table>

Table7.1-1 Environmental Test Items, Testing Conditions, Methods, and Criteria (continued)

<table>
<tr><th>Test Item</th><th colspan="2">Testing condition and method</th><th>Criteria</th></tr>
<tr><td colspan="4">(Omitted)</td></tr>
<tr><td>Radiated emission test</td><td colspan="2">- Radiated emission test is to be carried out according to the following.</td><td>- Radiated emission is to be within limits in the table.</td></tr>
<tr><td></td><td>Frequency range: Up to 1 GHz</td><td>- For equipment installed in the bridge and deck zone.
<table><tr><th>Frequency range</th><th>Quasi peak limits (dB μ V/m)</th></tr><tr><td>150 kHz - 300 kHz</td><td>80 – 52</td></tr><tr><td>300 kHz - 30 MHz</td><td>52 – 34</td></tr><tr><td>30 MHz - 156 MHz</td><td>54</td></tr><tr><td>156 MHz - 165 MHz</td><td>24</td></tr><tr><td>165 MHz - ~~2~~1 GHz</td><td>54</td></tr></table>- For equipment other than the above.
<table><tr><th>Frequency range</th><th>Quasi peak limits (dB μ V/m)</th></tr><tr><td>150 kHz - 30 MHz</td><td>80 - 50</td></tr><tr><td>30 MHz - 100 MHz</td><td>60 - 54</td></tr><tr><td>100 MHz - 156 MHz</td><td>54</td></tr><tr><td>156 MHz - 165 MHz</td><td>24</td></tr><tr><td>165 MHz - ~~2~~1 GHz</td><td>54</td></tr></table>- Distance between equipment and antenna is to be 3 m.
- For the frequency band 156 MHz to 165 MHz, the measurement is to be repeated with a receiver bandwidth of 9 kHz (as per IEC 60945).
- The radiation limit at a distance of 3 m from the enclosure port at the frequency range of 156 MHz to 165 MHz may be 30 dB μ V/m (peak value) (as per IEC 60945).
- Detailed test methods are referred to CISPR 16-2-3. For the frequency band 156 MHz to 165 MHz, Detailed test methods are according to IEC 60945.</td></tr>
<tr><td></td><td>Frequency range: Above 1 GHz</td><td><table><tr><th>Frequency range</th><th>Average limit (dB μ V/m)</th></tr><tr><td>1 GHz - 6 GHz</td><td>54</td></tr></table>- Distance between equipment and antenna is to be 3 m.
- Equipment intended to transmit radio signals for the purpose of radio communication (e.g. wifi router, remote radio controller) may be exempted from limits, within its communication frequency range, subject to the provisions in 5.2 of Annex D18.1.1, Part D of the Guidance for the Survey and Construction of Steel Ships.
- Detailed test methods are according to CISPR 16-2-3.</td><td></td></tr>
<tr><td colspan="4">(Omitted)</td></tr>
</table>

Remarks:

(1) A simplified test may be used instead of a performance test to verify equipment operation if such testing is sufficient to show the equipment has not suffered any deterioration and no abnormalities were caused by the individual environmental tests.

(2) (*1) Performance Criterion A: The Equipment Under Test (EUT) is to continue to operate as intended during and after the tests. No degradation of performance or loss of function is allowed as defined in relevant equipment standard and the technical specification published by the manufacturer.

(*2) Performance Criterion B: The EUT is to continue to operate as intended after the test. No degradation of performance or loss of function is allowed as defined in the technical specification published by the manufacturer. During the test, degradation or less of function or performance which is self recoverable is however allowed but no change of actual operating state or stored data is allowed.

EFFECTIVE DATE AND APPLICATION (Amendment 2-3)

1. The effective date of the amendments is 1 January 2020.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to automatic devices and equipment other than which fall under the following:

(1) equipment for which the date of application for type approval certification is dated on or after 1 January 2020.

(2) equipment intended to be installed on ships contracted for construction* on or after 1 January 2022.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

Amendment 2-4

Annex 4 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL AND PRODUCTION TESTS OF LAUNCHING APPLIANCES OF LIFEBOATS, RESCUE BOATS AND LIFERAFTS

Chapter 1 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL OF LAUNCHING APPLIANCES

1.1 Strength and Performance Tests

1.1.2 Davits and Launching Appliances

Sub-paragraph -1 has been amended as follows.

1 Overload Test [8.1.1]

For lifeboats other than free-fall lifeboats, davits and launching appliances, except ~~the~~ winches ~~brakes~~, are to be subjected to a static proof load of 2.2 times their maximum working load (L_{max}). With the load at the full outboard position, the load is to be swung through an arc of approximately 10 degrees to each side of vertical in the intended fore and aft plane. The test is to be done first in the upright position, followed by tests simulating a shipboard condition of list of 20 degrees both inboard and outboard. There is to be no evidence of significant deformation or other damage as a result of this test. For free-fall lifeboats, the launching appliances for lowering a free-fall lifeboat by falls, except the winch brakes, are to be subjected to a static proof load of 2.2 times the maximum working load (L_{max}) at the full outboard position. The launching ramp and its connection to the release mechanism is to be subjected to a static proof load of 2.2 times the maximum working load. There is to be no evidence of significant deformation or other damage as a result of this test.

EFFECTIVE DATE AND APPLICATION (Amendment 2-4)

1. The effective date of the amendments is 1 January 2020.