INTERNATIONAL MARITIME ORGANIZATION

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Agenda item 11

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SHIP SYSTEMS AND EQUIPMENT

Report of the Working Group

1 GENERAL

1.1 The Working Group on Ship Systems and Equipment Matters, met from 4 to 8 November 2022 and was chaired by Ms. Brandi Baldwin (United States).

1.2 The Group was attended by delegates from the following Member States:

ANGOLA
ARGENTINA
BAHAMAS
CANADA
CHINA
CROATIA
CYPRUS
DENMARK
FINLAND
FRANCE
GERMANY
GREECE
INDIA
INDONESIA
ITALY
JAPAN
LIBERIA
MALAYSIA
MALTA
MARSHALL ISLANDS
MOROCCO
NETHERLANDS
NEW ZEALAND
NIGERIA
NORWAY
PANAMA
PHILIPPINES
POLAND
REPUBLIC OF KOREA
RUSSIAN FEDERATION
SAUDI ARABIA
SPAIN
SWEDEN
THAILAND
TÜRKİYE
UNITED ARAB EMIRATES
UNITED KINGDOM
UNITED STATES

* Reissued on 10 November 2022 to update the list of participating delegations.

representatives from the following intergovernmental organization:

EUROPEAN COMMISSION (EC)

and observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)
INTERNATIONAL UNION OF MARINE INSURANCE (IUMI)
BIMCO
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)
INTERNATIONAL LIFE-SAVING APPLIANCE MANUFACTURERS' ASSOCIATION (ILAMA)
CESA
INTERNATIONAL ASSOCIATION OF INDEPENDENT TANKER OWNERS (INTERTANKO)
SOCIETY OF INTERNATIONAL GAS TANKER AND TERMINAL OPERATORS LTD. (SIGTTO)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)
THE ROYAL INSTITUTION OF NAVAL ARCHITECTS (RINA)
INTERNATIONAL TRANSPORT WORKERS' FEDERATION (ITF)

2 TERMS OF REFERENCE

2.1 Taking into account the comments made and decisions taken in plenary, the Working Group was instructed to:

.1 finalize the draft MSC circular on revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk (MSC.1/Circ.1315), based on annex 4 to document SSE 8/20 and taking into account document MSC 106/11/2, with a view to approval and dissemination as MSC.1/Circ.1315/Rev.1;

.2 finalize the draft MSC circular on guidelines for anchor handling winches, based on annex 5 to document SSE 8/20 and taking into account documents MSC 106/11/4 and MSC 106/11/7, with a view to approval in principle and subsequent approval in conjunction with the adoption of the related draft amendments to SOLAS;

.3 finalize the draft MSC circular on guidelines for lifting appliances, based on annex 6 to document SSE 8/20 and taking into account document MSC 106/11/4, with a view to approval in principle and subsequent approval in conjunction with the adoption of the related draft amendments to SOLAS; and develop a statement of fact confirming only the scope of draft SOLAS regulation II-1/3-13.2.4, with a view to inclusion in the final report of the Committee; and

.4 finalize the draft amendments to paragraph 4.4.7.6.17 of the LSA Code on single fall and hook systems, based on document MSC 106/WP.9, with a view to approval and subsequent adoption.

3 REVISION OF MSC.1/CIRC.1315

3.1 The Group considered the draft MSC circular on revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk (MSC.1/Circ.1315), based on annex 4 to document SSE 8/20 and taking into account document MSC 106/11/2.

3.2 Having agreed with the proposed modifications in document MSC 106/11/2, the Group finalized the draft MSC circular on revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk, as set out in annex 1, with the effective date of 1 July 2023; and invited the Committee to approve, with a view to dissemination as MSC.1/Circ.1315/Rev.1.

4 GUIDELINES FOR ANCHOR HANDLING WINCHES

4.1 The Group considered the draft guidelines for anchor handling winches, based on annex 5 to document SSE 8/20 and taking into account documents MSC 106/11/4 (Germany and IACS) and MSC 106/11/7 (Japan).

4.2 The Group, having agreed with the proposed modifications in documents MSC 106/11/4 and MSC 106/11/7, incorporated them in the draft guidelines with some adjustments, in particular in paragraphs 3.2.1.1, 3.2.1.2 and 4.7.1.2. Additionally, the Group:

.1 introduced minor editorial modifications for consistency and clarity; and

.2 modified paragraph 3.2.1.1.2 to include capacity and integrity verification of the anchor handling winch being overload tested.

4.3 Consequently, the Group finalized the draft MSC circular on guidelines for anchor handling winches, as set out in annex 2; and invited the Committee to approve in principle, with a view to final approval by MSC 107, in conjunction with the adoption of the associated draft amendments to SOLAS.

5 GUIDELINES FOR LIFTING APPLIANCES

Finalization of the draft guidelines on lifting appliances

5.1 The Group considered the draft guidelines on lifting appliances, based on annex 6 to document SSE 8/20 and taking into account document MSC 106/11/4.

5.2 Having agreed with the proposed modifications in document MSC 106/11/4, the Group finalized the draft MSC circular on guidelines for lifting appliances, as set out in annex 3, and invited the Committee to approve in principle, with a view to final approval by MSC 107, in conjunction with the adoption of the associated draft amendments to SOLAS.

Statement of fact

5.3 The Group considered a statement of fact confirming only the scope of draft SOLAS regulation II-1/3-13.2.4, with a view to inclusion in the final report of the Committee.

5.4 In the ensuing discussion, the following views were expressed:

.1 A statement of fact issued by the Administration or a classification society recognized by the Administration would demonstrate compliance with the requirements in the guidelines.

.2 The draft guidelines provided sufficient guidance under draft SOLAS regulation I-1/3-13 for existing lifting appliances which were not currently covered under "another international instrument acceptable to the Administration", as stated in paragraph 3.3.3 of the draft guidelines. Such appliances were required to be tested and thoroughly examined in accordance with paragraphs 3.2.1.2 and 3.2.2.1 of the draft guidelines; and paragraph 3.3.3 provided flexibility to Administrations, in particular those parties to ILO Convention No.152. Therefore, inclusion of this understanding in the final report of the Committee would suffice, as instructed to the Group.

.3 Paragraph 4.7.1.2 of the draft guidelines stated that records of thorough examination and testing might be documented in any convenient form, and such statement of fact could well serve as evidence that existing lifting appliances without valid certificates under another international instrument were considered compliant with the associated SOLAS regulations. Therefore, the format of such documentation should be left at the discretion of flag State Administration, without needing to mandate within the scope of the draft guidelines.

.4 Sufficient consideration had been given to existing appliances during the course of the development of the draft guidelines, as a result of mutual understanding of the co-authors. Therefore, a modification would not be necessary to the draft guidelines; however, this mutual understanding should be reflected in the final report of the Committee.

.5 As authorized by the Committee (SSE 8/20, paragraph 9.10.2.2), the IMO Secretariat, when informing the ILO Secretariat of the development of the new SOLAS requirements for lifting appliances to invite ILO to take appropriate action regarding surveys stipulated in ILO Convention No.152 so as to avoid duplicative surveys, should also reflect the Committee's mutual understanding in the letter to assist ILO in taking expected actions, as appropriate.

5.5 Following discussion, the Group reached to the following mutual understanding, with a view to being reflected in the final report of the Committee:

.1 Existing lifting appliances with valid certificates of test and thorough examination under another international instrument, e.g. ILO Convention No.152, acceptable to the Administration and issued prior to the entry into force of SOLAS regulation II-1/3-13, should be considered compliant with SOLAS regulation II-1/3-13.2.4, so as to avoid duplicative testing and thorough examination.

.2 Where existing lifting appliances installed before the entry into force date have no valid certificates of test and thorough examination under another international instrument, they should be documented as compliant with SOLAS regulation II-1/3-13.2.4 no later than the date of the first renewal* survey on or after that date. Contracting Parties are encouraged to consider paragraphs 3.2.1.2, 3.2.1.6 and 3.2.2.1 of the Guidelines when issuing this documentation.

* Refer to the surveys required by SOLAS regulations I/7 (Surveys of passenger ships) and I/10 (Surveys of structure, machinery and equipment of cargo ship).

.3 In accordance with paragraph 3.2.3.2 of the Guidelines, demonstration of compliance following testing and thorough examination may be documented in any convenient form, provided each entry contains the necessary information stipulated in the Guidelines, is clearly legible and is authenticated by a competent person. A factual statement issued by the Administration or a classification society recognized by the Administration could serve as a demonstration of compliance for existing lifting appliances without valid certificates of test and thorough examination under another international instrument.

5.6 In this respect, the Group invited the Committee to request the IMO Secretariat to insert the above understanding in the letter to the ILO Secretariat (see paragraph 5.4.5).

6 AMENDMENTS TO THE LSA CODE ON SINGLE FALL AND HOOK SYSTEMS

6.1 The Group considered the draft amendments to paragraph 4.4.7.6.17 of the LSA Code on single fall and hook systems, based on document MSC 106/WP.9, which included modification proposals in document MSC 106/11/1 (Bahamas et al.).

6.2 The Group deliberated on several alternative options for resolving the concerns raised in document MSC 106/11/1, including the unintended consequences that could compromise the safety of single fall and hook systems. In particular, the Group considered the proposal contained in document MSC 106/11/1 and the following additional options:

.1 adding the "load over centre type (which is held fully closed by the weight of the boat)" to the examples of types of hooks to which paragraph 4.4.7.6.8 of the LSA Code need not apply;

.2 replacing the examples of types of hooks to which paragraph 4.4.7.6.8 of the LSA Code need not apply to only the "load over centre type (which is held fully closed by the weight of the boat)"; and

.3 retaining the draft amendments to paragraph 4.4.7.6.17 of the Code as was agreed at SSE 7, but modifying paragraph 4.4.7.6.8 to clarify the application of requirements for hooks to not be capable of taking a load unless completely reset.

6.3 In the ensuing discussion, the Group noted the following views:

.1 the proposed phrase "mechanically simplistic with few moving parts", in document MSC 106/11/1, was considered vague and too subjective, and could cause unintended confusion in implementation;

.2 it would not be appropriate to apply paragraph 4.4.7.6.8 of the LSA Code to purely off-load hooks;

.3 paragraph 4.4.7.6.17 of the Code aimed to prevent accidents involving simple release mechanisms described in the document, and such hooks would require manual separation of the lifting ring from the jaw of the hook, which in the past had been known to cause significant accidents; and

.4 sufficient consideration had already been given to the draft amendments and it would not be appropriate to introduce modifications without a thorough examination of consequential impacts; and therefore, the amendments should be approved without any modification.

6.4 Following the discussion, due to the highly technical nature of these amendments, and having recalled the decision of MSC 99 to limit the scope of the output to amending paragraph 4.4.7.6.17 of the LSA Code (MSC 99/22, paragraph 20.25), the Group suggested that this matter be considered in more detail at SSE 9, noting that the entry into force of the amendments would not be affected if SSE 9 finalized the draft amendments, with a view to approval at MSC 107 and adoption at MSC 108, with the expected entry into force on 1 January 2026.

6.5 The Group noted that the output had previously been marked as completed and it would need to be reinstated for the work item to continue for finalization.

6.6 In this respect, the Group invited the Committee to:

.1 reinstate the agenda item in SSE 9 agenda and instruct the Sub-Committee to consider document MSC 106/11/1, together with any other relevant submissions to be made to SSE 9;

.2 redefine the scope of the output to include other subparagraphs of paragraph 4.4.7.6 of the LSA Code to provide the necessary clarity for consistent application of the requirements and rename the output as "Amendments to the LSA Code concerning single fall and hook systems with on-load release capability"; and

.3 instruct SSE 9 to complete the work item as a matter of priority in order to remain in the ad-hoc midterm amendment cycle, with a view to approval at MSC 107 and subsequent adoption at MSC 108.

6.7 Additionally, the Group invited interested Member States and international organizations to submit relevant proposals to SSE 9, subject to the Committee's approval to retain the agenda item open.

7 ACTION REQUESTED OF THE COMMITTEE

7.1 The Committee is invited to approve the report in general and, in particular, to:

.1 approve the draft MSC circular on Revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk, with a view to dissemination as MSC.1/Circ.1315/Rev.1, with the effective date of 1 July 2023 (paragraphs 3.1 and 3.2, and annex 1);

.2 approve, in principle, the draft MSC circular on Guidelines for anchor handling winches, with a view to final approval by MSC 107, in conjunction with the adoption of the associated draft amendments to SOLAS (paragraphs 4.1 to 4.3 and annex 2);

.3 approve, in principle, the draft MSC circular on Guidelines for lifting appliances, with a view to final approval by MSC 107, in conjunction with the adoption of the associated draft amendments to SOLAS (paragraphs 5.1 and 5.2, and annex 3);

.4 note the discussion on the scope of draft SOLAS regulation II-1/3-13.2.4 for existing lifting appliances and endorse the Group's mutual understanding, with a view to being reflected in the final report of the Committee (paragraphs 5.3 to 5.5);

.5 if endorsed, request the IMO Secretariat to insert the Group's mutual understanding in the letter to the ILO Secretariat inviting ILO to take actions for avoiding duplicative surveys (paragraph 5.6);

.6 note the Group's discussion on the draft amendments to the LSA Code on single fall and hook systems that further discussion would be necessary (paragraphs 6.1 to 6.3);

.7 endorse the Group's suggestion to consider the matter on single fall and hook systems in more detail at SSE 9 (paragraph 6.4); and

.8 if endorsed:

.1 reinstate the agenda item in SSE 9's agenda; and instruct the SSE Sub-Committee to consider document MSC 106/11/1, together with any other relevant submissions to SSE 9 (paragraphs 6.5 and 6.6.1);

.2 redefine the scope of the output to include other subparagraphs of paragraph 4.4.7.6 of the LSA Code to provide the necessary clarity for consistent application of the requirements, and rename it as "Amendments to the LSA Code concerning single fall and hook systems with on-load release capability" (paragraph 6.6.2); and

.3 instruct SSE 9 to complete the output as a matter of priority in order to remain in the ad-hoc midterm amendment cycle agreed by MSC 104, with a view to approval at MSC 107 and subsequent adoption at MSC 108 (paragraph 6.6.3).

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ANNEX 1

DRAFT MSC CIRCULAR

REVISED GUIDELINES FOR THE APPROVAL OF FIXED DRY CHEMICAL POWDER FIRE-EXTINGUISHING SYSTEMS FOR THE PROTECTION OF SHIPS CARRYING LIQUEFIED GASES IN BULK

1 The Maritime Safety Committee, at its eighty-sixth session (27 May to 5 June 2009), having considered the proposal by the Sub-Committee on Fire Protection, at its fifty-third session, approved *Guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk* (MSC.1/Circ.1315).

2 The Committee, at its [106th session (2 to 11 November 2022)], approved the *Revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk* (MSC.1/Circ.1315/Rev.1), prepared by the Sub-Committee on Ship Systems and Equipment, at its eighth session, as set out in the annex.

3 Member Governments are invited to apply the annexed Revised guidelines for the approval of fixed dry chemical powder fire-extinguishing systems installed on or after 1 July 2023 for the protection of ships carrying liquefied gases in bulk, and bring them to the attention of ship designers, shipowners, equipment manufacturers, test laboratories and other parties concerned.

4 The expression *installed on or after 1 July 2023* means:

.1 for ships for which the building contract is placed on or after 1 July 2023, or in the absence of the contract, constructed on or after 1 July 2023, any installation date on the ship; or

.2 for ships other than those ships prescribed in (a) above, a contractual delivery date for the equipment or, in the absence of a contractual delivery date, the actual delivery date of the equipment to the ship on or after 1 July 2023.

5 This circular supersedes MSC.1/Circ.1315. Existing fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk approved based on MSC.1/Circ.1315 and installed before 1 July 2023 should be permitted to remain in service as long as they are serviceable.

ANNEX

REVISED GUIDELINES FOR THE APPROVAL OF FIXED DRY CHEMICAL POWDER FIRE-EXTINGUISHING SYSTEMS FOR THE PROTECTION OF SHIPS CARRYING LIQUEFIED GASES IN BULK

1 Application

These Guidelines apply to fixed dry chemical powder fire-extinguishing systems for the protection of on-deck cargo areas of ships carrying liquefied gases in bulk in accordance with SOLAS regulation II-2/1.6.2 and chapter 11 of the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code).

2 Definitions

2.1 *Caking* is a chemical reaction between dry chemical powder and moisture that causes individual particles of the medium to bind together to form an aggregate mass.

2.2 *Dry chemical powder* is an extinguishing medium composed of finely divided solid chemical products consisting of one or more components, which may be combined with additives to improve its characteristics to prevent packing and caking (moisture absorption) and to ensure consistent flow characteristics.

2.3 *Dry chemical powder unit* is a complete system including dry chemical storage container(s), pressurizing gas storage container(s), controls, piping and hand hose lines.

2.4 *Gas point* is a defined point in the discharge of a dry chemical powder unit when the discharge of dry chemical powder ends, and is marked by a change in the nozzle stream to the discharge of primarily pressurizing gas.

2.5 *Hand hose line* is a hand-held dry chemical powder nozzle covering cargo areas not covered by a monitor, that is normally closed and opened by the individual operating the device at or just before the nozzle.

2.6 *Monitor* is a fixed dry chemical powder nozzle protecting cargo loading and discharge manifold areas.

2.7 *Packing* is a phenomenon that occurs when dry chemical powder stored in a container is subjected to vibration causing the smaller particles to move to the bottom of the container and the larger particles to travel to the top.

2.8 *Pressurizing medium* is the gas used to expel the dry chemical from the system, usually dry nitrogen.

3 Principal requirements for the dry chemical powder and the system

3.1 The system should be capable of manual release. A manual release station should be located adjacent to each hand hose line and each monitor. A back-up release station should be provided at the fixed dry chemical powder unit. The operation of any manual release station should initiate the pressurization of the fixed dry chemical powder unit and begin the discharge of dry chemical powder to all connected hand hose lines and monitors.

3.2 The system and its components should be designed to withstand ambient temperature changes, vibration, humidity, shock, impact and corrosion normally encountered on the open deck of ships, and manufactured and tested to the satisfaction of the Administration in accordance with the criteria given in the appendix.

3.3 Dry chemical storage should be designed to maintain the conditions on board in accordance with the manufacturer's recommendations.

3.4 Systems should be designed for the discharge characteristics and flow rates of a specific dry chemical powder medium (formulation and physical nature of composition). The specific type of dry chemical powder medium in the system should not be changed unless testing to verify performance is conducted by a laboratory to the satisfaction of the Administration. Different dry chemical powder media should not be mixed.

3.5 Dry chemical storage containers should be designed to pressure codes of practice acceptable to the Administration, for the maximum system pressure developed at 55ºC.

3.6 Dry chemical powder should be tested as specified in the appendix.

3.7 A means for pressurizing the system using an inert gas, which is normally dry nitrogen, in high pressure cylinders should be provided. The inert gas should be industrial grade with a dew point of -50ºC or lower. Pressure gauges should be provided for monitoring the contents of the cylinders. A pressure regulator should be installed to reduce the gas pressure to the required system operating pressure.

3.8 The quantity of expellant gas should be adequate for the system to discharge the entire charge of dry chemical powder within the time period specified in paragraph 1 of the appendix. If multiple gas cylinders are provided, they should be arranged with normally closed cylinder valves that are automatically opened by a pilot system when a release station is actuated. Each cylinder should have, in addition, the capability of manual operation.

3.9 System piping should be arranged to ensure that the required flow rates are achieved at each hand hose line and monitor. Flow through the piping should be based on flow calculation methods determined by the test laboratory for the specific dry chemical powder medium and equipment used.

3.10 Hand hose line nozzles, monitors and hose couplings should be constructed of brass or stainless steel. Piping, fittings and related components, except gaskets, should be designed to withstand 925ºC.

3.11 Dry chemical storage container pick-up tubes and related internal structures should be shown to be resistant to corrosive effects of the dry chemical medium.

3.12 Dry chemical storage containers should have a fill opening of at least 100 mm to allow onboard recharging, and suitable connections to allow the dry powder charge to be fully agitated with nitrogen, in accordance with the system manufacturer's maintenance instructions.

3.13 Operating instructions for the system should be placed at each operating station.

3.14 Recharging instructions should be provided on a permanent nameplate affixed to the fixed dry chemical powder unit. As a minimum, the instructions should indicate the required type of dry chemical powder, the manufacturer of the powder and the required charge. The required pressurizing medium pressure, number of cylinders and regulator valve setting should also be provided.

3.15 An approved design, installation, operation and maintenance manual should be provided to the shipowner for each type of fixed dry chemical powder unit.

4 Onboard testing

After installation, the pipes, valves, fittings and assembled systems should be subjected to a tightness test and functional testing of the remote and local release stations. Testing arrangements are to involve discharge using dry chemical powder from all monitors and hand hose lines on board, but a full discharge of the installed quantity of dry powder is not required. This testing can also be used to satisfy the requirement that the piping is free of obstructions, in lieu of blowing through with dry air all the distribution piping. However, after completion of this testing, the system, including all monitors and hand hose lines, are to be blown through with dry air; but only for the purpose of the system subsequently being clear from any residues of dry chemical powder.

APPENDIX

APPROVAL TESTS

Except for paragraph 5, a fully charged fixed dry chemical powder unit conditioned at 21 ± 3ºC for at least 24 h should be used.

Characteristics of the system

1 Discharge duration test

A fixed dry chemical powder unit should have a discharge duration of at least 45 s with all attached hand hose lines and monitors operating. The hand hose lines should be fully deployed for this test. To conduct the test, the hose lines and monitors should be held in a horizontal position and their discharge valves fully opened. The duration of discharge should be measured from the time dry chemical powder begins flowing from all attached devices until the gas point is reached at the first nozzle.

2 Maximum length of piping and fittings test

The discharge duration test should be conducted with the maximum length of discharge piping, elbows, tees and other fittings to be used on board, as recommended by the manufacturer. One nozzle should be located at the maximum height for which approval is requested.

3 Discharge range test

Dry chemical powder monitors should have a minimum discharge range as follows:

Monitor flow rate	Minimum range
10 kg/s	10 m
25 kg/s	30 m
45 kg/s	40 m

For monitors with a discharge rate between the above listed values, the minimum range should be determined by interpolation. The test should be conducted with the monitor positioned, 1 metre above the floor. The monitor should be capable of achieving the minimum range for at least 40 s of the 45 s discharge.

4 Flow rate test

The minimum flow rate of each type of hand hose line nozzle should be at least 3.5 kg/s and each type monitor should be at least 10 kg/s. The minimum flow rate should be determined based on the average of three discharge tests. The tests should be conducted with the nozzle/monitor discharged for at least 30 s. The fixed dry chemical powder unit should be placed on a load cell or weighed before and after testing to determine the quantity of medium discharged during the test.

5 Minimum temperature test

A fully charged fixed dry chemical powder unit conditioned at the minimum expected storage temperature for at least 24 h should be capable of discharging at least 85% of the dry chemical medium with all attached hand hose lines and monitors operating. The minimum expected storage temperature should be determined by the Administration.

6 Hand hose line hydrostatic test

A full-length representative sample of a hand hose line should be subjected to a hydrostatic pressure equal to two times the maximum operating pressure that would be developed in the line by a fully charged unit with the nozzle discharge valve closed. The hose should be capable of withstanding this test pressure for a period of 1 min without rupturing.

7 Salt spray test

7.1 Representative samples of valves, pressure regulators, gauges, releasing controls and related components that will be installed at locations exposed to the weather should be subjected to a salt spray within a fog chamber. Prior to exposure, any components with inlet or outlet orifices should be sealed.

7.2 The salt solution should be a 20% by mass sodium chloride solution in distilled water. The pH should be between 6.5 and 7.2 and the density between 1.126 g/mL and 1.157 g/mL when atomized at 35ºC. Suitable means of controlling the atmosphere in the chamber should be provided. The specimens should be supported in their normal operating position and exposed to the salt spray (fog) in a chamber having a volume of at least 0.43 m^3 in which the exposure zone should be maintained at a temperature of 35 ± 2ºC. The temperature should be recorded at least once per day, at least 7 h apart (except weekends and holidays when the chamber normally would not be opened). Salt solution should be supplied from a recirculating reservoir through air-aspirating nozzles, at a pressure between 0.7 bar (0.07 MPa) and 1.7 bar (0.17 MPa). Salt solution run-off from exposed samples should be collected and should not return to the reservoir for recirculation. The samples should be shielded from condensate dripping.

7.3 Fog should be collected from at least two points in the exposure zone to determine the rate of application and salt concentration. The fog should be such that for each 80 cm^2 of collection area, 1 mL to 2 mL of solution should be collected per hour over a 16 h period and the salt concentration should be 20 ± 1% by mass.

7.4 The samples should withstand exposure to the salt spray for a period of 30 days. After this period, the samples should be removed from the fog chamber and allowed to dry for 4 to 7 days at a temperature of 20°C to 25°C in an atmosphere having a relative humidity not greater than 70%.

7.5 Following the drying period, the samples should be examined for evidence of failure. Any operating components should be functionally tested to verify continued operability. Gauges should remain watertight for at least 2 h when immersed in 0.3 m of water.

Characteristics of the dry chemical powder

8 Temperature test

Dry chemical powders should be tested at a temperature of 55°C or higher.

9 Dry chemical powder tests

Dry chemicals should be tested in accordance with ISO 7202:2018, as amended by paragraph 8 above.

10 Characteristics of the fire test

The dry chemical powder should be demonstrated capable of extinguishing fires in liquefied gas cargoes. Representative equipment should be subjected to full-scale fire tests to the satisfaction of the Administration. Fire test using heptane should be carried out in accordance with ISO 7202 standards, item 13.3.

10.1 Characteristics of fires to be extinguished during the fire test

10.1.1 The fire test should be conducted using heptane as outlined in section 8 of ISO 7165:2017 standards for a Class B fire, except as outlined in section 9 of the appendix to these guidelines.

10.1.2 The fire tests should be conducted in a controlled space/area with no restrictions on air supply with agreed standard test equipment. Wind speed should not exceed 3 m/s during the fire tests and oxygen concentration should not be lower than 20% throughout the fire test. The fire tests may be performed outside.

10.2 Establishment of acceptance criteria for extinguishment in the fire test

10.2.1 Test requirements:

.1 temperature: 0°C to +30°C;

.2 powder application rate should be measured;

.3 the design of the hand hose line (including the nozzle) should be determined by the manufacturer and recorded in the test report; the system installed on board should match the qualification tests and be in accordance with the minimum requirements of resolution MSC.370(93); and

.4 10 second discharge time after extinguishment;

10.2.2 Test fire arrangement/apparatus:

.1 design and capacity of the storage tank containing the powder should be specified; similar storage tank should be on board in accordance with these qualification tests;

.2 operating pressure of the extinguishing system should be recorded;

.3 size and length of the piping should be recorded; and

.4 the design of the fixed monitor (including the nozzle) should be determined by the manufacturer and recorded in the test report; the system installed on board should match the qualification tests and be in accordance with the minimum requirements of resolution MSC.370(93).

10.2.3 The fire tray should be constructed in accordance with paragraph 8.4.3 of standard ISO 7165:2017. The dimensions of fire tray should be based on the class 144B test fire given in table 9 of standard ISO 7165:2017.

10.2.4 The following parameters should be measured and recorded:

.1 heptane volume for the fire scenario;

.2 the discharge pressures at the inlet of fixed monitor and at the hand hose, at the outlet of the dry chemical powder container and at the outlet of the pressurizing gas container;

.3 the mass of the dry chemical powder before and after the fire test; and

.4 the time for extinction should be recorded for each test. The average time over all the tests performed is the extinction time.

10.2.5 Acceptance criteria:

.1 the fire should be extinguished;

.2 for any given configuration, the test should be performed 3 times out of which 2 should be successful. The maximum used powder quantity necessary to extinguish the fire in the 3 tests is the quantity needed to extinguish the fire; and

.3 tests should be performed in such a way that they do not rely on skills of the fire-fighter operating the equipment and, therefore, a fixed monitor or hose line should be used.

10.2.6 Operation of the fire-fighting system during the tests:

.1 the fires should be extinguished within discharge time for the fire from the activation of the fixed dry chemical powder unit;

.2 for the fire a re-ignition test should be carried out to demonstrate that not all the fuel has been consumed; and

.3 the monitor or hose line should be discharged continuously. The operator may move but should attack the fire from one side of the pan only, which should be the side judged most difficult to extinguish the fire.

11 Approval of the fire-extinguishing system

1 The Type Approval Certificate for fire-extinguishing system should include at least the following**:**

.1 allowable storage temperature lower and higher range for the system;
.2 name of the specific dry chemical powder tested and approved with the system;
.3 allowable storage time;
.4 approved manufacturer's product manual; and
.5 checking/analyses intervals.

12 Dry chemical powder storage

Notwithstanding paragraph 8 above, the dry chemical powder should be tested for the expected maximum temperature to which it will be exposed during its storage on board and labelled accordingly.

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ANNEX 2

DRAFT MSC CIRCULAR

GUIDELINES FOR ANCHOR HANDLING WINCHES

1 The Maritime Safety Committee, at its [107th] session ([……]), having considered the proposal by the Sub-Committee on Ship Systems and Equipment, at its eighth session, with a view to ensuring a uniform approach towards the application of the provisions of SOLAS regulation II-1/3-13 adopted by resolution […], which is expected to enter into force on [date of entry into force], approved *Guidelines for anchor handling winches*, as set out in the annex.

2 Member States are invited to use the annexed Guidelines when applying the SOLAS regulation II-1/3-13 and to bring it to the attention of ship designers, shipyards, shipowners, equipment manufacturers, and other organizations and parties concerned.

ANNEX

GUIDELINES FOR ANCHOR HANDLING WINCHES

1 Application

These Guidelines support the application of SOLAS regulation II-1/3-13 for anchor handling winches, associated equipment and loose gear used in association with anchor handling winches.

2 Definitions

For the purpose of these Guidelines, the following definitions should apply:

.1 *Brake holding force* is the maximum force for which the winch brake is designed.

.2 *Brake holding capacity* is the maximum line pull that the winch brake can withstand without slipping of the brake.

.3 *Maximum line pull* is the maximum sustained force the winch is capable of pulling.

.4 *Static bollard pull* is the maximum sustained pulling force a vessel is capable of generating at maximum power (i.e. 100% maximum continuous rating (MCR)) and zero forward speed.

.5 A *wire* means a dedicated line (wire rope, synthetic rope or chain cable) used for the handling of anchors by means of an anchor handling winch.
The wire may include connecting loose gear.

.6 *Chain stopper* is a device used for securing and holding a section of wire, thereby relieving the load on the winch drum.

.7 *Competent person* means a person possessing the knowledge and experience required for the performance of duties specified in these guidelines and acceptable as such to the Administration.

.8 *Inspection* means an assessment carried out by a responsible person to ascertain if the anchor handling winches or associated loose gear are in good working condition for continued safe use.

.9 *Responsible person* means a person appointed by the master or company as defined in SOLAS regulation IX/1, as appropriate, possessing the knowledge and experience required for the performance of duties specified in these Guidelines.

.10 *Thorough examination* means a detailed assessment carried out by a competent person in order to determine whether or not the anchor handling winches or associated loose gear are in compliance with the applicable requirements of the Administration.

.11 *Certified* means that the anchor handling winches or associated loose gear have been verified and documented as compliant to the satisfaction of the Administration or recognized organization acting on its behalf.

.12 *Maintenance* means any activity carried out by a responsible person to keep the anchor handling winches or associated loose gear in good working condition for continued safe use.

.13 *Operational testing* means a test carried out by a responsible person to verify the correct functioning of a component or operation of the anchor handling winches and/or associated loose gear.

.14 *Load test* means a test in excess of the maximum line pull, carried out in the presence of a competent person in order to check the structural integrity of the anchor handling winches and their attachment to and adequacy of their supporting structure.

3 Anchor handling winches

3.1 Design, construction and installation

3.1.1 General

Anchor handling winches and associated equipment should be designed, constructed and installed in accordance with the requirements of a classification society which is recognized by the Administration in accordance with the provisions of SOLAS regulation XI-1/1 or standards acceptable to the Administration which provide an equivalent level of safety. In addition to the above, anchor handling winches that fall under the scope of SOLAS regulation II-1/3-13.2.2 should also comply with the additional guidance specified under paragraphs 3.1.2 to 3.1.8 below.

3.1.2 Speed control and handling

3.1.2.1 The anchor handling winches should be capable of hoisting and lowering in a controlled manner, and should be provided with adjustable speed control between the minimum and maximum speeds.

3.1.2.2 The winch operating controls should be designed to pay out the wire by moving the control lever away from the winch operator and heave in by pulling the control lever towards the operator. All operating controls should be permanently marked with signs indicating their purpose and the operating direction.

3.1.2.3 The winch operating controls should be of the "hold-to run" type, which will cause the hoisting or lowering motion to automatically stop when the control lever is released by the operator.

3.1.3 Tension control

Anchor handling winches should be equipped with tension control to ensure that the system is not overloaded in the event that the anchor being handled gets stuck, entangled or is exposed to similar situations.

3.1.4 Overload alarm and monitoring

3.1.4.1 Winches should be provided with continuous load monitors and an audible and visual overload alarm.

3.1.4.2 The overload alarm should be programmable for lower levels of load.

3.1.5 Control stations

3.1.5.1 The main control station should be placed in a position on the bridge which has a clear view of the deck area. Operators should be able to visually monitor anchor handling winches and associated equipment and, if the view is obstructed, cameras or video monitoring devices may be used for this purpose.

3.1.5.2 The anchor handling winch may be controlled from more than one position provided that an arrangement to prevent more than one position from exercising control at any one time is fitted.

3.1.5.3 Each control station should be provided with:

.1 means for two-way communication with the main control station;
.2 an arrangement to prevent inadvertent actuation;
.3 adequate protection of personnel; and
.4 sufficient illumination.*

3.1.6 Spooling device

Anchor handling winches should be equipped with remotely operated spooling devices.

3.1.7 Emergency release

3.1.7.1 Anchor handling winches should be designed to facilitate emergency release of the load on the wire in a safe and controlled manner, both under normal as well as dead-ship conditions.

3.1.7.2 The controls for actuation of the emergency release should be placed at the main control station. Emergency release function may also be available at the local control station.

3.1.7.3 Emergency release control should be protected against unintentional activation.

3.1.7.4 The design and operation of the emergency release should take into consideration restrictions on the pay-out speed of the wire due to inertia and any restrictions due to onboard arrangements.

3.1.7.5 Instructions for the operation of the emergency release should be clearly displayed at the navigation bridge and locally at the winch.

3.1.7.6 After an emergency release, the complete anchor handling winch system should be inspected for signs of damage or deterioration. Any identified damage or deterioration should be rectified before the anchor handling winch is put back into service.

3.1.8 Associated anchor handling equipment

3.1.8.1 Chain stopper

3.1.8.1.1 Anchor handling vessels should be equipped with chain or wire stoppers (hereafter referred to as chain stoppers).

3.1.8.1.2 A chain stopper should be equipped with an audible alarm which is activated when the stopper is either being engaged or disengaged.

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* The minimum lighting level is at least 320 Lux.

3.1.8.1.3 A chain stopper should be equipped with an emergency release that is functional in all conditions, including dead-ship situations.

3.1.8.1.4 Emergency release of chain stopper should include disengaging of pins and other equipment that may prevent releasing the wire or cause the wire to get stuck/entangled during release.

3.1.8.1.5 Emergency release of the chain stopper should be designed for remote operation in order to minimize the risk of injury to personnel.

3.1.8.1.6 The emergency release mechanism of the chain stopper should be protected against unintentional activation.

3.1.8.1.7 Instructions for the operation of the emergency release should be clearly displayed at the navigation bridge and locally at the emergency release control mechanism.

3.1.8.1.8 After an emergency release, the chain stopper system should be inspected for signs of damage or deterioration. Any identified damage or deterioration should be rectified before the chain stopper is put back into service.

3.2 Testing and thorough examination

3.2.1 Commissioning test

3.2.1.1 For anchor handling winches to which SOLAS regulation II-1/3-13.2.2 applies, a commissioning test should be carried out according to the manufacturer's instructions and the requirements of a classification society which is recognized by the Administration in accordance with SOLAS regulation XI-1/1, or with applicable national or international standards acceptable to the Administration and which provide an equivalent level of safety. The commissioning test should include the following:

.1 Function tests at light load to verify the correct working of the winch and its controls over the full operating range.

.2 An overload test to verify the capacity and integrity of the anchor handling winch, the attachment of the winch to ship and the adequacy of the ship's supporting structure.

.3 Test of emergency release and residual holding force in the wire. The test should be performed with the wire attached to an onshore strong point, or an anchor on the seabed or a similar arrangement.

.4 Residual brake holding force after emergency release should be verified by test.

.5 Function test of the whole winch system including static bollard pull test and brake holding capacity test. Where it is not practicable to verify the brake holding capacity by testing, the same may be demonstrated through calculations.

3.2.1.2 After repairs, modifications or alterations of a major character anchor handling winches are to be tested in accordance with 3.2.1.1.1, 3.2.1.1.2 and 3.2.1.1.5. If the emergency release system is affected by these repairs, modifications or alterations of a major character, the anchor handling winches are to be additionally tested in accordance with 3.2.1.1.3 and 3.2.1.1.4.

3.2.1.3 Repairs, modifications or alterations of major character are those which:

.1 change the rated wire pull of the anchor handling winch;

.2 affect the strength, stability or service life of the anchor handling winch;

.3 affect the primary load bearing structure of the anchor handling winch; or

.4 modify the functionality of the anchor handling winch or any part thereof which may affect its strength or safety or structural integrity.

3.2.1.4 Anchor handling winches that are not designed for towing do not need to undergo the bollard pull test in 3.2.1.1.5. Functional testing other than the static bollard pull test is still required.

3.2.2 Periodical testing

Anchor handling winches and associated equipment should be operationally tested annually and five-yearly according to the manufacturer's recommendation and the requirements or recommendations of a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1. The annual test should include function tests of all equipment. The Administration or recognized organization should witness the five-yearly test.

3.2.3 Thorough examination

3.2.3.1 Anchor handling winches and associated equipment should be subject to a thorough examination to the satisfaction of the Administration during annual surveys required by SOLAS regulations I/7 for passenger ships and I/10 for cargo ships, before re-entering service after any structural repairs or modifications of major character and after load testing.

3.2.3.2 If on completion of a thorough examination, the competent person considers the anchor handling winch to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that anchor handling winch should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The anchor handling winch should be clearly marked "not to be used" and the status should be recorded as outlined in 3.2.4. While out of service, the relevant actions for inoperative anchor handling winches as outlined under section 5 of these Guidelines should be followed.

3.2.4 Records of testing and thorough examination

Records of thorough examination and testing may be documented in any convenient form, provided each entry includes the necessary information, is clearly legible and is authenticated by the competent person. The relevant classification society or equivalent forms for documenting the thorough examination and testing should be considered for use.

3.3 Demonstration of compliance

3.3.1 Before being put into use for the first time, anchor handling winches installed on or after [date] should be certified by the Administration or a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1 as compliant with SOLAS regulations II-1/3-13.2.2 with the recommended scope for demonstration of compliance of anchor handling winches comprising the following:

.1 a plan appraisal of the anchor handling winch and foundation connections;

.2 verification of materials;

.3 survey, testing and examination during fabrication;

.4 verification of component certificates including its loose gear; and

.5 testing and thorough examination when installed on board.

3.3.2 Anchor handling winches installed before [date] should be certified by the Administration or a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1 as compliant with SOLAS regulation II-1/3-13.2.5 no later than the date of the first renewal survey on or after [date].

3.3.3 Existing anchor handling winches with valid certificates under another international instrument acceptable to the Administration and issued prior to the entry into force of SOLAS regulation II-1/3-13, should be considered compliant with SOLAS regulation II-1/3-13.2.5.

3.3.4 Demonstration of compliance certified as per paragraphs 3.3.1.and 3.3.2 should be recorded in accordance with paragraph 3.2.4.

3.4 Nameplate

3.4.1 Anchor handling winches should be provided with a permanently affixed name plate which should include at least the following information:

.1 details of the manufacturer (name, address);
.2 model name/number;
.3 serial number;
.4 date of manufacture and date of installation;
.5 details of power supply;
.6 details of wire (e.g. length, diameter);
.7 maximum brake holding capacity, metric tons;
.8 maximum line pull, metric tons;
.9 maximum static bollard pull, metric tons;
.10 placeholder for the classification society's surveyor's stamp;
.11 drum size; and
.12 winch speed.

3.4.2 Detailed specifications of anchor handling winches, such as the following information, can be included in other documentation e.g. anchor handling winches' operation/maintenance manual on board:

.1 date of manufacture and date of installation;
.2 details of power supply;
.3 details of wire (e.g. length, diameter);
.4 maximum brake holding capacity, metric tons;
.5 maximum line pull, metric tons;
.6 maximum static bollard pull, metric tons;
.7 placeholder for the classification society's surveyor's stamp;
.8 drum size; and
.9 winch speed.

It should be ensured that the documentation on board can be unambiguously related to the actual winch, i.e. by referring to the unique serial number.

3.5 Maintenance, inspection and operational testing

3.5.1 General

3.5.1.1 Maintenance, inspection, operational testing and their respective intervals should be in accordance with the manufacturer's recommendations, industry standards and guidelines or classification society requirements and recommendations acceptable to the Administration, considering factors such as the operational profile of the ship and the anchor handling winch.

3.5.1.2 All anchor handling winches and associated equipment should be considered vulnerable to marine environmental conditions which may lead to significant and accelerated deterioration and corrosion, and the inspection and maintenance regime should be implemented accordingly.

3.5.1.3 The inspection and maintenance of anchor handling winches and associated equipment may involve working at height, enclosed space entry and other hazards. These hazards should be considered when developing the relevant procedures for undertaking such tasks, including safe access.

3.5.1.4 Examples of items requiring particular attention may include:

.1 corrosion and damage of primary structural members, such as winch frames and bedplates, drums, foundations and foundation connections, including welds and bolts;

.2 wear, corrosion and damage of mechanical components including hydraulic/pneumatic cylinders, pins, winch drums, chain wheels, wire-spooling and guide systems, clutches, bearings, rollers, shafts, gears, bearings and brakes;

.3 correct setting and functioning of safety, protection and limiting devices;

.4 condition and correct functioning of the anchor handling winch as a whole and, in particular, the piping/hoses, hydraulic arrangements, spooling devices, motors, and electrical and control systems;

.5 corrosion and damage to all means of safe access to the anchor handling winch, including attached maintenance platforms and extensions, with particular attention to support brackets and welds; and

.6 certification and identification of all wires.

3.5.1.5 Damaged, broken, worn or corroded wires, including their terminations connecting loose gear, should be inspected and discarded according to manufacturers' recommendations, relevant industry standards, international standards or requirements of classification societies acceptable to the Administration.

3.5.1.6 If on the completion of an inspection, the responsible person considers the anchor handling winch to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that anchor handling winch should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The anchor handling winch should be clearly marked not to be used and the status should be recorded in accordance with 3.2.4. While out of service, the relevant actions for inoperative anchor handling winches as outlined under section 5 of these Guidelines should be followed.

3.5.2 Maintenance manual

3.5.2.1 A maintenance manual for an anchor handling winch should be provided by the manufacturer. Where maintenance manuals for existing anchor handling winches are not available from the manufacturer, these may be provided by competent third parties.

3.5.2.2 The maintenance manual should, as a minimum, include the following for each anchor handling winch:

.1 description of the required inspection regime and maintenance schedules specific to the anchor handling winch, checklists and a list of key tools or other items for use when carrying out inspections and maintenance;

.2 instructions for routine repairs/maintenance;

.3 technical maintenance information;

.4 information on recommended lubricants, oil and filter change;

.5 information on bearing maintenance, if applicable;

.6 lists of replaceable parts/components, as well as the inspection/maintenance/replacement procedures for these parts/components;

.7 lists of sources of spare parts;

.8 model forms for records of inspections and maintenance;

.9 operational test procedures, as well as the pre/post-operational test inspection procedures;

.10 list of components requiring particular attention during inspections, as well as the inspection/maintenance procedures for these components;

.11 recommended intervals for replacement and overhaul of components and equipment;

.12 information on the preservation of the coating and corrosion protection system; and

.13 information regarding special inspection and maintenance in cases where the anchor handling winch is not operated for long periods of time.

3.5.3 Records of maintenance and inspection

3.5.3.1 Records of the routine inspection and maintenance of anchor handling winches or their components or parts should be maintained and kept on board.

3.5.3.2 The records and particulars of inspection and maintenance may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a responsible person. Any recommendations of the manufacturer for such inspection and maintenance records should be used.

3.6 Operations

3.6.1 General

3.6.1.1 Personnel operating anchor handling winches and their associated equipment should be qualified, familiarized with the equipment and be authorized by the master.

3.6.1.2 All personnel involved in an anchor handling winch operation should understand their role during the operation and, in particular, the signals that may be required to commence, coordinate or stop the operation.

3.6.1.3 Personnel involved in anchor handling winch operations should be equipped with appropriate personal protective equipment for the task.

3.6.1.4 Anchor handling winch operations should be planned, supervised and carried out so that any identified risks are minimized.

3.6.1.5 Procedures and instructions should relate to the specific type of anchor handling winch and should be provided in the operations manual.

3.6.1.6 Due consideration should be given to any limiting operational conditions, such as the ship's motion/inclination, environmental conditions including sea state, maximum wind speeds including wind gusts, ice and snow accretion, as well as limitations of the anchor handling winch, such as maximum line pull, maximum brake holding capacity, etc.

3.6.1.7 Effective communication should be established among ship's personnel as well as other ships/offshore units involved in the anchor handling winch operation.

3.6.1.8 Safe means of access to anchor handling winches and the work area should be established. Safe areas for the personnel involved should be available.

3.6.1.9 When developing plans and procedures for anchor handling winch operations, consideration should be given to prevention of accidents or incidents due to the wires striking any person or other structures in close proximity.

3.6.1.10 Procedures and measures for the safe operation of anchor handling winches should take account of applicable international and national instruments and best practices for occupational safety and health.

3.6.1.11 Personnel operating the anchor handling winch should consult the operations manual for any specific instructions related to the anchor handling operations.

3.6.1.12 Periodic drills for emergency release and emergency brake operation should form part of the planned maintenance schedule.

3.6.2 Operations manual

3.6.2.1 An operations manual for the anchor handling winches should be provided by the manufacturer. Where operations manuals for existing anchor handling winches are not available from the manufacturer, these may be provided by competent third parties.

3.6.2.2 The operations manual should, as a minimum, include the following for each anchor handling winch:

.1 design, operational and environmental limitations;

.2 compatible loose gear, if any;

.3 safety instructions; and

.4 operating procedures, including emergency procedures, if any.

3.6.2.3 For anchor handling winches installed before [date], their operation manuals should be developed with original manufacture, design and build data, and take into account any modifications since installation. Where original data or modification data is not available, the operations manuals should be developed on the current operational procedures and practices.

4 Loose gear

4.1 Design and manufacturing

Loose gear utilized with anchor handling winches to which SOLAS regulations II-1/3-13.2.2 and II-1/3-13.2.5 apply should be designed and manufactured in accordance with requirements acceptable to the Administration or a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1.

4.2 Proof test and thorough examination

4.2.1 Proof test

All loose gear in use with anchor handling winches and associated equipment to which SOLAS regulation II-1/3-13 applies should have documentary evidence of a proof test and be retested after repairs, modifications or alterations of major character acceptable to the Administration.

4.2.2 Thorough examination

4.2.2.1 Loose gear should be subject to thorough examination to the satisfaction of the Administration:

.1 after any proof test; and

.2 annually.

4.2.2.2 If on completion of a thorough examination, the competent person considers the item(s) of loose gear to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that loose gear should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The loose gear should be clearly marked "not to be used" and the status should be recorded as detailed in subsection 4.7. While out of service, the relevant actions for inoperative loose gear as outlined under section 5 of these Guidelines should be followed.

4.3 Demonstration of compliance

4.3.1 Before being put into use for the first time, the loose gear utilized with anchor handling winches which comply with SOLAS regulations II-1/3-13.2.2 and 3-13.2.5 should be certified to meet the provisions in section 4.

4.3.2 The existing loose gear utilized with anchor handling winches and associated equipment to which SOLAS regulations II-1/3-13.2.2 and II-1/3-13.2.5 apply, with valid certificates under another international instrument acceptable to the Administration and issued prior to the entry into force of SOLAS regulation II-1/3-13, should be considered compliant with SOLAS regulation II-1/3-13.5.

4.4 Marking

4.4.1 Loose gear should be clearly and permanently marked with its unique identification (serial no.), safe working load (SWL) and any additional marks required for safe use.

4.4.2 If there is insufficient space for the marking on the loose gear other than the SWL, the omitted information should be included in the certificate or be provided by other suitable means.

4.5 Operation

The personnel involved in anchor handling winch operations which utilize loose gear should be qualified, familiarized with the equipment and be authorized by the master.

4.6 Maintenance and inspection

4.6.1 Maintenance and inspections at respective intervals should be in accordance with the manufacturer's recommendations, industry standards and guidelines or classification society requirements and recommendations acceptable to the Administration, considering factors such as the operational profile of the ship, anchor handling winch and the loose gear.

4.6.2 All loose gear should be considered vulnerable to marine environmental conditions which may lead to significant and accelerated deterioration and corrosion, and the inspection and maintenance regime should be implemented accordingly.

4.6.3 Hazards particular to the inspection and maintenance of loose gear should be considered when developing the relevant procedures for undertaking such tasks.

4.6.4 Loose gear should be inspected by a responsible person before each use.

4.6.5 Examples of aspects requiring particular attention may include:

.1 wear, corrosion, damage and correct functioning of the loose gear;

.2 damaged, worn or corroded chains, including their terminations;

.3 certification, identification and marking of loose gear; and

.4 physical or chemical degradation, including degradation due to the exposure to the environment.

4.6.6 If on completion of an inspection the responsible person considers the loose gear to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then the loose gear should not be used until any deficiency is rectified to the satisfaction of a competent person. The loose gear should be clearly marked "not to be used" and the status should be recorded. While out of service, the relevant actions for inoperative loose gear as outlined in section 5 should be followed.

4.7 Records of inspection, maintenance, testing and thorough examination

4.7.1 Records of thorough examination and testing

4.7.1.1 A record of thorough examination and evidence of proof testing of loose gear should be maintained and kept on board.

4.7.1.2 Records of thorough examination and testing may be documented in any convenient form, provided each entry includes the necessary information, is clearly legible and is authenticated by the competent person. Forms issued by the relevant classification society recognized by the Administration or any equivalent forms for documenting the thorough examination and testing should be considered for use.

4.7.2 Records of inspection and maintenance

4.7.2.1 Records of the routine inspection and maintenance of loose gear should be maintained and kept on board.

4.7.2.2 The records and particulars of inspection and maintenance may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a responsible person. Any recommendations of the manufacturer for such inspection and maintenance records should be used.

5 Inoperative anchor handling winches, associated equipment and loose gear

For the implementation of SOLAS regulation II-1/3-13.4, the following actions should be taken by the master to mitigate risks posed by inoperative anchor handling winches and associated loose gear and wire:

.1 take the inoperative anchor handling winches, associated equipment and wire into account in planning and executing a safe voyage;

.2 prevent the operation of inoperative anchor handling winches and associated loose gear and equipment;

.3 prevent uncontrolled movement of inoperative anchor handling winches or associated loose gear and equipment using appropriate restraining and preventing arrangements, if required;

.4 store inoperative wires and loose gear separately from in-service wires and loose gear and mark it as being inoperative; and

.5 record the particulars of anchor handling winches or loose gear, associated equipment and wire that is inoperative as detailed in paragraph 3.2.4 and/or 4.7.1 until necessary repairs have been completed and it has been tested or proof tested, as necessary, and thoroughly examined.

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ANNEX 3

DRAFT MSC CIRCULAR

GUIDELINES FOR LIFTING APPLIANCES

1 The Maritime Safety Committee, at its […] session ([……..…..]), having considered the proposal by the Sub-Committee on Ship Systems and Equipment, at its eighth session, with a view to ensuring a uniform approach towards the application of the provisions of SOLAS regulation II-1/3-13 adopted by resolution MSC.[…], which is expected to enter into force on [*date of entry into force*], approved the *Guidelines for lifting appliances*, as set out in the annex.

2 Member States are invited to use the annexed Guidelines when applying SOLAS regulation II-1/3-13 and to bring it to the attention of ship designers, shipyards, shipowners, equipment manufacturers, other organizations and parties concerned.

ANNEX

GUIDELINES FOR LIFTING APPLIANCES

1 Application

These Guidelines support the application of SOLAS regulation II-1/3-13 for lifting appliances and loose gear used in association with lifting appliances.

2 Definitions

For the purpose of these Guidelines, the following definitions should apply:

.1 *Competent person* means a person possessing the knowledge and experience required for the performance of duties specified in these Guidelines and acceptable as such to the Administration.

.2 *Inspection* means an assessment carried out by a responsible person to ascertain if the lifting appliance or loose gear is in good working condition for continued safe use.

.3 *Responsible person* means a person appointed by the master or company as defined in SOLAS regulation IX/1, as appropriate, possessing the knowledge and experience required for the performance of duties specified in these Guidelines.

.4 *Thorough examination* means a detailed assessment carried out by a competent person in order to determine whether or not the lifting appliance or loose gear is in compliance with the applicable requirements of the Administration.

.5 *Certified* means that the lifting appliance or loose gear has been verified and documented as compliant to the satisfaction of the Administration or recognized organization acting on its behalf.

.6 *Maintenance* means any activity carried out by a responsible person to keep the lifting appliance or loose gear in good working condition for continued safe use.

.7 *Operational testing* means a test carried out by a responsible person to verify the correct functioning of a component or operation of the lifting appliance and/or associated loose gear.

.8 *Load test* means a test in excess of the SWL, carried out in the presence of a competent person in order to check the structural integrity of the lifting appliance and its attachment to and adequacy of its supporting structure.

.9 *Safe working load (SWL)* is the maximum static load at a specified radius which a lifting appliance or item of loose gear is certified to lift for a specified operating condition.

.10 *Certificate of test and thorough examination* means a certificate issued by a competent person upon satisfactory completion of the test and thorough examination of the lifting appliance and/or loose gear.

3 Lifting appliances

3.1 Design, construction and installation

As required by SOLAS regulation II-1/3-13.2.1.1, lifting appliances installed on or after [date] should be designed, constructed and installed in accordance with the requirements of a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1 or standards acceptable to the Administration which provide an equivalent level of safety.

3.2 Load testing and thorough examination

3.2.1 Load test

3.2.1.1 Lifting appliances to which SOLAS regulation II-1/3-13.2.1 applies should be load tested to the satisfaction of the Administration after installation and before being taken into use for the first time and after repairs, modifications or alterations of major character.

3.2.1.2 Lifting appliances to which SOLAS regulation 3-13.2.4 applies should be load tested to the satisfaction of the Administration no later than the date of the first renewal survey on or after [*date*] or after repairs, modifications or alterations of major character.

3.2.1.3 *Repairs, modifications or alterations of major character* are those which:

.1 change the safe working load of the lifting appliance; or

.2 affect the strength, stability or service life of the lifting appliance; or

.3 affect the primary load bearing structure of the lifting appliance; or

.4 modify the functionality of the lifting appliance or any part thereof which may affect its strength or safety or structural integrity.

3.2.1.4 Lifting appliances to which SOLAS regulations II-1/3-13.2.1 and 3-13.2.4 apply should be retested at least once in every five years.

3.2.1.5 For load testing of lifting appliances intended for use while the ship is in port or sheltered waters, the test load, as set out in table 1 below, should be established using the SWL. For lifting appliances intended for open-sea operations, the test loads should be to the satisfaction of the Administration or a classification society which is recognized by it, taking into account the applicable dynamic loads.

Table 1: Lifting appliances minimum test loads

SWL of the lifting appliance, in tonnes	Test load, in tonnes
SWL ≤ 20 t	1.25 x SWL
20 t < SWL ≤ 50 t	SWL + 5 t
SWL > 50 t	1.10 x SWL

3.2.1.6 Where the safe working load of the lifting appliances is undocumented and design information is not available, e.g. for lifting appliances which are installed on board before [date] and the manufacturer no longer exists, the test load should be calculated using table 1, based on a safe working load nominated by the company, to the satisfaction of the Administration.

3.2.2 Thorough examination

3.2.2.1 Lifting appliances should be subject to thorough examination to the satisfaction of the Administration:

.1 upon completion of any load test; and

.2 annually.

3.2.2.2 Where thorough examination does not form part of the renewal survey or annual survey, verification that thorough examination of lifting appliances has been conducted/completed to the satisfaction of the Administration should take place during the renewal survey under SOLAS regulation I/7 or the annual survey under SOLAS regulation I/10, as applicable.

3.2.2.3 If on completion of a thorough examination, the competent person considers the lifting appliance to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that lifting appliance should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The lifting appliance should be clearly marked "not to be used" and the status should be recorded in a register of lifting appliances. While out of service, the relevant actions for inoperative lifting appliances as outlined under section 5 of these Guidelines should be followed.

3.2.3 Records of thorough examination and testing

3.2.3.1 A record of thorough examination and load testing should be maintained in a register of lifting appliances and should be available on board.

3.2.3.2 Load testing and thorough examination may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a competent person. The minimum information to be included in the *Certificate of test and thorough examination*, as set out in the appendix 1, should be used. Alternatively, other formats may be used which are acceptable to the Administration, such as those of a classification society recognized by the Administration.

3.3 Demonstration of compliance

3.3.1 Before being put into use for the first time, lifting appliances installed on or after [date] should be certified as compliant with SOLAS regulations II-1/3-13.2.1 and II-1/3-13.2.3 with the recommended scope for demonstration of compliance of lifting appliances comprising the following:

.1 a plan appraisal of the lifting appliance and foundation connections;
.2 verification of materials;
.3 survey, testing and examination during fabrication;
.4 verification of component certificates including its loose gear; and
.5 testing and thorough examination when installed on board.

3.3.2 Lifting appliances installed before [date] should be certified as compliant with SOLAS regulation II-1/3-13.2.4 no later than the date of the first renewal survey on or after [date].

3.3.3 Existing lifting appliances with valid certificates of test and thorough examination under another international instrument acceptable to the Administration and issued prior to the entry into force of SOLAS regulation II-1/3-13 should be considered compliant with SOLAS regulation II-1/3-13.2.4.

3.3.4 All certified lifting appliances on board a ship should be recorded in the *Register of Ship's Lifting Appliances and Cargo Handling Gear*, as set out in appendix 3, with the *Certificate of test and thorough examination* attached to it (see paragraph 3.2.3.2).

3.3.5 A rigging plan and block list showing the correct reeving and rigging arrangements for the lifting appliance and the associated loose gear positions is to be kept on board, if applicable.

3.4 Marking

3.4.1 The safe working load (SWL) and other information essential for the safe operation of the lifting appliance (e.g. maximum or minimum slewing radius or boom angle) should be permanently and clearly marked in a conspicuous place on the lifting appliance and should be available to the operator.

3.4.2 In all cases where the lifting appliance has a variable load radius rating, the SWLs corresponding to the minimum and maximum radius should be clearly marked in a conspicuous place on the lifting appliance and, in addition, a diagram of the permissible maximum loads over the entire range of use should be displayed in a position clearly visible to the operator.

3.4.3 If the safe working load is established in accordance with paragraph 3.2.1.6, this safe working load should be used for the purpose of compliance with SOLAS regulation II-1/3-13.2.3.

3.5 Maintenance, inspection and operational testing

3.5.1 General

3.5.1.1 Maintenance, inspection, operational testing and their respective intervals should be in accordance with the manufacturer's recommendations, industry standards and guidelines or classification society requirements and recommendations acceptable to the Administration, considering factors such as the operational profile of the ship and the lifting appliance.

3.5.1.2 All lifting appliances should be considered vulnerable to marine environmental conditions which may lead to significant and accelerated deterioration and corrosion, and the inspection and maintenance regime should be implemented accordingly.

3.5.1.3 The inspection and maintenance of lifting appliances may involve working at height, enclosed space entry and other hazards. These hazards should be considered when developing the relevant procedures for undertaking such tasks, including safe access.

3.5.1.4 Examples of items requiring particular attention may include:

.1 corrosion and damage of primary structural members, including crane jibs, crane housings (slewing column), pedestals and foundations/foundation connections, including welds and bolts;

.2 wear, corrosion and damage of mechanical components including winches, hydraulic cylinders, slew bearings, sheaves and pins;

.3 correct setting and functioning of safety, protection and limitation devices;

.4 condition and correct functioning of the lifting appliance as a whole and, in particular, hydraulic or pneumatic arrangements, hydraulic/pneumatic cylinders, motors, hoses, piping, winches, brakes and drums;

.5 corrosion and damage to all means of safe access to the lifting appliances including attached maintenance platforms and extensions, with particular attention to support brackets and welds; and

.6 certification and identification of ropes.

3.5.1.5 Damaged, broken, worn or corroded ropes, including their terminations, should be inspected and discarded according to manufacturers' recommendations, relevant industry standards, international standards (e.g. ISO 4309:2017 on Cranes – Wire ropes – Care and maintenance, inspection and discard) or requirements of classification societies acceptable to the Administration.

3.5.1.6 If, on completion of an inspection, the responsible person considers the lifting appliance to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that lifting appliance should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The lifting appliance should be clearly marked "not to be used" and the status should be recorded in a register of lifting appliances. While out of service, the relevant actions for inoperative lifting appliances as outlined under section 5 of these Guidelines should be followed.

3.5.2 Maintenance manual

3.5.2.1 A maintenance manual for a lifting appliance should be provided by the manufacturer. Where maintenance manuals for existing lifting appliances are not available from the manufacturer, these may be provided by competent third parties.

3.5.2.2 The maintenance manual should, as a minimum, include the following for each lifting appliance:

.1 description of the required inspection regime and maintenance schedules specific to the lifting appliance, checklists and a list of key tools or other items for use when carrying out inspections and maintenance;

.2 instructions for routine repairs/maintenance;

.3 technical maintenance information;

.4 information on recommended lubricants, oil and filter change;

.5 information on slewing bearing maintenance, if applicable;

.6 lists of replaceable parts/components, as well as the inspection/ maintenance/replacement procedures for these parts/components;

.7 lists of sources of spare parts;

.8 model forms for records of inspections and maintenance;

.9 operational test procedures, as well as the pre/post-operational test inspection procedures;

.10 list of components requiring particular attention during inspections, as well as the inspection/maintenance procedures for these components;

.11 recommended intervals for replacement and overhaul of components and equipment;

.12 information on the preservation of the coating and corrosion protection system; and

.13 information regarding special inspection and maintenance in cases where the lifting appliance is not operated for long periods of time.

3.5.3 Records of inspections and maintenance

3.5.3.1 Records of the routine inspection and maintenance of lifting appliances or their components or parts should be maintained and kept on board.

3.5.3.2 The records and particulars of inspection and maintenance may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a responsible person. Any recommendations of the manufacturer for such inspection and maintenance records should be used.

3.6 Operations

3.6.1 General

3.6.1.1 Personnel operating lifting appliances should be qualified, familiarized with the equipment and be authorized by the master.

3.6.1.2 All personnel involved in a lifting operation should understand their role during the operation and, in particular, the signals that may be required to commence, coordinate or stop the operation.

3.6.1.3 Personnel involved in lifting operations should be equipped with appropriate personal protective equipment for the task.

3.6.1.4 Lifting operations should be planned, supervised and carried out so that any identified risks are minimized.

3.6.1.5 Procedures and instructions should relate to the specific type of lifting appliance and should be provided in the operations manual.

3.6.1.6 Due consideration should be given to any limiting conditions such as ship's motion/inclination, wind speeds including wind gusts, environmental conditions such as ice and snow, limitations of the lifting appliance such as SWL and slew radius, etc. of the lifting appliance.

3.6.1.7 Effective communication should be established between ship's personnel and shore-based personnel involved in the lifting operation.

3.6.1.8 Safe means of access to lifting appliances and loads requiring attachment/detachment should be established. Safe areas for the signaller and slinger should be available.

3.6.1.9 When developing plans and procedures for lifting operations, consideration should be given to avoiding any part of the lifting appliances striking any person or other structures in close proximity.

3.6.1.10 Procedures and measures for the safe operation of lifting appliances should take account of applicable international and national instruments and best practices for occupational safety and health.

3.6.1.11 Lifting appliances should be restrained and stowed in order to avoid uncontrolled movement during sea voyages. The stowage and restraining arrangements should be as required by the manufacturer.

3.6.1.12 Personnel operating the lifting appliance should consult the operations manual for any specific instructions related to the lifting operations.

3.6.2 Operations manual

3.6.2.1 An operations manual for a lifting appliance should be provided by the manufacturer. Where operations manuals for existing lifting appliances are not available from the manufacturer, these may be provided by competent third parties.

3.6.2.2 An operations manual should, as a minimum, include the following for each lifting appliance:

.1 design, operational and environmental limitations;

.2 compatible loose gear;

.3 safety instructions; and

.4 operating procedures, including special procedures, if any.

3.6.2.3 For lifting appliances installed before the date of entry into force of SOLAS regulation II-1/3-13 operation manuals should be developed with original manufacture, design and build data and take into account any modifications since installation. Where original data or modification data is not available, operation manuals should be developed on the current operational procedures and practices.

4 Loose gear

4.1 Design and manufacturing

Loose gear utilized with lifting appliances to which SOLAS regulations II-1/3-13.2.1 and II-1/3-13.2.4 apply should be designed and manufactured in accordance with requirements acceptable to the Administration or a classification society which is recognized by the Administration in accordance with the provisions of regulation XI-1/1.

4.2 Proof test and thorough examination

4.2.1 Proof test

All loose gear in use with lifting appliances to which SOLAS regulation II-1/3-13 applies should have documentary evidence of a proof test and be retested after repairs, modifications or alterations of major character to the satisfaction of the Administration. Where an item of loose gear is tested, minimum test loads should be to the satisfaction of the Administration, based on table 2 below.

Table 2: Loose gear minimum test loads

Item	Test load, in tonnes
Single sheave block	4 x SWL
Multi-sheave blocks and hook blocks: SWL ≤ 25 t 25 t < SWL ≤ 160 t 160 t < SWL	 2 x SWL (0.993 x SWL) + 27 1.1 x SWL
Hooks, shackles, chains, rings, swivels, etc.: SWL ≤ 25 t 25 t < SWL	 2 x SWL (1.22 x SWL) + 20
Lifting beams, spreaders, frames, grabs: SWL ≤ 10 t 10 t < SWL ≤ 160 t 160 t < SWL	 2 x SWL (1.04 x SWL) + 9.6 1.1 x SWL
Note 1. Sheave blocks that are permanently attached to, or are integral with the hook, are called hook blocks. Hook blocks are to be tested with the load for multi-sheave blocks. The hook of the hook block is to be tested with the loads for hooks. Note 2. The SWL for a single sheave block, including single sheave blocks with beckets, is to be taken as one half of the resultant load on the head fitting. Note 3. The SWL of a multi-sheave block is to be taken as the resultant load on the head fitting.	

4.2.2 Thorough examination

4.2.2.1 Loose gear should be subject to thorough examination to the satisfaction of the Administration:

.1 upon completion of any proof test; and

.2 annually.

4.2.2.2 Where thorough examination does not form part of the renewal survey or annual survey, verification that thorough examination of loose gear has been conducted/completed to the satisfaction of the Administration should take place during the renewal survey under SOLAS regulation I/7 or the annual survey under SOLAS regulation I/10, as applicable.

4.2.2.3 If, on completion of a thorough examination, the competent person considers the item(s) of loose gear to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then that loose gear should be taken out of service until any deficiency is rectified to the satisfaction of a competent person. The loose gear should be clearly marked "not to be used" and the status should be recorded in a register of lifting appliances. While out of service, the relevant actions for inoperative loose gear as outlined under section 5 of these Guidelines should be followed.

4.3 Demonstration of compliance

4.3.1 Before being put into use for the first time, loose gear utilized with lifting appliances which comply with SOLAS regulations II-1/3-13.2.1 and 3-13.2.4 should be certified to meet the provisions in section 4.

4.3.2 Certificates of test and thorough examination of certified loose gear should be attached to the *Register of Ship's Lifting Appliances and Cargo Handling Gear* (see paragraph 4.7.1.2).

4.4 Marking

4.4.1 Loose gear should be clearly and permanently marked with its unique identification (serial no.), the SWL and any additional marks required for safe use.

4.4.2 In addition, specific types of loose gear should be marked with the following minimum information:

.1 ramshorn hooks: range of sling angle;

.2 block and hook blocks;

.1 rope diameter;

.2 rigging plan identification mark (for blocks) if any;

.3 lifting beams, spreaders, frames;

.1 tare weight;

.2 allowable sling angles;

.3 details of the safe application of the SWL in case of complex equipment which can be utilized in different ways;

.4 grabs;

.1 tare weight; and

.5 other equipment as per the requirements of the classification society or industry standards acceptable to the Administration.

4.4.3 If there is insufficient space for the marking on the loose gear other than the SWL, the omitted information should be included in the certificate or be provided by other suitable means.

4.5 Operation

Personnel involved in lifting operations which utilize loose gear should be qualified, familiarized with the equipment and be authorized by the master.

4.6 Maintenance and inspection

4.6.1 Maintenance and inspections at respective intervals should be in accordance with the manufacturer's recommendations, industry standards and guidelines or classification society requirements and recommendations acceptable to the Administration considering factors such as the operational profile of the ship and the loose gear.

4.6.2 All loose gear should be considered vulnerable to marine environmental conditions which may lead to significant and accelerated deterioration and corrosion and the inspection and maintenance regime should be implemented accordingly.

4.6.3 The inspection and maintenance of loose gear may involve working at height, enclosed space entry and other hazards. These hazards should be considered when developing the relevant procedures for undertaking such tasks, including safe access.

4.6.4 Loose gear should be inspected by a responsible person before each use.

4.6.5 Examples of aspects requiring particular attention may include:

.1 wear, corrosion, damage and correct functioning of the loose gear;

.2 damaged, worn or corroded chains, including their terminations;

.3 certification and identification of loose gear; and

.4 physical or chemical degradation, including degradation due to the exposure to the environment.

4.6.6 If on completion of an inspection the responsible person considers the loose gear to be unsafe for operation or not in compliance with the applicable requirements of the Administration, then the loose gear should not be used until any deficiency is rectified to the satisfaction of a competent person. The loose gear should be clearly marked "not to be used" and the status should be recorded in a register of lifting appliances. While out of service, the relevant actions for inoperative loose gear as outlined in section 5 should be followed.

4.7 Records of inspection, maintenance, testing and thorough examination

4.7.1 Records of thorough examination and testing

4.7.1.1 A record of thorough examination and evidence of proof testing of loose gear should be maintained in a register of lifting appliances and kept on board.

4.7.1.2 Records of thorough examination may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a competent person. The minimum information to be included in the *Certificate of test and thorough examination of loose gear*, as set out in appendix 2, should be used. Alternatively, other formats may be used which are acceptable to the Administration, such as those of a classification society recognized by the Administration.

4.7.2 Records of inspection and maintenance

4.7.2.1 Records of the routine inspection and maintenance of loose gear should be maintained and kept on board.

4.7.2.2 The records and particulars of inspection and maintenance may be documented in any convenient form, provided each entry contains the necessary information, is clearly legible and is authenticated by a responsible person. Any recommendations of the manufacturer for such inspection and maintenance records should be used.

5 Inoperative lifting appliances and loose gear

For the implementation of SOLAS regulation II-1/3-13.4, the following actions should be taken by the master to mitigate risks posed by inoperative lifting appliances:

.1 take the inoperative lifting appliance into account in planning and executing a safe voyage;

.2 prevent operation of inoperative lifting appliances;

.3 prevent uncontrolled movement of inoperative lifting appliances or their components using appropriate restraining and preventing arrangements, if required;

.4 store inoperative loose gear separately from in-service loose gear and mark it as being inoperative; and

.5 record a particular lifting appliance or loose gear that is inoperative in the register of ship's lifting appliances until necessary repairs have been completed and it has been load tested or proof tested, as necessary, and thoroughly examined.

APPENDIX 1

SAMPLE CERTIFICATE
OF TEST AND THOROUGH EXAMINATION OF LIFTING APPLIANCES

(Official seal) Certificate No. _____

Name of Ship:

IMO Number:

Call Sign:

Port of Registry:

Name of Owner:

This is to certify that the lifting appliances listed below have been tested and thoroughly examined as required by SOLAS regulation II-1/3-13.

Situation and description of lifting appliance (with distinguishing number or mark, if any) which has been tested and thoroughly examined	Angle to the horizontal or radius at which test load is applied		Test load (tonnes)	Safe working load at angle or radius shown (tonnes)
	Angle (degrees)	Radius (metres)		

This certificate is valid until …… *(dd/mm/yyyy)*

Completion date of the testing and thorough examination on which this certificate is based:

Issued at …… *(place of issue of the certificate)*

Date of issue …… *(dd/mm/yyyy)*

Signature of competent person issuing the certificate …….

(Seal or stamp of the issuing authority)

APPENDIX 2

SAMPLE CERTIFICATE
OF TEST AND THOROUGH EXAMINATION OF LOOSE GEAR

(Official seal) Certificate No. _____

Name of Ship:

IMO Number:

Call Sign:

Port of Registry:

Name of Owner:

This is to certify that the loose gear listed below have been tested and thoroughly examined as required by SOLAS regulation II-1/3-13.

Distinguishing number or mark	Description of loose gear	Number tested	Date of test	Test load applied (tonnes)	Safe working load (tonnes)

Name and address of makers or suppliers: ....

Name and address of the company of
competent person who witnessed
testing and carried out thorough examination: .....

Name of the competent person and
position in public service, association, company: .....

Completion date of the testing and thorough examination on which this certificate is based:

Issued at ……. *(place of issue of the certificate)*

Date of issue …… *(dd/mm/yyyy)*

Signature of competent person issuing the certificate …….

(Seal or stamp of the issuing authority)

APPENDIX 3

SAMPLE FORM
OF REGISTER OF LIFTING APPLIANCES AND CARGO HANDLING GEAR

Name of Ship

Official Number

Call Sign

Port of Registry

Name of Owner

Thorough examination of lifting appliances and loose gear

(1) Situation and description of lifting appliances and loose gear (with distinguishing numbers or marks, if any) which have been thoroughly examined (see Note 1).	(2) Certificate nos.	(3) I certify that on the date to which I have appended by signature, the gear shown in column (1) was thoroughly examined and no defects affecting its safe working condition were found other than those shown in column (4) date and signature (see Note 2).	(4) Remarks

Note 1:
If all the lifting appliances are thoroughly examined on the same date it will be sufficient to enter in column (1) 'All lifting appliances and loose gear'. If not, the parts which have been thoroughly examined on the dates stated must be clearly indicated.

Note 2:
The thorough examinations to be indicated in column (3) include:
(a) Initial
(b) 12-monthly
(c) Five-yearly
(d) Repair/damage
(e) Other thorough examinations including those associated with heat treatment