



सत्यमेव जयते

भारत सरकार/GOVERNMENT OF INDIA

पोत परिवहन मंत्रालय/MINISTRY OF SHIPPING

नौवहन महानिदेशालय/DIRECTORATE GENERAL OF SHIPPING

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F. No. CSS/10/2017

Dated: 10.11.2017

To,

1. All Principal Officers of Mercantile Marine Department
2. Chairman & Managing Directors of Indian Shipyard,
3. All Classification society,
4. All Indian Shipboard Machinery & Equipment Manufactures,
5. SAI/INSA/ICCSA

Sub: Technical requirements for inclusion in HS Code taking into account the IMO / IACS guidelines with the aim to enhance quality and restrict import of low quality ships / shipboard equipments – reg

Sir,

This is to inform that, Government of India has decided to implement certain technical and quality standards for shipbuilding yards, ship-repair yards and equipment used on board Indian ships with an aim to ensure quality and safety standards. In this respect a draft DGS order on the "Procedures for Certification of Shipbuilding/Repair Yards, Material & Equipment Manufacturing Works and Products as a Quality Control measure for Indian Ships" is enclosed for comments from stakeholders of the Shipping Industry. It is requested that, your comments may please be forwarded to the undersigned latest by 27 Nov 2017 on e-mail pradeepsk-dgs@gov.in . A meeting of the stakeholders is also proposed to be held in the Directorate around 8th Dec 2017, for which the final date shall be intimated in due course.

Yours faithfully,

10/11/17

(Pradeep Sudhakar K.)

Ship Surveyor

ENCL: a/a

Sub: Procedures for Certification of Shipbuilding/Repair Yards, Material & Equipment Manufacturing Works and Products as a Quality Control measure for Indian Ships

NOTING that the Indian ships are being built at shipbuilding yards around the world for various reasons thereof;

NOTING further that Indian ships are availing dry-docking and repair facilities across the world for carrying out repairs, modifications, conversions, etc;

NOTING further that many materials, components, products, equipment, and appliances are procured from the domestic/International suppliers, manufacturers for installation on board ship;

NOTING further that many a time decision to build/repair a ship or to procure the materials, components, products, equipment, appliances is governed by the price factor with a less emphasize on quality;

NOTING further with the experience that low quality manufacturing during shipbuilding/repair results in substandard ship quality, barely meeting the minimum requirements, jeopardizing the strength & safety of the ship;

NOTING further with the experience that inferior quality products when installed on board ship are delivering non-reliable performance, frequent breakdown/shutdown causing increased maintenance and presenting a reason of concerns for safety of crew/personnel on board;

REALIZING that the cumulative use of substandard shipbuilding/repair yard in combination with use of inferior quality materials, components, products, equipment, and appliances further downgrades the quality& reliability of ship, causing major reason for losses incurred in breakdown/shutdown time and causing adverse impacts due to detention of ship;

REALIZING further that loss of productive time due to breakdown/shutdown and repairs/replacements and other adverse impacts on ships and shipping industry in general, offsets and/or exceeds the previous economic gains made during the selection/procurement of shipbuilding/repair yards, materials, components, products, equipment, appliances;

REALIZING further that the approach of extensively emphasizing on low cost over the quality may hamper the shipbuilding/repair yards and manufacturers negatively in longer run;

REALIZING further that, to maintain sustainability, the quality conscious manufacturer may compromise on quality and thus affecting the further research and technology developments, which could be beneficial to shipping industry;

REALIZING further that continuation of this trend will affect the shipping industry in longer run in a one or the other way other than as described above;

REALIZING further that implementation of robust quality control measures shall help in reversing this trend and improve the overall quality of Indian Ships including its materials, components, products, equipment, and appliances;

NOTING further that, the Government of India has included technical requirements with regards to provisions for ships, boats and floating structures under Harmonized System (HS) code;

Accordingly, as directed by the Ministry, this Directorate has decided to implement a procedure for certification of Shipbuilding/Repair Yards, components, products, appliances, & equipment, and procedure for certification of manufacturing works of materials, components, products, equipment, and appliances manufacturers. These procedures are described in Annexure I to this notification and may be amended as and when required to be.

NOW, THEREFORE, the undersigned as the Director General of Shipping, Govt. of India, hereby issues the draft procedures for Certification of Shipbuilding / Repair Yards, Material & Equipment Manufacturing Works and Products as a Quality Control measure for Indian Ships and invites valuable comments / suggestion from all stakeholders concerned, on the proposed draft procedures.

The comments may kindly be sent to the Directorate at the earliest or latest by 21.11.2017 to the following e-mail IDs; pradeepsk-dgs@gov.in, suresh-dgs@nic.in. The Directorate also intends to hold a stakeholders meeting in the last week of November 2017 and the exact date and time will be intimated through a separate communication.

Annexure – I

1. Applicability:

1.1 This order shall apply with effect from 1st April 2018:

- to Indian / foreign shipyards or repair yards undertaking new building and / or repairs of Indian Ships,
- to all Indian ships as per the MS Act - 1958, as amended, regardless of their size, nature of voyage or location of survey;
- to proposed import of all existing tugs/port crafts/ships;
- to all manufacturers of the Materials, Components, Products, Equipment, and Appliances intended for installation on board Indian ship,
- to Products, Equipment, and Appliances intended for installation on board Indian ship.

2. Import of existing tugs/port crafts/ships to India

2.1 Age of the tug/port craft/ship imported to India shall not exceed 20 years on the date of import to India. The vessel shall be classed with any one of the ROs of Government of India and shall comply with emission norms required under Marpol Annex VI. Registration of such vessels will be subject to a satisfactory inspection by this Administration or by the nominated RO.

3. Approval of shipbuilding/ship repair yards undertaking new Construction or repairs of Indian ships

3.1 Any yard intending to build or repair an Indian ship must be approved and certified by the Indian Administration or by the nominated RO following procedure as provided in Chapter I. Ships and crafts built for Indian flag shall be classed with a Classification Society as recognized by the Indian Administration.

4. Approval of works manufacturing materials, components, equipment, product and appliances intended for installation on board Indian ships

4.1 Works of manufacturer of materials, components, equipment, product and appliances intended for installation on board Indian Ships shall be approved by the Indian Administration or its nominated RO following procedures described in Ch.2

5. Approval of equipment, products and appliances

5.1 Equipment, product and appliances intended for installation on board Indian Ships shall be approved by the Indian Administration or its nominated RO following procedures described in Ch.3

6. Obligation of owners of Indian ships

6.1 All owners of Indian Ships operating from India or abroad shall ensure that they make use of the certified yards, manufacturers, components, products, equipment and appliances in compliance to provisions of this order.

Chapter – I

Procedure for Certification of Shipbuilding / Ship Repair Yard

1. General:

1.1 Safe and environment-friendly ship operation is of utmost importance and is only possible if the ship is built/repared in a yard having sufficient infrastructure capabilities, qualified human resources and sound quality control procedures.

1.2 Recognizing above, this procedure gives the minimum requirements of quality, safety & infrastructure of such yards and their assessment including periodical monitoring.

2. Requirements of Shipbuilding/repair yards:

2.1 Quality Management System

The Shipbuilding / repair yard shall maintain an effective quality management system (QMS) complying with the most current version of ISO 9001 series and shall have following management system certifications.

ISO 9001– Standard for Quality Management System

ISO 14001 – Standard for Environmental Management System

OHSAS 18001 – Standard for Occupational Health and Safety Management System

The yard's quality management system procedures shall be documented in the form of a Quality Manual comprising the following aspects, as a minimum.

2.1.1 Organization chart

This is to include the details of departments such as design, purchasing, manufacturing, quality assurance (QA) etc. and personnel responsible for each process. QA/QC department shall be independent of the other departments and shall report directly to the top management of the yard.

2.1.2 Qualified man power in QA/QC activities

Qualification of personnel involved in quality control activities shall be defined and ensured.

2.1.3 Procedures for pre-inspection

Pre-inspection shall be carried out on all raw materials, welding consumables, castings, forgings, machinery, equipment etc. and procedures to ensure the same shall be established.

2.1.4 In-process inspections/tests and subsequent acceptance/rejection

The yard shall ensure that at every stage of fabrication, necessary inspection/tests are carried out as part of quality control activity. Procedures for acceptance or rejection shall be formulated.

2.1.5 Certification of welders

Welding being a critical activity shall only be carried out by qualified welders. Welders shall be qualified for the type of welding and positions of welding. Procedures to qualify them and maintenance of qualified welders, control of welding consumables etc. shall be available.

2.1.6 Control of production activities

Control of fabrication/production activities at various stages to ensure consistent quality and to reduce rejection/rework is to be ensured by the yard.

2.1.7 Control of documents, drawings, records etc.

Design drawings, production drawings, fabrication procedures, work instructions etc. are to be controlled so that the most current version is available for the personnel at all times. Procedures for control of documents and prevention of use of obsolete documents are to be established and implemented.

2.1.8 System for identification and traceability

System for identification and traceability of raw materials, fabricated blocks, documents, procedures, records etc. is to be ensured.

2.1.9 Control for sub-contracted activities

Control measures shall be formulated for sub-contracted activities (if any) prior to acceptance of the goods/materials. Procedure to ensure the same is to be documented.

2.1.10 Calibration of measuring/testing equipment

All measuring/testing equipment is to be calibrated periodically and records for the same shall be maintained.

2.1.11 Vendor approval and maintenance

Procedure is to be in place for acceptance of suppliers for various components, equipment etc. required to be installed onboard a ship. Products/materials which require type approval/manufacturer approval from Flag Administration or classification society shall be obtained from vendors/works having valid approval certificates.

2.1.12 Shipbuilding and Remedial Quality Standards followed by the yard shall be in accordance with IACS Recommendation No. 47 or higher.

2.2 Infrastructure for shipbuilding/repairing facility and fabrication activities

In order to build/carry out repairs of ships in a consistent manner, shipbuilding yard/ship repair yard is to possess sufficient infrastructure and adequate well-qualified human resources. The infrastructure availability would either allow/restrict the yard from building/repairing a specific type or size of a ship.

Welding of hull structures is to be carried out by qualified welders, according to approved and qualified welding procedures and with approved welding consumables. Welding operations shall be carried out under proper supervision by the shipbuilder.

Welding procedures shall be qualified in accordance with IACS URW28 or other recognized international standard. Welders shall be qualified in accordance with IACS URW32 or other recognized international standard.

2.2.1 Physical Infrastructure

2.2.1.1 In order to be approved as a Shipbuilding yard / Ship repair yard, physical infrastructure of shipbuilding yard /ship repair yard is to comprise of facilities to handle indoor and outdoor processes.

2.2.1.2 Indoor work areas for steel preparation and fit up shall be adequately laid out in order to carry out

- surface preparation,
- marking and cutting of plates,
- straightening,
- forming,
- alignment,
- welding,
- erection of subassembly, grand assembly,
- remedial/repair work etc.

Adequate machinery capacity for carrying out various metal forming processes and welding (manual and automatic welding machines) shall be available.

2.2.1.3 Outdoor work areas such as building berth/dock, outfitting quays, testing bays and paint shops shall be laid out taking into consideration the work flow processes. Capacity of cranes and material handling equipment shall be adequate for handling the maximum size of blocks/units expected to be fabricated.

2.2.1.4 Facilities and equipment for carrying out tightness testing and structural testing for confirming the adequacy of the design shall be available.

2.2.1.5 Adequate infrastructure and qualified personnel shall be in place for carrying out coatings, painting, application of anti-fouling system and application of protective coatings for dedicated sea water ballast tanks.

2.2.1.6 Storage facilities for raw materials and consumables, intermediate products and final fabricated units shall be provided.

2.2.1.7 Facilities for marking and cutting of steel plates and section bars shall be available.

2.2.2 Construction Features

2.2.2.1 Features of construction procedures shall be established and documented covering following aspects inter alia

- Sub-contract of hull blocks (sub members, blocks)
- Method of plate block assembly
 - Method of fitting and welding longitudinals and transverse webs on jointed panels
 - Method of welding longitudinals on jointed panels prior to fitting and welding transverse webs
 - Method of fitting frame assembly of longitudinals and transverse webs on jointed panels
 - Method of jointing panels with pre assembled longitudinals by welding prior to fitting and welding of transverse webs
- Pre Erection Outfitting (Grand Block / Mega Block) and Method of erection at building berth/dock
- Block Loading Process (single starting block, multiple starting blocks, inserting blocks)
- Final Dock
- Any other features of construction

2.2.3 Human Resources

2.2.3.1 Human resources available in the Shipbuilding yard / Ship repair yard shall be well qualified for carrying out the respective functions. Training, re-training and maintenance of qualification shall be properly established and ensured in order to carry out following functions inter alia

- Welding
- Fabrication
- Designing
- Purchasing
- Quality assurance
- Health, Safety and Environment
- Launching
- Testing and Trials

2.2.4 Production Line

The production line is to have resources and means to check the following

2.2.4.1 Preventive measures for misuse of materials:

- Collating ordered steel, received steel and checking of mill certificates
- Means for checking material grade of higher strength steels, steel for low temperature service
- Means for inscribing the type and grade of steels on the surface of plates and sections
- Procedures for re-issuing remaining cut pieces of ordinary quality steel

- Means for correlating material to original mill test certificates

2.2.4.2 Shot Blasting and Priming

- Surface preparation standards
- Coating thickness control standards
- Thickness measurement records
- Methods for traceability of shot blasting and priming

2.2.4.3 Marking and Cutting

- Standards for accuracy and periodical inspections of tape measures, tapes, stencils, templates etc.
- Standards for accuracy of cut dimensions and edge preparation
- Standards for finish of cutting face
- Frequency and extent of maintenance and inspection carried out for ensuring accuracy of NC cutter and or flame planer

2.2.4.4 Bending and Stress Relieving

- Standards for maximum heating temperatures during water cooling and at the time of bending and distortion removal of steel by quick heating and cooling
- Regulations for plate thickness and bending radii for flanging
- Methods for training operators for maintaining quality during bending operations

2.2.4.5 Hydrostatic and Tightness tests

- Approved test plans

2.2.4.6 Non-Destructive Examination (NDE)

- Specialization in Radiography, Ultrasonic techniques, surface crack detection methods
- Trained and qualified resources
- NDE equipments
- If partially or fully subcontracted, qualified employees to verify NDE results issued by outsourced agency

2.3 Safety, Security and Environment

2.3.1 Safety and Health

The shipbuilding yard/ship repair yard is to have a Health, Safety and Environment (HSE) policy. Competent personnel shall be available to implement, monitor and control the HSE aspects of the yard as per the established procedures.

In general, safety aspects pertaining to following shall be ensured.

2.3.1.1 Safety procedures shall be in place for activities pertaining to entering confined and enclosed spaces and other dangerous atmospheres including vessels, vessel sections and on-land side operations.

Atmospheric testing to ensure oxygen content, flammability, toxicity shall be carried out every time.

2.3.1.2 Toxic cleaning solvents for cleaning operation, use of primers and paints require safety precautions. Adequate ventilation arrangements shall be in place for cleaning operation. PPEs shall be made available for personnel engaged in surface preparation, painting and paint removal.

2.3.1.3 Spaces where welding and cutting processes are carried out shall be adequately ventilated. Procedures for safety during welding and PPEs for welders shall be ensured.

2.3.1.4 All scaffolds and their supports whether of lumber, steel or other material shall be capable of supporting the load they are designed to carry with adequate safety factor.

2.3.1.5 Guarding of deck openings and edges – Flush manholes and other small openings of comparable size in the deck and other working surfaces shall be suitably covered or guarded to a height of not less than 30 inches. Large openings shall be guarded to a height of 36 to 42 inches.

2.3.1.6 There shall be at least one safe and accessible ladder in any cargo space.

2.3.1.7 While accessing vessels afloat, a gangway of not less than 20 inches walking surface of adequate strength, maintained in safe repair and safely secured shall be used. If a gangway is not practicable, a substantial straight ladder, extending at least 36 inches above the upper landing surface and adequately secured against shifting or slipping shall be provided.

2.3.1.7 Machinery and Piping systems – Safety procedures shall be established for installation and testing of propulsion systems, boilers, air receivers, piping systems, deck machinery, electrical equipment etc.

2.3.1.8 Necessary safety arrangements shall be in place for personnel working at height. Fall-Arrest system, fall prevention/protection systems shall be in place.

2.3.2 Pollution Prevention

3.3.2.1 Requirements for shipyard: Use of asbestos is to be prevented in construction of new ships and machinery/equipment installed on ships. Declaration is to be obtained from suppliers of equipment regarding presence of hazardous materials in machinery/equipment.

2.3.2.2 Requirements for Repair yard: In addition to the requirements indicated above, repair yards shall have facilities for handling and safe disposal of pollutants regulated by various IMO

conventions (eg. MARPOL, AFS, BWM etc.) from ships undergoing repairs. This includes pollutants from defective machinery/equipment which are replaced or pollutants such as oil residues, oily water mixture, sludge, garbage, e-waste, batteries etc. Safe disposal of paint scraps containing tin base components is to be ensured.

2.3.2.3 Security

The shipbuilding yard/ship repair yard is to ensure security measures are in place based on the security assessment carried out.

3. Verification and Certification:

All shipbuilding yards/ship repair yards involved in construction/repair of Indian flag ships shall comply with the requirements of this order. Such yards shall undergo an initial assessment by the Administration.

The assessment process consists of two stages.

- a) Review of documents submitted by the yard
- b) Assessment of the yard for compliance to the requirements of this order (Refer Checklist for approval of yard as described in Appendix – C)

The yard intending to seek approval is to submit an application along with following documents.

- a) Details of the shipyard and its facilities (physical infrastructure and man power)
- b) Production/fabrication processes
- c) Copy of Quality manual, quality control measures and their implementation
- d) Health, safety, security and environment protection measures
- e) Copy of QMS, EMS and OHSAS certificates
- f) Types and size of ships the yard can build/carry out repair and details of previous experience

The documents would be reviewed and upon satisfactory review of the documents, a visit would be required to assess the yard facilities.

Upon completion of satisfactory assessment for compliance with the requirements of this order, a Certificate of Approval for Shipbuilding / repair Yard (as per format specified in Appendix –D of this order) shall be issued having a validity of 5 years subject to annual assessment.

4. Annual Assessment, Withdrawal and Renewal of Certificate:

The shipbuilding yard/ship repair yard which is certified as per this order would have to undergo annual assessment in order to maintain the validity of the certificate. The annual assessment would be carried out to monitor continued compliance to the requirements. The assessment is to be completed within 3 months before or after the date of annual assessment.

Failure to offer the facilities for annual assessment or failure to maintain compliance of the requirements would lead to certificate being withdrawn. In such cases, reassessment of the facility would be required.

Before the expiry date of certificate, shipbuilding/repair yard shall offer the facility for renewal assessment. Certificate shall be renewed for a further period of 5 years after satisfactory completion of renewal assessment.

5. Reassessment of shipbuilding yard/ship repair yard:

Reassessment of the yard would be required under following conditions

- a) Conditions as indicated in Para. 4 above
- b) Where the shipbuilding yard/ship repair yard is building a new ship type or ship of substantially different design/repair activity for which it has no recent experience
- c) Where new infrastructure has been added
- d) Where there has been significant re-structuring or changes in the management systems of the yard

6. Monitoring and Control:

The updated details of “Approved Shipyard/repair yard” will be published on the official website of the Directorate www.dgshipping.gov.in. No Ship Owner shall build/repair Indian Flag ships in yards which are not certified as per this order.

7. Obligation of the shipbuilding yard/ship repair yard

The approved yards shall ensure that all requirements of this order are effectively complied with and relevant records are maintained for continued approval.

CHAPTER -II

Procedure for approval of Works manufacturing Material, Components, Equipment, Products & Appliances

1. General

The requirements of this chapter apply to approval of works manufacturing material, components, equipment, products and appliances intended to be fitted on Indian Ships

2. Approval Pre-requisites for Manufacturer

Prior to making an application for approval of manufacturing works, the manufacturer shall fulfill following minimum requirements:

- i. The manufacturer holds relevant permit/license for the type of manufacturing, if applicable;
- ii. The manufacture complies with all statutory registrations, as necessary;
- iii. The manufacturer maintains a quality management system certified by an accredited certifying body to the current version of the ISO 9001 standard or equivalent and that this certified quality management system is applied in the manufacturing of the product(s);

The manufacturer shall submit documentation showing that the necessary manufacturing, inspection & testing facilities are available in support of capability & competency of manufacturing.

3. Outsourcing/Sub-contracting

Any manufacturer, who is outsourcing /sub-contracting part of production activities shall ensure that necessary quality control procedures are employed by the sub-contractor. The manufacturer shall be responsible for ensuring quality at the sub-contractors work by means of appropriate control measures. Such control measures and scope of sub-contracting activity shall be disclosed by the manufacture in the application. For the critical components, sub-contractor may be required to undergo works approval certification.

4. Restrictions/Limitations

Works Approval certification under this procedure is limited to the scope of works/manufacturing facilities, which undergo approval procedure. A separate works approval certification shall be required where production is made at more than one manufacturing works.

The scope of assessments and approval testing is limited to the process and products covered by the application for approval. Significant changes to the manufacturing facilities or processes shall be reported immediately to certifying authority. Additional approval testing, if necessary

may be required to ascertain the changes made. Shifting or migrating of manufacturing facility partly or fully shall require fresh approval.

5. Initial approval

5.1 Application for Works Approval Certification

1. The manufacturer shall apply in writing, and shall include:
 - a. the name and address of the manufacturer; and
 - b. the documentation as described in point 3 below.
2. A separate application for works approval shall be made for each product or group of products and each location of production/manufacturing facility.
3. The application and documents submitted shall contain sufficient information to allow the product to be assessed for manufacturing capability against the relevant standard/code/rule. Typical documentation shall be as listed below:
 - a. Product specification/description and/or reference to design codes, standards, regulations etc.;
 - b. Manufacturing/fabrication process description;
 - c. Quality control procedures during manufacturing;
 - d. Proposed field of application and operational limitations;
 - e. Proposed test program to demonstrate the capability & competence;
 - f. Certificates and reports for relevant tests previously obtained;
 - g. Documentation of reliability, by calculations and/or in-service experience;
 - h. List of equipment used for inspection & testing;
 - i. Records of calibration;
 - j. List of qualified personnel including personnel engaged in QC/QA.
 - k. Profile of the manufacturer, its production quality assurance system including quality control responsibilities;
 - l. the documentation concerning the quality management system and its certification
 - m. Procedure for identification and traceability from raw material to finished product;
 - n. Any other information that the manufacturer considers necessary;

6. Documentation Review

Manufacturer's application along with submitted documentation shall be reviewed and the manufacturer will be informed about decision of acceptance of application and future actions, as necessary.

7. Manufacturers Works Assessment

Assessment of the manufacturer's works shall be carried out at a location of the inspection and testing identified by the manufacturer. The assessment is to ensure:

- i. that the works is properly equipped with satisfactory test and measuring equipment, gauges etc., appropriate to the type of manufacture and testing to be undertaken and the facilities exist to enable the accuracy and serviceability of such product to be maintained; and
- ii. that system exists for manufacturing process control to ensure consistency in product quality.
- iii. The claims made by the manufacturer in his application are actually implemented and verified.

8. Selection of Samples

- a) Samples for inspection and testing shall be representative of the entire range of products to be certified and shall be produced using the same methods and tools established for the production run.
- b) Samples shall be selected in agreement with the surveyor.

9. Inspection and Testing

- a) The samples shall be inspected and tested by Surveyor to verify the competency and capability of manufacturer.
- b) The tests shall be carried out in accordance with agreed test program. Tests may be carried out at the manufacturer's works or at an accredited laboratory having suitable facilities.
- c) Tests shall always be witnessed by the Surveyor. In cases, where the tests are conducted at an Accredited Laboratory (ISO 17025 or equivalent), the presence of Surveyor may not be required.
- d) Test methods shall be consistent with the purpose of the Specified standard/rule/code(s), be objective, concise, accurate and produce consistent results.
- e) The basis and criteria for acceptance shall be stated in the test program.

10. Test Report

On completion of tests, a report shall be issued, identified by number and date which accurately, clearly and unambiguously presents the test results and all other relevant information.

All reports shall be endorsed by the manufacturer, prior to submission.

11. Certification

When the report on the manufacturing facilities and test results are considered satisfactory, the manufacturer shall be issued with a certificate of Works Approval (as per specified format in Appendix – E to this order). The certificate shall remain valid for 5 years.

12. Maintenance of Certificate

12.1 Periodical Surveillance

Periodical surveillance shall be applicable for every certificate and the periodicity of surveillance shall remain annual.

12.2 Extension of Scope

1. The scope of a works approval certificate may be extended by the issue of a new certificate if:
 - i. The manufacturer wishes the certification to cover additional product similar to those products already approved, made to the same specified standard(s) for which the works approval certificate is earlier issued.
 - ii. The manufacturer wishes the certification to attest to the conformity of his product(s) with additional specified standard(s).
 - iii. The manufacturer wishes the certification to include an additional place of production.
2. If necessary, it may call upon assessment by the certifying authority.

12.3 Renewal

1. A works approval certificate may be renewed for a further period of validity, at the manufacturer's request, by the issue of a new certificate.
2. Assessment audit shall be conducted at manufacturing facility to confirm that the product is unchanged from that to which the original works approval certificate

12.4 Cancellation or Withdrawal

1. Administration reserves the right to cancel a works approval certificate if:
 - i. Any design and/or construction changes are made to a certified product which are deemed to adversely affect the descriptive or performance provisions under which works approval was granted;

- ii. Improper use is made of the certificate;
 - iii. The manufacturer moves from the address stipulated on the certificate, without informing to Administration in writing.
 - iv. Periodical surveillance to the certificate is not made
2. In addition, a works approval certificate will be withdrawn if:
- i. The manufacturer does not wish to renew the certificate;
 - ii. the manufacturing activity is discontinued;

Chapter - III

Procedure for Type Approval of Products, Equipment & Appliances

1. General:

The requirements of this chapter apply to approval of products, equipment and appliances intended to be fitted on Indian Ships

Products and equipment listed in Appendix A as part of the safety construction requirement shall be designed, constructed in compliance with the structural, mechanical and electrical requirements of the Classification Society recognized by this Administration. Products and equipment listed under Section II of Appendix A may however be accepted based on mutual recognition of type approval scheme agreed between Classification Societies.

Statutory equipment / products listed in the Appendix - B, intended for installation onboard Indian ships shall be type approved as provided in this procedure.

2. Type Approval Process

Type approval process in general is demonstrated in two stages.

(i) Product design review and testing as per applicable standard

Product design review shall take into account design appraisal, document review and witness testing of the product to ensure & ascertain if the product compliance complies with the international standards.

(ii) Assessment of Quality systems shall be done by either of the three ways e.g.

a. by verification of Production Quality Assurance or

Production quality Assurance involves assessment of Quality system of manufacturer to ensure that the complete production process results in equipment meeting the standard of the prototype for which the product design review and testing has been completed. This certification requires manufacturer's quality system to have in-process testing as well as testing of final product.

b. by verification of Product Quality Assurance or

Product quality assurance involves assessment of Quality system of manufacturer to ensure that the complete production process results in equipment meeting the standard of the prototype for which the product design review and testing has been completed. This certification requires manufacturer's quality system to have postproduction inspection/testing regime.

c. by Product verification.

Product verification involves equipment manufactured in smaller batches or lots. Manufacturer is to schedule inspection in advance of the intended production. The batches shall be examined and samples selected for testing as per applicable standards/codes. Manufacturer's records of production shall be verified to ensure conformity with the prototype. Type approval certificates for the products remain valid for 5 years with annual surveillance.

The manufacturer shall make an application stating the detailed specifications of each product/equipment or group of products/equipment and each place of production.

Additionally, the manufacturer shall submit design documents containing sufficient information to allow the product/equipment to be assessed against the design criteria. Typical documentation is listed below:

- (a) Product specification and/or reference to design codes, standards, regulations etc;
- (b) Relevant design drawings with materials specified, catalogues, data sheets calculations, functional descriptions, component lists where necessary and marking of the product;
- (c) Fabrication specifications, where applicable;
- (d) Proposed field of application and operational limitations;
- (e) Proposed test program to demonstrate that the performance provisions of the specified standard(s) may be fulfilled;
- (f) Certificates and reports for relevant tests previously obtained for the product;
- (g) Documentation of reliability, by calculations and/or in-service experience;
- (h) A copy of the specified standard(s), where necessary;
- (i) Profile of the manufacturer, its production and quality assurance system;
- (j) Any other information that the manufacturer considers necessary.

3. Design Review and review of Test Protocol

In this step the evaluation of a design of the product/equipment to determine compliance with the agreed technical requirements and review of the test proposal (if submitted) will be completed. The comments or recommendations resulting from the Design Review will be advised together with the preliminary conditions and/or limitations that will be applicable to the Type Approval.

The review of the test proposals is to confirm that the testing will adequately demonstrate compliance of the products(s) with the relevant standards. Any comments or recommendations on these tests will be advised to the manufacturer.

The test proposals shall include information on following's:

- (a) Itemized lists of tests and duration of each;
- (b) Method of tests;
- (c) Details of each test including measurements to be taken and recorded;
- (d) Details of measuring and test equipment standard of accuracy;

- (e) Test conditions;
- (f) Performance to be achieved and accepted deviation.

In formulating proposals, manufacturers shall combine as many test requirements as practicable to minimize the total number of separate tests.

4. Review of the Production and Quality Control System of the Manufacturer:

The assessment of the Production & Quality Control System is to ensure that the product can be consistently produced in accordance with the Type Approval Certificate for the product concerned. The assessment procedure will include a visit to the client and other place(s) of production and a review of the quality management system documentation available in these locations.

The objectives of this assessment shall be to:

- (a) Verify that information provided on the products, facilities and procedures is correct.
- (b) Verify that the quality management system is being maintained and audited to the requirements of ISO 9001 or industry-specific equivalent standard.
- (c) Verify that the manufacture of products and implementation of controls are performed in accordance with the quality management system. Audits will focus on technical aspects of product realization and determine whether process variables are adequately controlled.
- (d) Verify product quality and performance characteristics by auditing manufacturer's records on nonconforming products and processes, warranty data and client complaints.
- (e) Verify arrangements for acceptance and certification of purchased materials, components and equipment and services at the manufacturer's works.

4.1 Requirements of Quality Control System:

The product/equipment manufacturing facility is to maintain an effective quality management system (QMS) complying with the most current version of ISO 9001: 2015 – Standard for Quality Management System.

The quality management system procedures of the manufacturing facility shall be documented in the form of a Quality Manual comprising the following aspects, as a minimum.

4.1.1 Organization chart

This shall include the details of departments such as design, purchasing, manufacturing, quality assurance (QA) etc. and personnel responsible for each process. QA/QC department is to be independent of the other departments and is to report directly to the top management of the organization.

4.1.2 Qualified man power in QA/QC activities

Qualification of personnel involved in quality control activities shall be defined and the same is to be ensured.

4.1.3 Procedures for pre-inspection

Pre-inspection is to be carried out on all materials, welding consumables, castings, forgings, attached machinery/equipment etc. and procedures to ensure the same shall be established.

4.1.4 In-process inspections/tests and subsequent acceptance/rejection

The manufacturing facility is to ensure that at every stage of manufacturing, necessary inspection/tests are carried out as part of quality control activity and procedures for acceptance or rejection shall be formulated.

4.1.5 Certification of welders

Welding being a critical activity is to be carried out by qualified welders. Welders shall be qualified for the type of welding and positions of welding. Procedures to qualify them and maintenance of qualified welders, control of welding consumables etc. are to be available.

4.1.6 Control of production activities

Control of fabrication/production activities at various stages to ensure consistent quality and to reduce rejection/rework is to be ensured by the yard.

4.1.7 Control of documents, drawings, records etc.

Design drawings, production drawings, manufacturing procedures, work instructions etc. are to be controlled so that the most current version is available for the personnel at all times. Procedures for control of documents and prevention of use of obsolete documents shall be established and implemented.

4.1.8 System for identification and traceability

System for identification and traceability of raw materials, semi-finished/finished products, documents, procedures, records etc. is to be ensured.

4.1.9 Control for sub-contracted activities

Control measures shall be formulated for sub-contracted activities (if any) prior to acceptance of the materials/ components. Procedure to ensure the same is to be documented.

4.1.10 Calibration of measuring/testing equipment

All measuring/testing equipments shall be calibrated periodically and records for the same shall be maintained.

4.1.11 Vendor approval and maintenance

Procedure is to be in place for acceptance of suppliers for various components, materials etc. required to be used in the production/assembly of the product. Components/ materials which require approval from classification society shall be obtained from relevant vendors/works.

5. On Site Verification and Witnessing of Type Testing:

The aim of the onsite verification and testing is to:

- (a) Examine and test the material and workmanship and confirm that the product / equipment has been manufactured and tested in accordance with requirements, manufacturer's specification in so far as they are applicable;
- (b) Demonstrate that the product is able to perform its specified function;
- (c) Establish the performance characteristics of the product / equipment, where applicable.

The tests would be carried out in accordance with agreed type test protocol. Selected samples shall be inspected at the manufacturer's works to confirm that the descriptive provisions of the specified standard(s) are fulfilled.

5.1 Type Testing

5.1.1 Tests, in accordance with the agreed protocol, shall be carried out on the representative samples to confirm that the performance provisions of the specified standard(s) are fulfilled. Tests shall be witnessed by the Surveyor(s), unless otherwise agreed in writing.

5.1.2 Test methods should be consistent with the purpose of the specified standard(s), be objective, concise, accurate and produce consistent results.

5.1.3 The basis and criteria for acceptance shall be stated in the test protocol. The type of product, with type number / serial number and quantity to be tested shall be designated.

5.1.4 All test and measuring equipment shall be of proven accuracy, where appropriate to a national or international standard of measurement.

5.1.5 Tests may be carried out at the manufacturer's works or at an accredited laboratory having suitable facilities.

5.2 Test Report

5.2.1 On completion of tests, a report shall be issued, identified by number and date which accurately, clearly and unambiguously presents the test results and all other relevant information.

5.2.2 The contents of test report(s) shall include the following minimum information:

- (a) Description of product, type of product, with type number / serial number(s) and quantity tested;
- (b) Statement of specified duties and requirements of the unit;
- (c) Date of test and report date;
- (d) Test specification with a sketch (where applicable) and brief description of the test rig actually used and description of each test procedure, its duration and purpose;
- (e) Details of test equipment and measuring instruments stating serial numbers and dates of calibration;
- (f) Ambient environmental conditions during the test;

- (g) The test results with a description of any failures encountered;
- (h) A statement that the product has been found to comply with the requirement or where the product does not fully comply, a statement that it has complied apart from the exceptions described.

5.2.3 All reports shall be endorsed by the manufacturer, accredited laboratory and where applicable by the Surveyor.

6. Evaluation of Test Results and Issuance of Type Approval Certificate

When the report on the manufacturing facilities and test results are considered satisfactory, the manufacturer will be issued with a certificate of type approval (in a format as specified in Appendix F to this order).

7. Renewal of Type Approval Certificate:

A type approval certificate may be renewed for a further period of validity, at the manufacturer's request, by the issue of a new certificate.

Application should be submitted to the relevant approval authority at least three months prior to the existing certificate expiry date.

No additional documentation is required if the product (including range and ratings), place of production and specified standards are unchanged. If any of these aspects will be changed prior to the expiry date, depending on the changes made, the renewal process may need to be followed as for the original certificate.

8. Cancellation or Withdrawal of Type Approval Certificate

The Type Approval Certificate will be cancelled if:

- Any design and /or construction changes are made to a certified product which is deemed to adversely affect the descriptive or performance provisions under which Type Approval was granted.
- Safety or any other feature of a certified product is found to be unsatisfactory in service.
- Improper use is made of the Certificate in marketing the product.
- The client changes any of the addresses stipulated on the Certificate, without informing the approving authority.

The Type Approval Certificate will be withdrawn if:

- The client does not wish to renew the certification.
- The product is no longer produced.
- The specific relationship between a manufacturer producing a product under licence and the licensor no longer applies.

Appendix – A
List of Products/Equipment requiring Type Approval

SECTION - I

1. Diesel Engines
2. Exhaust Gas Turbochargers
3. Gas Turbines
4. Steam Turbines
5. Reduction Gearing
6. Electronic Governors
7. Electronic Control Units
8. Crankcase Explosion Relief Valves
9. Crankcase oil mist detectors
10. Flexible hoses
11. Overspeed protective device
12. Flexible Couplings
13. Steering gear-hydraulic cylinder
14. Air Vent valve
15. Bearings - Rudder bearings, Stern tube bearing
16. Fire Insulation Material
17. Mechanical Joints
18. Electrical equipment

SECTION – II

List of Products covered under EU RO MR Type Approval acceptable to Indian Administration

1. Circuit Breakers
2. Contactors
3. Electric Driven Motors < 20 kW
4. Fuses
5. Display Monitors, Video Screens, Terminals
6. LV Enclosures & Boxes
7. LV Transformers
8. Mechanical Joints
9. Resin Chocks
10. Switches
11. Sensors
12. Accumulator Battery
13. Air Pipe Automatic Closing Device
14. Cable Ties
15. Class III Pipe Fittings
16. Computers and PLCs
17. Electrical/Electronic Relays
18. Electric Cables - Heating Cables

19. Expansion Joints
20. Flameproof Luminaire (Lighting Fixture)
21. Plastic Piping Systems (Components)
22. Spark Arresters
23. Adjustable Steel Chock
24. Air Compressor
25. Battery Chargers
26. Boiler Remote Level Indicator
27. Cable Trays & Ducts (Glass Reinforced Plastic)
28. Cable Trays & Ducts (Metallic)
29. Connecting Systems for Cable Repair (Cable Splices)
30. Electrical Actuators for Valves
31. Insulation Panels for Provision Rooms & Chambers
32. Pneumatic Actuators for Valves
33. Solenoid Valve Assembly
34. Stationary Lighting Fixtures/Flood Light Projectors
35. Circuit Breakers with Electronic Devices
36. Contactors with Electronic Devices
37. Tachometer
38. Temperature Gauges and Transmitters
39. Thermal Insulation of Organic Foams for Piping
40. Valves for Bilge Systems
41. Valves for Freshwater Systems
42. Valves for Lubricating Oil & Hydraulic Oil Systems
43. Valves for Sanitary Systems
44. Valves for Seawater Systems
45. AC Semiconductor Controllers
46. Control and Protective Switching Devices
47. Electronic Power Units for Valve Control
48. Electro-Pneumatic Level Transmitters (EPLT)
49. Flow Gauges/Transmitters
50. Level Gauges/Transmitters
51. LV Soft Starters
52. Pilot Devices
53. Pressure Gauges - Transmitters
54. Valves for Fuel Oil Systems
55. Valves for Cargo Systems

Appendix – B

List of Statutory Equipment along with Technical Requirements and Testing Standards

Life Saving Appliances

S.No.	Product	Technical Requirements	Testing standards
1	Lifebuoys	— Reg. III/7, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70).
2	Position-indicating lights for life-saving appliances: (a) for survival craft and rescue boats, (b) for lifebuoys, (c) for lifejackets.	— Reg. III/7, — Reg. III/22, — Reg. III/26, — Reg III/32, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) II, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70).
3	Lifebuoys self-activating smoke signals	— Reg. III/7, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70).
4	Lifejackets	— Reg. III/7, — Reg. III/22, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.922, — IMO MSC.1/Circ.1304, — IMO MSC.1/Circ.1470.	— IMO Res. MSC.81(70).

5	Immersion suits and anti-exposure suits designed to be worn in conjunction WITH a lifejacket a) immersion suit without inherent insulation b) immersion suit with inherent insulation c) anti exposure suits	<ul style="list-style-type: none"> — Reg. III/7, — Reg. III/22, — Reg. III/32, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.1046. 	— IMO Res. MSC.81(70).
6	Immersion suits and anti-exposure suits designed to be worn WITHOUT a life jacket a) immersion suit without inherent insulation b) immersion suit with inherent insulation c) anti exposure suits	<ul style="list-style-type: none"> — Reg. III/7, — Reg. III/22, — Reg. III/32, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.1046. 	— IMO Res. MSC.81(70).
7	Thermal protective aids	<ul style="list-style-type: none"> — Reg. III/22, — Reg. III/32, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, II, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.1046. 	— IMO Res. MSC.81(70).
8	Rocket parachute flares (pyrotechnics)	<ul style="list-style-type: none"> — Reg. III/6, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, III, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
9	Hand flares (pyro technics)	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, III, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
10	Buoyant smoke signals (pyrotechnics)	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) I, III. 	— IMO Res. MSC.81(70).
11	Line-throwing appliances	<ul style="list-style-type: none"> — Reg. III/18, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VII, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).

12	Inflatable liferafts	<ul style="list-style-type: none"> — Reg. III/13, — Reg. III/21, — Reg. III/26, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.811, — IMO MSC.1/Circ.1328. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70). And for extended service intervals: — IMO MSC.1/Circ.1328.
13	Rigid liferafts	<ul style="list-style-type: none"> — Reg. III/21, — Reg. III/26, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.811. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70), — IMO MSC/Circ.1006.
14	Automatically self-righting liferafts	<ul style="list-style-type: none"> — Reg. III/26, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.809, — IMO MSC/Circ.811, — IMO MSC.1/Circ.1328. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70). And for extended service intervals: — IMO MSC.1/Circ.1328.
15	Canopied reversible liferafts	<ul style="list-style-type: none"> — Reg. III/26, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.809, — IMO MSC/Circ.811, — IMO MSC.1/Circ.1328. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70). And for extended service intervals: — IMO MSC.1/Circ.1328.
16	Float-free arrangements for liferafts (hydrostatic release units)	<ul style="list-style-type: none"> — Reg. III/13, — Reg. III/26, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC/Circ.811. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70).

17	Lifeboats: (a) Davit-launched lifeboats: — partially en closed, — totally en closed. (b) Free-fall life boats.	— Reg. III/21, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC.1/Circ.1423.	— IMO Res. MSC.81(70), — IMO MSC/Circ.1006 .
18	Rigid rescue boats	— Reg. III/21, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70), — IMO MSC/Circ.1006 .
19	Inflated rescue boats	— Reg. III/21, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70), — ISO 15372 (2000).
20	Fast rescue boats: (a) inflated (b) rigid (c) rigid-inflated	— Reg. III/26, — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) I,V, — IMO MSC/Circ.1016, — IMO MSC/Circ.1094	— IMO Res. MSC.81(70), — IMO MSC/Circ.1006 , — ISO 15372 (2000).
21	Launching appliances using falls (davits)	— Reg. III/23, — Reg. III/33, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70).
22	Launching appliances for free-fall lifeboats	— Reg. III/16, — Reg. III/23, — Reg. III/33, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8.	— IMO Res. MSC.81(70).

23	Liferaft launching appliances (Davits)	<ul style="list-style-type: none"> — Reg. III/12, — Reg. III/16, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
24	Fast rescue boat launching appliances (Davits)	<ul style="list-style-type: none"> — Reg. III/26, — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) I, VI. 	— IMO Res. MSC.81(70).
25	Release mechanism for (a) Lifeboats and rescue boats (launched by a fall or falls) (b) Liferafts (launched by a fall or falls) (c) Free fall life boats	<ul style="list-style-type: none"> — Reg. III/16, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO MSC.1/Circ.1419. 	— IMO Res. MSC.81(70).
26	Marine evacuation systems	<ul style="list-style-type: none"> — Reg. III/15, — Reg. III/26, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
27	Means of rescue	<ul style="list-style-type: none"> — Reg. III/26, — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) I, VI. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70), — IMO MSC/Circ.810.
28	Embarkation ladders	<ul style="list-style-type: none"> — Reg. III/11, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code), — IMO Res. MSC.48(66)-(LSA Code), — IMO Res. MSC.97(73)-(2000 HSC Code), — IMO MSC.1/Circ.1285. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70), — ISO 5489 (2008).

29	Retro-reflective materials	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. A.658(16).
30	Radar reflector for lifeboats and rescue boats (passive)	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res A.384(X), — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, — IMO Res. MSC.164(78). 	<ul style="list-style-type: none"> — EN ISO 8729 (1998), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — EN ISO 8729 (1998), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — ISO 8729-1 (2010), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — ISO 8729-1 (2010), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008).
31	Lifeboat/rescue boat propulsion engine	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) IV, V. 	— IMO Res. MSC.81(70).

32	Rescue boat propulsion engine-out board motor	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) V. 	— IMO Res. MSC.81(70).
33	Searchlights for use in lifeboats and rescue boats	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
34	Open reversible life rafts	<ul style="list-style-type: none"> — IMO Res. MSC.36(63)-(1994 HSC Code) 8, Annex 10, — IMO Res. MSC.48(66)-(LSA Code) I, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, Annex 11, — IMO MSC.1/Circ.1328. 	<ul style="list-style-type: none"> — IMO Res. MSC.36(63)-(1994 HSC Code) Annex 10, — IMO Res. MSC.97(73)-(2000 HSC Code) Annex 11. <p>And for extended service intervals:</p> <ul style="list-style-type: none"> — IMO MSC.1/Circ.1328.
35	Winches for survival craft and rescue boats (a) davit launched lifeboats, (b) free-fall life boats, (c) liferafts, (d) rescue boats, (e) fast rescue boats.	<ul style="list-style-type: none"> — Reg. III/16, — Reg. III/17, — Reg. III/23, — Reg. III/24, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, VI, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	— IMO Res. MSC.81(70).
36	Rigid/inflated rescue boats	<ul style="list-style-type: none"> — Reg. III/21, — Reg. III/31, — Reg. III/34, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	<ul style="list-style-type: none"> — IMO Res. MSC.81(70), — IMO MSC/Circ.1006, — ISO 15372 (2000).

		Fire Protection Equipment	
S.No.	Product	Technical Requirements	Testing standards
1	Primary decks covering	<ul style="list-style-type: none"> — Reg. II-2/4, — Reg. II-2/6, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
2	Portable fire extinguishers	<ul style="list-style-type: none"> — Reg. II-2/4, — Reg. II-2/10, — Reg. II-2/18, — Reg. II-2/19, — Reg. II-2/20, — IMO Res. A.951(23), — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 4, — IMO MSC/Circ.1239, — IMO MSC/Circ.1275. 	<ul style="list-style-type: none"> — EN 3-7 (2004) including A.1 (2007), — EN 3-8 (2006) including AC (2007), — EN 3-9 (2006) including AC (2007), — EN 3-10 (2009).
3	Fire-fighter's outfit: protective clothing (close proximity clothing)	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3. 	Protective clothing for fire fighting: <ul style="list-style-type: none"> — EN 469 (2005) including A1 (2006) and AC (2006). Protective clothing for fire fighting — Reflective clothing for specialised fire-fighting: <ul style="list-style-type: none"> — EN 1486 (2007). Protective clothing for fire fighting — Protective clothing with a reflective

			outer surface: — ISO 15538 (2001) Level 2.
4	Fire-fighter's outfit: boots	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3.	— EN 15090 (2012).
5	Fire-fighter's outfit: gloves	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3.	— EN 659 (2003) including A1 (2008) and AC (2009).
6	Fire-fighter's outfit: helmet	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3.	— EN 443 (2008).
7	Self-contained compressed-air-operated breathing apparatus <i>Note:</i> For use in accidents involving dangerous goods a positive pressure type mask is required.	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3. And where the apparatus is for use in accidents with cargo: — IMO Res. MSC.4(48)-(IBC Code) 14, — IMO Res. MSC.5(48)-(IGC Code) 14.	— EN 136 (1998) including AC (2003), — EN 137 (2006). And where the apparatus is for use in accidents with cargo: — ISO 23269-3(2011).
8	Compressed air line breathing apparatus	— IMO Res. MSC.36(63)-(1994 HSC Code) 7.	— EN 14593-1 (2005), — EN 14593-2 (2005) including AC (2005), — EN 14594 (2005)

			including AC (2005).
9	Sprinkler systems components for accommodation spaces, service spaces and control stations equivalent to that referred to in SOLAS 74 Reg. II-2/12 (limited to nozzles and their performance). (Nozzles for fixed sprinkler systems, for high speed craft (HSC) are included under this item)	<ul style="list-style-type: none"> — Reg. II-2/7, — Reg. II-2/9, — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.44(65), — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 8. — IMO MSC/Circ.912. 	— IMO Res. A.800(19).
10	Nozzles for fixed pressure water spraying fire extinguishing systems for machinery spaces and cargo pump- rooms	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 7, — IMO MSC.1/Circ.1313. 	— IMO MSC/Circ.1165 , Appendix A.
11	“A” & “B” Class divisions fire integrity (a) “A” class divisions, (b) “B” class divisions.	<ul style="list-style-type: none"> — Reg.II-2/9, and, “A” Class: — Reg. II-2/3.2. — IMO MSC/Circ.1120 — IMO MSC.1/Circ.1434 “B” Class: — Reg. II-2/3.4. 	<ul style="list-style-type: none"> — IMO Res. MSC.307(88)-(2010 FTP Code). — IMO MSC.1/Circ.1435 (the latter is only for “A” Class divisions)
12	Devices to prevent the passage of flame into the cargo tanks in tankers	<ul style="list-style-type: none"> — Reg II-2/4, — Reg II-2/16 	<ul style="list-style-type: none"> — EN ISO 16852 (2010), — ISO 15364 (2007), — IMO MSC/Circ.677.
13	Non-combustible materials	<ul style="list-style-type: none"> — Reg. II-2/3, — Reg. II-2/5, — Reg. II-2/9, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	— IMO Res. MSC.307(88)-(2010 FTP Code).

14	<p>Materials other than steel for pipes conveying oil or fuel oil</p> <p>(a) plastic pipes and fittings,</p> <p>(b) valves,</p> <p>(c) flexible pipe assemblies and compensators,</p> <p>(d) metallic pipe components with resilient and elastomeric seals.</p>	<p>— Reg. II-2/4,</p> <p>— IMO Res. MSC.36(63)-(1994 HSC Code) 7, 10,</p> <p>— IMO Res. MSC.97(73)-(2000 HSC Code) 7, 10.</p> <p>— IMO MSC/Circ.1120.</p>	<p>Pipes and fittings:</p> <p>— IMO Res. A.753(18),</p> <p>— IMO Res. MSC.307(88)-(2010 FTP Code).</p> <p>Valves:</p> <p>— EN ISO 10497 (2010).</p> <p>Flexible pipe assemblies:</p> <p>— EN ISO 15540 (2001)</p> <p>— EN ISO 15541 (2001).</p> <p>Metallic pipe components with resilient and elastomeric seals.</p> <p>— ISO 19921 (2005),</p> <p>— ISO 19922 (2005).</p>
15	Fire Doors	— Reg. II-2/9.	<p>— IMO Res. MSC.307(88)-(2010 FTP Code).</p> <p>— IMO MSC.1/Circ.13 19.</p>
16	<p>Fire door control systems components.</p> <p><i>Note:</i> When the term “system components” is used in column 2 it may be that a single component, a group of components or a whole system needs to be tested to ensure that the international requirements are fulfilled.</p>	<p>— Reg. II-2/9,</p> <p>— IMO Res. MSC.97(73)-(2000 HSC Code) 7.</p>	— IMO Res. MSC.307(88)-(2010 FTP Code).

17	Surface materials and floor coverings with low flame-spread characteristics (a) decorative veneers (b) paint systems, (c) floor coverings, (d) pipe insulation covers, (e) adhesives used in the construction of "A", "B" & "C" class divisions, (f) combustible ducts membrane	<ul style="list-style-type: none"> — Reg. II-2/3, — Reg. II-2/5, — Reg. II-2/6, — Reg. II-2/9, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. — IMO MSC/Circ.1120. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
18	Draperies, curtains and other suspended textile materials and films	<ul style="list-style-type: none"> — Reg. II-2/3, — Reg. II-2/9, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	<ul style="list-style-type: none"> — IMO Res. MSC.307(88)-(2010 FTP Code), — IMO MSC.1/Circ.1456.
19	Upholstered furniture	<ul style="list-style-type: none"> — Reg. II-2/3, — Reg. II-2/5, — Reg. II-2/9, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
20	Bedding components	<ul style="list-style-type: none"> — Reg. II-2/3, — Reg. II-2/9, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
21	Fire dampers	— Reg. II-2/9.	— IMO Res. MSC.307(88)-(2010 FTP Code),
22	"A" and "B" class fire proof windows and side scuttles	<ul style="list-style-type: none"> — Reg. II-2/9, — IMO MSC/Circ.1120. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
23	Penetrations through "A" class divisions (a) electric cable transits, (b) pipe, duct, trunk, etc penetrations.	<ul style="list-style-type: none"> — Reg. II-2/9, — IMO MSC.1/Circ.1276. (only applicable to (b)) 	— IMO Res. MSC.307(88)-(2010 FTP Code).

24	Penetrations through "B" class divisions (a) electric cable transits, (b) pipe, duct, trunk, etc penetrations.	— Reg. II-2/9.	— IMO Res. MSC.307(88)-(2010 FTP Code).
25	Sprinkler systems (limited to sprinkler heads). (Nozzles for fixed sprinkler systems, for high speed craft (HSC) are included under this item)	— Reg. II-2/7, — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.44(65), — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 8, — IMO MSC/Circ.912.	— ISO 6182-1 (2014). Or, — EN 12259-1 (1999) including A1 (2001), A2 (2004) and A3 (2006).
26	Fire hoses with diameter ≤ 52 mm	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7.	— EN 14540 (2004) including A.1 (2007).
27	Portable oxygen analysis and gas detection equipment	— Reg. II-2/4, — Reg. VI/3, — IMO Res. MSC.98(73)-(FSS Code) 15.	— EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008) or IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60533 (1999), and as applicable to: a) Category 1: (safe area): — EN 50104

			(2010), — EN 60079-29-1 (2007). b) Category 2: (explosive gas atmospheres): — EN 50104 (2010), — EN 60079-29-1 (2007), — EN 60079-0 (2012) including A11:2013, — EN 60079-1 (2007) including IEC 60079-1 Corrigendum 1 (2008), — EN 60079-10-1 (2009), — EN 60079-11 (2012), — EN 60079-15 (2010), — EN 60079-26 (2007).
28	Fire restricting materials (except furniture) for high speed craft	— IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. — IMO MSC.1/Circ.1457.	— IMO Res. MSC.307(88)-(2010 FTP Code).
29	Fire restricting materials for furniture for high speed craft	— IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7.	— IMO Res. MSC.307(88)-(2010 FTP Code).
30	Fire resisting divisions for high speed craft	— IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. — IMO MSC.1/Circ.1457.	— IMO Res. MSC.307(88)-(2010 FTP Code).
31	Fire doors on high speed craft	— IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7.	— IMO Res. MSC.307(88)-(2010 FTP Code).
32	Fire dampers on high speed craft	— IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7.	— IMO Res. MSC.307(88)-(2010 FTP Code).

33	Penetrations through fire resisting divisions on high speed craft (a) electric cable transits, (b) pipe, duct, trunk etc penetrations.	<ul style="list-style-type: none"> — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	— IMO Res. MSC.307(88)-(2010 FTP Code).
34	Portable fire-extinguishing equipment for lifeboats and rescue boats	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. A.951(23), — IMO Res. MSC.36(63)-(1994 HSC Code) 8, — IMO Res. MSC.48(66)-(LSA Code) I, IV, V, — IMO Res. MSC.97(73)-(2000 HSC Code) 8. 	<ul style="list-style-type: none"> — EN 3-7 (2004) including A1 (2007), — EN 3-8 (2006) including AC (2007), — EN 3-9 (2006) including AC (2007), — EN 3-10 (2009).
35	Nozzles for equivalent water-mist fire extinguishing systems for machinery spaces and cargo pump rooms	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 7, — IMO MSC.1/Circ.1313, — IMO MSC.1/Circ.1458. 	— IMO MSC/Circ.1165 .
36	Low-location lighting systems (components only)	<ul style="list-style-type: none"> — Reg. II-2/13, — IMO Res. A.752(18), — IMO Res. MSC.98(73)-(FSS Code) 11. 	<ul style="list-style-type: none"> — IMO Res. A.752(18). Or, — ISO 15370 (2010).
37	Emergency escape breathing devices (EEBD)	<ul style="list-style-type: none"> — Reg. II-2/13, — IMO Res. MSC.98(73)-(FSS Code) 3, — IMO MSC/Circ.849. 	<ul style="list-style-type: none"> — ISO 23269-1 (2008), and alternatively: For self-contained: open — circuit compressed air breathing apparatus with full mask or mouthed piece assembly for escape: — EN

			402(2003). For self-contained: open — circuit compressed air breathing apparatus with a hood for escape: — EN 1146(2005). For self-contained: closed — circuit compressed air breathing apparatus: — EN 13794(2002).
38	Inert gas systems components	— Reg. II-2/4, — IMO Res. A.567(14), — IMO Res. MSC.98(73)-(FSS Code) 15, — IMO MSC/Circ.353, — IMO MSC/Circ.485, — IMO MSC/Circ.731, — IMO MSC/Circ.1120.	— IMO MSC/Circ.353.
39	Nozzles for deep fat cooking equipment fire extinguishing systems (automatic or manual type).	— Reg. II-2/1, — Reg. II-2/10, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO MSC.1/Circ.1433.	— ISO 15371 (2009).
40	Fire-fighters outfit — lifeline	— Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 3.	— IMO Res. MSC.98(73)-(FSS Code) 3, — IMO Res. MSC.307(88)-(2010 FTP Code).

41	Equivalent fixed gas fire extinguishing systems components (extinguishing medium, head valves and nozzles) for machinery spaces and cargo pump rooms	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 5, — IMO MSC/Circ.848, — IMO MSC.1/Circ.1313, — IMO MSC.1/Circ.1316. 	<ul style="list-style-type: none"> — IMO MSC/Circ.848, — IMO MSC.1/Circ.1316.
42	Equivalent fixed gas fire extinguishing systems for machinery spaces (aerosol systems)	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 5, — IMO MSC.1/Circ.1270 including Corrigendum 1 — IMO MSC.1/Circ.1313. 	<ul style="list-style-type: none"> — IMO MSC.1/Circ.1270 including Corrigendum 1.
43	<p>Concentrate for Fixed High Expansion Foam Fire Extinguishing Systems for Machinery Spaces and Cargo Pump Rooms.</p> <p>Note: The fixed high expansion foam fire extinguishing system (including those systems which use inside air from their working spaces for their intended performance), for machinery spaces and cargo pump rooms must still be tested with the approved concentrate to the satisfaction of the Administration.</p>	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.98(73)-(FSS Code) 6. 	<ul style="list-style-type: none"> — IMO MSC/Circ.670.
44	Fixed water based local application fire fighting systems components for use in category "A" machinery spaces (Nozzles and performance tests).	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	<ul style="list-style-type: none"> — IMO MSC.1/Circ.1387.

45	<p>Fixed water-based fire-fighting systems for ro-ro spaces, vehicle spaces and special category spaces</p> <p>(a) Prescriptive- based systems as per Circ. 1430 Clause 4:</p> <p>(b) Performance- based systems as per Circ. 1430 Clause 5.</p>	<p>— Reg. II-2/19,</p> <p>— Reg. II-2/20,</p> <p>— IMO Res. MSC.36(63)-(1994 HSC Code) 7,</p> <p>— IMO Res. MSC.97(73)-(2000 HSC Code) 7.</p> <p>— IMO Res. MSC.98(73)-(FSS Code) 7.</p>	<p>— IMO MSC.1/Circ.1430.</p>
46	<p>Fixed fire detection and fire alarm systems components for control stations, service spaces, accommodation spaces, cabin balconies, machinery spaces and unattended machinery spaces</p> <p>(a) Control and indicating equipment</p> <p>(b) Power supply equipment</p> <p>(c) Heat detectors — Point detectors</p> <p>(d) Smoke detectors: Point detectors using scattered light, transmitted light or ionization</p> <p>(e) Flame detectors: Point detectors</p> <p>(f) Manual call points</p> <p>(g) Short circuit isolators</p> <p>(h) Input/output devices</p> <p>(i) Cables</p>	<p>— Reg. II-2/7,</p> <p>— IMO Res. MSC.36(63)-(1994 HSC Code) 7,</p> <p>— IMO Res. MSC.97(73)-(2000 HSC Code) 7,</p> <p>— IMO Res. MSC.98(73)-(FSS Code) 9,</p> <p>— IMO MSC.1/Circ.1242.</p>	<p>Control and indicating equipment. Electrical installations in ships:</p> <p>— EN 54-2 (1997) including AC(1999) and A1 (2006). Power supply equipment:</p> <p>— EN 54-4 (1997) including AC(1999), A1 (2002) and A2(2006). Heat detectors — Point detectors:</p> <p>— EN 54-5 (2000) including A1(2002). Smoke detectors — Point detectors using scattered light, transmitted light or ionization:</p> <p>— EN 54-7 (2000) including A1(2002) and A2 (2006). Flame detectors — Point detectors:</p> <p>— EN 54-10</p>

			<p>(2002) including A1(2005). Manual call points: — EN 54-11 (2001) including A1(2005). Short circuit isolators: — EN 54-17 (2007) including AC(2007). Input/output devices: — EN 54-18 (2005) including AC(2007). Cables: — EN 60332-1-2 (2004). — IEC 60092-376 (2003). And, as applicable, electrical and electronic installations in ships: — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60533 (1999).</p>
47	Non-portable and transportable fire extinguishers	<ul style="list-style-type: none"> — Reg. II-2/4, — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	<ul style="list-style-type: none"> — EN 1866-1 (2007). — EN 1866-3 (2013). <p>Or,</p> <ul style="list-style-type: none"> — ISO 11601 (2008).

48	Fire alarm devices — Sounders	<ul style="list-style-type: none"> — Reg. II-2/7, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7, — IMO Res. MSC.98(73)-(FSS Code) 9, — IMO MSC.1/Circ.1242. 	Sounders — EN 54-3 (2001) including A1(2002) and A2 (2006), — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60533 (1999).
49	Fixed oxygen analysis and gas detection equipment	<ul style="list-style-type: none"> — Reg. II-2/4, — Reg. VI/3, — IMO Res. MSC.98(73)-(FSS Code) 15. <p>For combined O₂/HC systems additionally:</p> <ul style="list-style-type: none"> — IMO MSC.1/Circ.1370. 	<ul style="list-style-type: none"> — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60533 (1999), and as applicable to: (a) Category 4: (safe area) — EN 50104 (2010). (b) Category 3: (explosive gas atmospheres) — EN 50104 (2010), — EN 60079-0 (2012) including A11:2013, — EN 60079-29-1 (2007). <p>For combined O₂/HC systems additionally:</p> <ul style="list-style-type: none"> — IMO MSC.1/Circ.1370.

50	Dual purpose type nozzles (spray/jet type)	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	<p>Hand-held branchpipes for fire service use — Combination branchpipes PN 16:</p> <ul style="list-style-type: none"> — EN 15182-1 (2007) including A1(2009), — EN 15182-2 (2007) including A1(2009). <p>Hand-held branchpipes for fire service use — Smooth bore jet and/or one fixed spray jet angle branchpipes PN 16:</p> <ul style="list-style-type: none"> — EN 15182-1 (2007) including A1(2009).
51	Fire hoses (reel type)	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.36(63)-(1994 HSC Code) 7, — IMO Res. MSC.97(73)-(2000 HSC Code) 7. 	<ul style="list-style-type: none"> — EN 671-1 (2012)
52	Medium Expansion Foam Fire Extinguishing Systems components — Fixed Deck Foam for Tankers	<ul style="list-style-type: none"> — Reg. II-2/10.8.1, — IMO Res. MSC.98(73)-(FSS Code) 14, — IMO MSC.1/Circ.1239, — IMO MSC.1/Circ.1276. 	<ul style="list-style-type: none"> — IMO MSC/Circ.798.
53	Fixed Low Expansion Foam Fire Extinguishing Systems components for Machinery Spaces and Tanker Deck Protection.	<ul style="list-style-type: none"> — Reg. II-2/10, — IMO Res. MSC.98(73)-(FSS Code) 6, 14, — IMO MSC.1/Circ.1239, — IMO MSC.1/Circ.1276, 	<ul style="list-style-type: none"> — IMO MSC.1/Circ.13 12. — IMO MSC.1/Circ.13 12/

			Corr.1.
54	Expansion Foam for Fixed Fire Extinguishing Systems for Chemical Tankers	— IMO Res. MSC.4(48)-(IBC Code) 11, — IMO MSC/Circ.553.	— IMO MSC.1/Circ.13 12. — IMO MSC.1/Circ.13 12/ Corr.1.
55	Nozzles for fixed pressure water- spraying fire-extinguishing systems for cabin balconies	— Reg. II-2/10, — IMO Res. MSC.98(73)-(FSS Code) 7, — IMO MSC.1/Circ.1313.	— IMO MSC.1/Circ.12 68.
56	(a) Inside air high expansion foam systems for the protection of machinery spaces, cargo pump rooms, vehicle and ro-ro spaces, special category spaces and cargo spaces. (b) Outside air high expansion foam systems for the protection of machinery spaces, cargo pump rooms, vehicle and ro-ro spaces, special category spaces and cargo spaces. <i>Note:</i> Inside/Outside air high expansion foam systems for the protection of machinery spaces, cargo pump rooms, vehicle and ro-ro spaces, special category spaces and cargo spaces shall be tested with the approved concentrate to the satisfaction of the Administration	— Reg. II-2/10, — IMO Res. MSC.98(73)-(FSS Code) 6.	— IMO MSC.1/Circ.13 84.
57	Dry chemical powder extinguishing systems	— Reg. II-2/1, — IMO Res. MSC.5(48)-(IGC Code) 11.	— IMO MSC.1/Circ.13 15.

58	Sample extraction smoke detection systems components	<ul style="list-style-type: none"> — Reg. II-2/7, — Reg. II-2/19, — Reg. II-2/20, — IMO Res. MSC.98(73)-(FSS Code) 10. 	<ul style="list-style-type: none"> — IMO Res. MSC.98(73)-(FSS Code) 10, and for: Control and indicating equipment. Electrical installations in ships: <ul style="list-style-type: none"> — EN 54-2 (1997) including AC(1999) and A1 (2006). Power supply equipment: <ul style="list-style-type: none"> — EN 54-4 (1997) including AC(1999), A1 (2002) and A2(2006). Aspiring smoke detectors: <ul style="list-style-type: none"> — EN 54-20 (2006) including AC(2008). And, as applicable, electrical and electronic installations in ships: <ul style="list-style-type: none"> — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), <ul style="list-style-type: none"> — IEC 60533 (1999). And, as applicable for explosive atmospheres: <ul style="list-style-type: none"> — EN 60079-0 (2012) in
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			<u>cluding A11:2013.</u>
59	C class Divisions	— Reg. II-2/3, — Reg. II-2/9.	— IMO Res. MSC.307(88)-(2010 FTP Code).
60	Fixed hydrocarbon gas detection system	— Reg. II-2/4, — IMO Res. MSC.98(73)-(FSS Code) 16, — IMO MSC.1/Circ.1370.	— IMO MSC.1/Circ.1370, — EN 60079-0 (2012) in cluding A11:2013. — EN 60079-29-1 (2007), — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60533 (1999).
61	Evacuation guidance systems used as an alternative to low-location lighting systems	— Reg. II-2/13, — IMO MSC.1/Circ.1168.	— IMO MSC.1/Circ.1168.
62	Helicopter facility foam fire-fighting appliances	— Reg. II-2/18. — IMO MSC.1/Circ.1431.	— EN 13565-1 (2003) in cluding A1 (2007).
63	Galley Exhaust Duct Fixed Fire Extinguishing Systems components	— Reg. II-2/9.	— ISO 15371(2009)
		MARPOL Equipment	
S.No.	Product	Technical Requirements	Testing standards

1	Oil-filtering equipment (for an oil content of the effluent not exceeding 15 p.p.m.)	Annex I, Reg. 14, — IMO MEPC.1/Circ.643.	— IMO Res. MEPC.107 (49), — IMO MEPC.1/Circ.643.
2	Oil/water interface detectors	— Annex I, Reg. 32.	— IMO Res. MEPC.5(XIII).
3	Oil-content meters	Annex I, Reg. 14, — IMO MEPC.1/Circ.643.	— IMO Res. MEPC.107 (49), — IMO MEPC.1/Circ.643.
4	Oil discharge monitoring and control system for oil tankers	— Annex I, Reg. 31.	— IMO Res. MEPC.108 (49).
5	Sewage systems	— Annex IV, Reg. 9.	Until 31 December 2015: — IMO Res. MEPC.159 (55). As from 1 January 2016: — IMO Res. MEPC.227 (64).
6	Shipboard incinerators	— Annex VI, Reg.16, — IMO MEPC.1/Circ.793	— IMO Res. MEPC.76(40).
7	NOx analyser for use on board as per NOx Technical Code 2008	— IMO Res. MEPC.176(58) — (Revised MARPOL Annex VI, Reg. 13); — IMO Res. MEPC.177(58) — (NOx Technical code 2008), — IMO Res. MEPC.198(62), — IMO MEPC.1/Circ.638.	— IMO Res. MEPC.177(58) — (NOx Technical Code 2008).
8	On board exhaust gas cleaning systems	— IMO Res. MEPC.176(58) — (Revised MARPOL Annex VI, Reg. 4).	— IMO Res. MEPC.184 (59).

Navigation and Radio Equipment			
S.No.	Product	Technical Requirements	Testing standards
1	Magnetic compass Class A for ships	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.382(X), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13. 	<ul style="list-style-type: none"> — ISO 1069 (1973), — ISO 25862 (2009), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — ISO 1069 (1973), — ISO 25862 (2009), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008).
2	Transmitting heading device THD (magnetic method)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.116(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series; — ISO 22090-2 (2014), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1

			(2008), — IEC 61162 series. — ISO 22090-2 (2014), — IEC 62288 Ed. 2.0 (2014-07).
3	Gyro compass	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.424(XI), — IMO Res. A.694(17), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN ISO 8728 (1998), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 8728 (1997), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 series. — IEC 62288 Ed. 2.0 (2014-07).

4	Echo — sounding equipment	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.224(VII), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.74(69) Annex 4, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN ISO 9875 (2001) in cluding ISO Technical Corrigendum 1: 2006, — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 9875 (2000) in cluding ISO Technical Corrigendum 1: 2006, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
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5	Speed and distance measuring equipment (SDME)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. A.824(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61023 (2007), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61023 (2007), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
6	Rate-of-turn indica tor	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.526(13), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — ISO 20672 (2007) in cluding Corrigendum 1 (2008), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-

			<p>rigendum 1 (2008), — IEC 61162 series, — ISO 20672 (2007) including Corrigendum 1 (2008), — IEC 62288 Ed. 2.0 (2014-07).</p>
7	GPS equipment	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code), — IMO Res. MSC.97(73)-(2000 HSC Code), — IMO Res. MSC.112(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61108-1 (2003), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). <p>Or,</p> <ul style="list-style-type: none"> — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61108-1 Ed.2.0 (2003), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).

8	GLONASS equipment	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.113(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61108-2 (1998), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61108-2 Ed.1.0 (1998), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
9	Heading control system (HCS)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.342(IX), — IMO Res. A.694(17), — IMO Res. MSC.64(67) Annex 3, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — ISO 11674 (2006), — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — EN 62288 (2008). Or, — ISO 11674 (2006), — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008),

			<ul style="list-style-type: none"> — IEC 61162 series, — IEC 62288 Ed.1.0 (2008).
10	Search and rescue locating devices (SRLD): 9 GHz SAR transponder (SART)	<ul style="list-style-type: none"> — Reg. III/6, — Reg. III/26, — Reg. IV/7, — IMO Res. A.530(13), — IMO Res. A.802(19), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 8, 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, 14, — ITU-R M.628-3(11/93). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61097-1 (2007). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61097-1 (2007).
11	Rudder angle indicator	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — ISO 20673 (2007), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC

			60945 Corrigendum 1 (2008), — IEC 61162 series, — ISO 20673 (2007), — IEC 62288 Ed. 2.0 (2014-07).
12	Propeller revolution indicator	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — ISO 22554 (2007), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 series, — ISO 22554 (2007), — IEC 62288 Ed. 2.0 (2014-07).

13	Pitch indicator	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — ISO 22555 (2007), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 series, — ISO 22555 (2007), — IEC 62288 Ed. 2.0 (2014-07).
14	Compass for life boats and rescue boats	<ul style="list-style-type: none"> — Reg. III/34, — IMO Res. MSC.48(66)-(LSA Code) IV, V, — IMO Res. MSC.36(63)-(1994 HSC Code) 8, 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, 13. 	<ul style="list-style-type: none"> — ISO 1069 (1973), — ISO 25862 (2009), — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008).

15	Voyage data recorder (VDR)	<ul style="list-style-type: none"> — Reg. V/20, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.333(90). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 Series, — EN 61996-1 (2013), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 Series, — IEC 61996-1 Ed.2.0 (2013-05), — IEC 62288 Ed. 2.0 (2014-07).
16	Electronic chart display and information system (ECDIS) with backup, and raster chart display system (RCDS)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13 — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.232(82), — IMO SN.1/Circ.266. <p>[ECDIS back-up and RCDS are only applicable when this functionality is included in the ECDIS. The module B certificate shall indicate whether these options were tested].</p>	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 Series, — EN 61174 (2008), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008),

			<ul style="list-style-type: none"> — IEC 61162 Series, — IEC 61174 (2008), — IEC 62288 Ed. 2.0 (2014-07).
17	Gyro compass for high-speed craft	<ul style="list-style-type: none"> — IMO Res. A.694(17), — IMO Res. A.821(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — ISO 16328 (2014), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 16328 (2014), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07).

18	Universal automatic identification system equipment (AIS)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.74(69), — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — ITU-R M. 1371-5(2014). <p>Note: ITU-R M. 1371-5(2014) shall only be applicable in accordance with requirements of IMO Res.MSC.74(69).</p>	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — EN 61993-2 (2013), — IEC 62288 Ed. 2.0 (2014-07). <p>Or,</p> <ul style="list-style-type: none"> — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 Series, — IEC 61993-2 (2012), — IEC 62288 Ed. 2.0 (2014-07).
19	Track control sys tem (working at ship's speed from mini mum manoeuvring speed up to 30 knots)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.74(69), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — IEC 62065 Ed.2.0 (2014-02), — IEC 62288 Ed. 2.0 (2014-07). <p>Or,</p> <ul style="list-style-type: none"> — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008),

			<ul style="list-style-type: none"> — IEC 61162 Series, — IEC 62065 Ed.2.0 (2014-02), — IEC 62288 Ed. 2.0 (2014-07).
20	Radar equipment CAT 1	<ul style="list-style-type: none"> — Reg. V/19. — IMO Res. A.278(VIII), — IMO Res. A.694(17), — IMO Res. A.823(19), — IMO Res. MSC.191(79), — IMO Res. MSC.192(79), — ITU-R M. 1177-4(04/11). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — EN 62388 (2013). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62388 Ed.2.0 (2013-06).

21	Radar equipment CAT 2	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.278(VIII), — IMO Res. A.694(17), — IMO Res. MSC.191(79), — IMO Res. MSC.192(79), — ITU-R M. 1177-4(04/11). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — EN 62388 (2013). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62388 Ed.2.0 (2013-06).
23	Radar equipment CAT 3	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.278(VIII), — IMO Res. A.694(17), — IMO Res. MSC.191(79), — IMO Res. MSC.192(79), — ITU-R M. 1177-4(04/11). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — EN 62388 (2013). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008),

			<ul style="list-style-type: none"> — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62388 Ed.2.0 (2013-06).
24	<p>Radar equipment for high speed craft applications (CAT 1H and CAT 2H)</p>	<ul style="list-style-type: none"> — IMO Res. A.278(VIII), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.192(79), — ITU-R M. 1177-4(04/11). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — EN 62388 (2013). Or, "— IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62388 Ed.2.0

33	<p>Radar equipment approved with a chart option, namely:</p> <p>(a) CAT 1C (b) CAT 2C, (c) CAT 1HC for HSC (d) CAT 2HC for HSC</p>	<ul style="list-style-type: none"> — IMO Res. A.278(VIII), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.192(79), — ITU-R M. 1177-4(04/11). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — EN 62388 (2013). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62388 Ed.2.0 (2013-06).
34	Radar reflector — passive type	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.164(78). 	<ul style="list-style-type: none"> — ISO 8729-1 (2010), — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), Or, — ISO 8729-1 (2010), — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008).

35	Heading control system for high speed craft	<ul style="list-style-type: none"> — IMO Res. A.694(17), — IMO Res. A.822(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — ISO 16329 (2003), — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 16329 (2003), — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
36	Transmitting heading device THD (GNSS method)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.116(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — ISO 22090-3 (2014), — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 22090-3 (2014), — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1

			(2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
38	Searchlight for high speed craft	— IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13.	— ISO 17884 (2004), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — ISO 17884 (2004), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008).
39	Night vision equipment for high speed craft	— IMO Res.A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.94(72), — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79).	— ISO 16273 (2003), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 16273 (2003), — IEC 60945

			(2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — IEC 62288 Ed. 2.0 (2014-07).
40	Differential beacon receiver for DGPS and DGLONASS Equipment	— Reg. V/19, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.114(73).	— EN 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — IEC 61108-4 (2004), — EN 61162 series. Or, — IEC 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — IEC 61108-4 (2004), — IEC 61162 series.
41	Transmitting heading device THD (Gyroscopic method)	— Reg. V/19, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.116(73), — IMO Res. MSC.191(79).	— ISO 22090-1 (2014), — EN 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — ISO 22090-1 (2014),

			<ul style="list-style-type: none"> — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
42	Simplified voyage data recorder (S- VDR)	<ul style="list-style-type: none"> — Reg. V/20, — IMO Res. A.694(17), — IMO Res. MSC.163(78), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — EN 61996-2 (2008), — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 series, — IEC 61996-2 (2007), — IEC 62288 Ed. 2.0 (2014-07).
43	Pilot ladder	<ul style="list-style-type: none"> — Reg. V/23, — IMO Res.A.1045(27), — IMO MSC/Circ.1428. 	<ul style="list-style-type: none"> — IMO Res.A.1045(27), — ISO 799 (2004).

44	DGPS Equipment	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.112(73), — IMO Res. MSC.114(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61108-1 (2003), — EN 61108-4 (2004), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61108-1 (2003), — IEC 61108-4 (2004), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
45	DGLONASS Equip-ment	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.113(73), — IMO Res. MSC.114(73), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61108-2 (1998), — EN 61108-4 (2004), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945

			(2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61108-2 (1998), — IEC 61108-4 (2004), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07).
46	Daylight signalling lamp	— Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code), — IMO Res. MSC.95(72), — IMO Res. MSC.97(73)-(2000 HSC Code).	— EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — ISO 25861 (2007). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — ISO 25861 (2007).
47	Radar target enhancer	— Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.164(78), — ITU-R M 1176-1 (02/13)	— ISO 8729-2 (2009), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), Or, — ISO 8729-2 (2009), — IEC 60945 (2002) including IEC 60945 Cor-

			rigendum 1 (2008).
48	Bearing Device	— Reg. V/19.	— ISO 25862 (2009), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), Or, — ISO 25862 (2009), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008).
49	Search and rescue locating devices (SRLD): AIS SART equipment	— Reg. III/6, — Reg. III/26, — Reg. IV/7, — IMO Res. MSC.246(83), — IMO Res. MSC.256(84), — ITU-R M. 1371-5(2014).	— EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61097-14 (2010). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61097-14 (2010).

50	Galileo Receiver	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. A.813(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.233(82). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61108-3 (2010), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). Or, — IEC 60945 (2002) including IEC 60945 Cor-rigendum 1 (2008), — IEC 61108-3 (2010), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07).
51	Bridge Navigational Watch Alarm Sys tem (BNWAS)	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.128(75), — IMO Res. MSC.191(79). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62616(2010) in cluding IEC 62616 Cor-rigendum 1 (2012). Or, — IEC 60945 (2002) in cluding IEC

			60945 Corrigendum 1 (2008), — IEC 61162 Series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 62616 (2010) including IEC 62616 Corrigendum 1 (2012).
52	Sound reception system	— Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code), — IMO Res. MSC.86(70), — IMO Res. MSC.97(73)-(2000 HSC Code), — IMO Res. MSC.191(79).	— EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). — ISO 14859 (2012). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07). — ISO 14859 (2012).

53	Integrated navigation system	<ul style="list-style-type: none"> — Reg. V/19, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 13, — IMO Res. MSC.97(73)-(2000 HSC Code) 13, — IMO Res. MSC.191(79), — IMO Res. MSC.252(83), — IMO Res. MSC.302(83) — (Bridge Alert Management, (BAM)). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — EN 61162 series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 61924-2 (2012). Or, — IEC 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — IEC 61162 series, — IEC 62288 Ed. 2.0 (2014-07). — IEC 61924-2 (2012).
54	VHF radio capable of transmitting and receiving DSC and radiotelephony	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.385(X), — IMO Res. A.524(13), — IMO Res. A.694(17), — IMO Res. A.803(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO MSC/Circ.862, — IMO MSC.1/Circ.1460, — IMO COMSAR Circ.32, — ITU-R M.489-2 (10/95), — ITU-R M.493-13 (10/09), — ITU-R M.541-9 (05/04), — ITU-R M.689-3 (03/12). 	<ul style="list-style-type: none"> — IMO MSC/Circ.862, — EN 60945 (2002) in cluding IEC 60945 Cor- rigendum 1 (2008), — EN 61162 series, — ETSI EN 300 338-1 V1.3.1 (2010- 02), — ETSI EN 300 338-2 V1.3.1 (2010- 02), — ETSI EN 301 843-2 V1.2.1 (2004-

			06), — ETSI EN 301 925 V1.4.1 (2013-05).
60	VHF DSC watch- keeping receiver	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. A.803(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO COMSAR Circ.32, — ITU-R M.489-2 (10/95), — ITU-R M.493-13 (10/09), — ITU-R M.541-9 (05/04). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — ETSI EN 300 338-1 V1.3.1 (2010-02), — ETSI EN 300 338-2 V1.3.1 (2010-02), — ETSI EN 301 033 V1.4.1 (2013-09), — ETSI EN 301 843-2 V1.2.1 (2004-06),

61	NAVTEX receiver	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO Res. MSC.148(77), — IMO COMSAR Circ.32, — ITU-R M.540-2 (06/90), — ITU-R M.625-4 (03/12) 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — ETSI EN 300 065-1 V1.2.1 (2009-01), — ETSI EN 301 843-4 V1.2.1 (2004-06), Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61097-6 (2012-01).
62	EGC receiver	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.570(14), — IMO Res. A.694(17), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO Res. MSC.306(87), — IMO COMSAR Circ.32. 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — ETSI ETS 300 460 Ed.1 (1996-05), — ETSI ETS 300 460/ A1 (1997-11), — ETSI EN 300 829 V1.1.1 (1998-03), — ETSI EN 301 843-1 V1.3.1 (2012-08), Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-

			<p>rigendum 1 (2008), — IEC 61097-4 (2012-05).</p>
63	<p>HF marine safety in formation (MSI) equipment (HF NBDP receiver)</p>	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. A.699(17), — IMO Res. A.700(17), — IMO Res. A.806(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO MSC.1/Circ.1460, — IMO COMSAR Circ.32, — ITU-R M.492-6 (10/95), — ITU-R M.540-2 (06/90), — ITU-R M.625-4 (03/12), — ITU-R M.688 (06/90). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 Series, — ETSI ETS 300 067 Ed.1 (1990-11), — ETSI ETS 300 067/ A1 Ed.1 (1993-10). <p>Or,</p> <ul style="list-style-type: none"> — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61162 Series, — ETSI ETS 300 067 Ed.1 (1990-11), — ETSI ETS 300 067/ A1 Ed.1 (1993-10).

64	406 MHz EPIRB (COSPAS-SARSAT)	<ul style="list-style-type: none"> — Reg. IV/7, — Reg. X/3, — IMO Res. A.662(16), — IMO Res. A.694(17), — IMO Res. A.696(17), — IMO Res. A.810(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO MSC/Circ.862, — IMO COMSAR Circ.32, — ITU-R M.633-4 (12/10), — ITU-R M.690-2 (03/12). 	<ul style="list-style-type: none"> — IMO MSC/Circ.862, — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — ETSI EN 300 066 V 1.3.1 (2001-01). Or, — IMO MSC/Circ.862, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61097-2 (2008), <i>Note:</i> IMO MSC/ Circ. 862 is applicable only to the op-tional remote activation de vice, not to the EPIRB itself.
65	MF DSC watch- keeping receiver	<ul style="list-style-type: none"> — Reg. IV/9, — Reg. IV/10, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. A.804(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO COMSAR Circ.32, — ITU-R M.493-13 (10/09), — ITU-R M.541-9 (05/04), — ITU-R M.1173-1 (03/12). 	<ul style="list-style-type: none"> — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — ETSI EN 300 338-1 V1.3.1 (2010-02), — ETSI EN 300 338-2 V1.3.1 (2010-02), — ETSI EN 301

			033 V1.4.1 (2013-09), — ETSI EN 301 843-5 V1.1.1 (2004-06).
66	Inmarsat-B SES <i>Note:</i> The service will be discontinued on and after 31 December 2016.	<ul style="list-style-type: none"> — Reg. IV/10, — Reg. X/3, — IMO Res. A.570(14), — IMO Res. A.694(17), — IMO Res. A.808(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO MSC/Circ.862, — IMO COMSAR Circ.32. 	<ul style="list-style-type: none"> — IMO MSC/Circ 862, — EN 60945 (2002) in including IEC 60945 Corrigendum 1 (2008). Or, — IMO MSC/Circ 862, — IEC 60945 (2002) in including IEC 60945 Corrigendum 1 (2008).
67	Inmarsat-C SES	<ul style="list-style-type: none"> — Reg. IV/10, — Reg. X/3, — IMO Res. A.570(14), — IMO Res. A.664 (16), (applied only if the Inmarsat C SES comprises EGC functions), — IMO Res. A.694(17), — IMO Res. A.807(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO Res. MSC.306(87), — IMO MSC/Circ.862, — IMO COMSAR Circ.32. 	<ul style="list-style-type: none"> — IMO MSC/Circ.862, — EN 60945 (2002) in including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — ETSI ETS 300 460 Ed.1 (1996-05), — ETSI ETS 300 460/ A1 (1997-11), — ETSI EN 300 829

			<p>V1.1.1 (1998-03), — ETSI EN 301 843-1 V1.3.1 (2012-08), Or, — IEC 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — IEC 61097-4 (2012), — IEC 61162 series.</p>
69	<p>MF/HF radio cap able of transmitting and receiving DSC, NBDP and radiotelephony <i>Note:</i> In line with IMO and ITU decisions, the requirements for Two Tone Alarm generator and transmission on A3H are no longer applicable in testing standards.</p>	<p>— Reg. IV/10, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. A.806(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)- (2000 HSC Code) 14, — IMO MSC/Circ.862, — IMO MSC.1/Circ.1460, — IMO COMSAR Circ.32, — ITU-R M.476-5 (10/95), — ITU-R M.492-6 (10/95), — ITU-R M.493-13 (10/09), — ITU-R M.541-9 (05/04), — ITU-R M.625-4 (03/12), — ITU-R M.1173-1 (03/12).</p>	<p>— IMO MSC/Circ.862, — EN 60945 (2002) in cluding IEC 60945 Cor-rigendum 1 (2008), — EN 61162 series, — ETSI ETS 300 067 Ed.1 (1990-11), — ETSI ETS 300 067/ A1 Ed.1 (1993-10), — ETSI EN 300 338-1 V1.3.1 (2010-02), — ETSI EN 300 338-2 V1.3.1 (2010-02), — ETSI EN 300 373-1 V1.4.1 (2013-09), — ETSI EN 301 843-5 V1.1.1 (2004-</p>

			06).
70	MF/HF DSC scanning watch keeping receiver	<ul style="list-style-type: none"> — Reg. IV/10, — Reg. X/3, — IMO Res. A.694(17), — IMO Res. A.806(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO COMSAR Circ.32, — ITU-R M.493-13 (10/09), — ITU-R M. 541-9 (05/04). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — EN 61162 series, — ETSI EN 300 338-1 V1.3.1 (2010-02), — ETSI EN 300 338-2 V1.3.1 (2010-02), — ETSI EN 301 033 V1.4.1 (2013-09), — ETSI EN 301 843-5 V1.1.1 (2004-06). Or, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61097-3

			(1994), — IEC 61097-8 (1998), — IEC 61162 series.
71	Portable survival craft two-way VHF radiotelephone apparatus	<ul style="list-style-type: none"> — Reg. III/6, — IMO Res. A.694(17), — IMO Res. A.809(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 8, 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, 14, — IMO Res. MSC.149(77), — ITU-R M.489-2 (10/95). 	<ul style="list-style-type: none"> — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — ETSI EN 300 225 V1.4.1 (2004-12), — ETSI EN 301 843-2 V1.2.1 (2004-06). <p>Or,</p> <ul style="list-style-type: none"> — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61097-12 (1996).

72	Fixed survival craft two-way VHF radio telephone apparatus	<ul style="list-style-type: none"> — Reg. III/6, — IMO Res. A.694(17), — IMO Res. A.809(19), — IMO Res. MSC.36(63)-(1994 HSC Code) 8, 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 8, 14, — ITU-R M.489-2 (10/95). 	<ul style="list-style-type: none"> — EN 60945 (2002) in including IEC 60945 Corrigendum 1 (2008), — ETSI EN 301 466 V1.1.1 (2000-10), Or, — IEC 60945 (2002) in including IEC 60945 Corrigendum 1 (2008), — IEC 61097-12 (1996).
73	Inmarsat-F77	<ul style="list-style-type: none"> — Reg. IV/10, — IMO Res. A.570 (14), — IMO Res. A.808 (19), — IMO Res. A.694 (17), — IMO Res. MSC.36(63)-(1994 HSC Code) 14, — IMO Res. MSC.97(73)-(2000 HSC Code) 14, — IMO MSC/Circ.862, — IMO COMSAR Circ.32. 	<ul style="list-style-type: none"> — IMO MSC/Circ.862, — EN 60945 (2002) in including IEC 60945 Corrigendum 1 (2008), — IEC 61097-13 (2003). Or, — IMO MSC/Circ.862, — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008), — IEC 61097-13 (2003).

COLREG and Other Equipment

S.No.	Product	Technical Requirements	Testing standards
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1	Navigation lights	<ul style="list-style-type: none"> — COLREG Annex I/14, — IMO Res. A.694(17), — IMO Res. MSC.253(83) 	<ul style="list-style-type: none"> — EN 14744 (2005) including AC (2006), — EN 60945 (2002) including IEC 60945 Corrigendum 1 (2008). Or, — EN 14744 (2005) including AC (2006), — IEC 60945 (2002) including IEC 60945 Corrigendum 1 (2008).
2	Water level detectors	<ul style="list-style-type: none"> — Reg. II-1/25, — Reg. XII/12, — IMO Res. MSC.188(79), — IMO MSC.1/Circ 1464 Rev.1 	<ul style="list-style-type: none"> — IEC 60092-504 (2001) including IEC 60092-504 Corrigendum 1 (2011), — IEC 60529 Ed.2.2 -2001 — IMO Res. MSC.188(79), — IMO MSC.1/Circ. 1291.

Note: This list is indicative and will be modified time-to-time.

Appendix –C
Checklist for Shipbuilding/Repair Yard Approval

Name of the Shipbuilding/ Repair Yard

Date

1. Details of Management Systems (if any):

Obtained Approval	Certification By	Expiry Date	Details (Scope, etc.)
ISO 9001			
ISO 14001			
ISO 18001			
Others			

2. Construction Facilities: (surveyor to study and review the control exercised by yard and describe briefly) (Documents such as brochures of yard can be attached

2.1 Building Berth (B) or Dock (D)

B/D	Name	Length (m)	Width (m)	Depth (m)	Building Capacity (GT)	Crane (Ton x No.)

2.2 Outfitting Quays

Name	Length (m)	Width(m)	Depth (m)	Berthing Capacity (GT)	Crane (ton x No.)

2.3 Main Fabrication and Erection Facilities:

<p>1. Marking and Cutting of Steel Plates (including internal stiffeners)</p> <p>- Marking Method (Manual, Photo x , EPM x , NC x , Others)</p> <p>- NC Cutting Machine (Gas x , Plasma x , Laser x)</p> <p>Control Procedure of NC (On line, Other)</p> <p>- Cutting Equipment (Edge Planer x , Roll Shear x)</p>
<p>2. Marking and Cutting of Section Bar</p> <p>- Marking Method (Manual, NC) – Marking of reference curved lines (Manual, NC)</p> <p>- Cutting Method (Manual, NC) - In case of NC, (Gas x , Plasma x)</p>
<p>3. One- side automatic welding machine (Yes, No)</p> <p>- Type of welding machine (Flux Backing x , Flux and Copper Backing x ,Other)</p> <p>- Existence of special surface for plate welding (Yes, No)</p>
<p>4. Fillet Welding Machine (Gravity, Automatic)</p> <p>Percentage of Automation except gravity (about %)</p> <p>- Line welder (No, Yes: Submerged Arc x heads, CO2 x heads)</p> <p>- Small automatic fillet welding machines (No, Yes: Make: x)</p> <p>- Welding Robots (No, Yes; Portal x Rectangular x Articulated x)</p>
<p>5. Painting Equipment</p> <p>- Plate shot blasting / priming machine (No, Yes: Max. width Length)</p> <p>- Section bars shot blasting / priming machine (No, Yes: Max. length)</p> <p>- Special Coating plant (No, Yes; Length x Width x Sections)</p>
<p>6. Vertical Automatic Welding Machines (No, Yes ; Electro Gas, Simplified Electro Gas, Electro Slag)</p>
<p>7. Other main fabrication facilities:</p>

3. Shipyard's Control of Qualified Welders: (Surveyor to study and review the control exercised by yard and describe briefly)

3.1 Normal Strength Steels

		Certification	Traceability	Supervision	Maintenance of Qualification
Shipyard Employees	(confirm system in place)	Yes/No	Yes/No	Yes/No	Yes/No
Sub-contractors, Employees	(confirm system in place)	Yes/No	Yes/No	Yes/No	Yes/No

3.2 Higher Strength / Grade / Special grade steels

		Certification	Traceability	Supervision	Maintenance of Qualification
Shipyard Employees	(confirm system in place)	Yes/No	Yes/No	Yes/No	Yes/No
Sub-contractors, Employees	(confirm system in place)	Yes/No	Yes/No	Yes/No	Yes/No

4. Features of Construction Procedures (surveyor to study and review the control exercised by yard and describe briefly)

<p>1. Sub-contract of Hull Blocks (Weight)</p> <p>-Sub members (No, Yes: Ratio of sub contracted works %, No. of Subcontractors)</p> <p>-Blocks (No, Yes; Ratio of sub contracted works %, No. of Subcontractors)</p>
<p>2. Method of plate block assembly</p> <ul style="list-style-type: none"> - Method of fitting and welding longitudinals and transverse webs on jointed panels - Method of welding longitudinals on jointed panels prior to fitting and welding transverse webs - Method of fitting frame assembly of longitudinals and transverse webs on jointed panels - Method of jointing panels with pre assembledlongitudinals by welding prior to fitting and welding of transverse webs
<p>3. Pre Erection Outfitting carried out (Yes, No)</p> <p>Grand Block / Mega Block Method adopted (Yes, No)</p> <p>Method of Erection at Building Berth / Dock</p> <ul style="list-style-type: none"> - Max. weight of loading block: tonnes - Construction method in building dock/ berth / land <p>(1 ship at a time, semi tandem = 1,5 ship at a time, dual entrance, etc)</p>

- Block loading process (single starting block, multiple starting blocks, inserting blocks, No , Yes)
4. Final Dock (No, Yes: In house, other premises of yard, other yard's facility)
5. Other Features of construction

5. Quality Assurance System (refer to QMS manual of shipyard (surveyor to study and review the various QA system exercised by yard and describe briefly)

Item and description	Result	Remarks
1. Existence of the organization chart including the departments of design, purchasing, manufacturing and quality assurance. - Are the functions, responsibility and competence of the organization clear?		
2. Quality assurance organization - Existence of quality assurance organization/ dept. - Number of employees in this organization / dept. - Existence of procedures and plans related to tests and inspections		
3. Pre- inspection system of shipyard - Is pre-inspection carried out prior to class inspection - Are pre-inspectors assigned ? - Number of pre-inspectors (related to hull only) - Are inspection results marked on the object and / or recorded in the check list ??		
4. Records of inspections and tests - Are records made and kept properly - Does a responsible person verify the records? - Are corrective actions checked and verified regularly		
5. Condition at the time of surveys in the presence of class surveyors - Are schedules of surveys often changed? - Are pre-inspections, shipyard inspections and repairs completed beforehand? - Are sufficient preparations for surveys such as lighting, scaffolding, cleaning etc sufficient?		
Note: 3 and 4 above may include acceptance inspections of subcontracted items also.		

6. Measures for Safety and Health

Item and Description	Result	Remarks
1. Are the conditions of scaffolding, nets, safety belts, lighting and ventilation good?		
2. Is sufficient attention paid to safety precautions during radiographic inspections and during operations of cherry		

pickers ?		
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7. Control Systems of Non-Destructive Examination (NDE)

Item and Description	Result	Remarks
1. Number of NDE Supervisors (including persons responsible for judging results)		
2. dependence of subcontracted NDE work - number of shipyard employees - number of sub-contractors	Persons Persons	
3. NDE Sub-contractor company's name and technical qualifications:	Name: Approved By: Name: Approved By:	
4. Grade and Number of NDE employees with recognized qualifications in the shipyard: - specialized in radiography - specialized in ultrasonic techniques - specialized in surface crack detection methods	Gr. No. Gr. No. Gr. No.	
5. If NDE are sub contracted, the grade and number of qualified personnel; - specialized in radiography - specialized in ultrasonic techniques - specialized in surface crack detection methods	Gr. No. Gr. No. Gr. No.	
6. NDE equipments (in house) - Number of radiographic equipment - Number of ultrasonic equipment		
Note: Even in the case of totally outsourced NDE, number of yard employees qualified to verify NDE results be reported.		

8. Quality Control on Production Line: (surveyor to study and review the control exercised by yard and describe briefly under this heading- guide line given below to be used for reference)

Items and Description	Results	Remarks
8.1 Preventive Measures for misuse of materials		
1. job Title of supervisor and person in charge of collating ordered steel, received steel and checking of mill certificates	Supervisor In charge	
2. Are means for checking available material, in the case of		

higher grade steels, specified?		
3. Are regulations prescribed for checking the material grade for higher tensile steel and steel for lower temperature applications? Are there regulations for inscribing the type and grade of steels on the surface of such plates and sections/		
4. Are there procedures for re-issuing remaining cut pieces of ordinary quality steel?		
5. Are there procedures for re-issuing remaining cut pieces of higher tensile / grade steel?		
6. In the case of 4 and 5 above, can the material be correlated to original mill test certificates?		
7. Section of controlling the list of remaining cut-off steel	Name:	
Notes: -In the case of mild/ HT steels methods for identifying grades to be available. -In the case of 3 and 4 above , are the materials approved by other classes controlled similarly?		
8.2 Shot Blasting and Priming		
1. Existence of surface preparation standards		
2. Existence of coating thickness control standards - Existence of thickness measurement records (Methods for traceability of shot blasting and priming are required)		
8.3 Marking and Cutting (assembly work)		
1. Existence of standards for accuracy and periodical inspections of tape measures, tapes, stencils, templates etc..		
2. Existence of standards for accuracy of cut dimensions and edge preparation		
3. Existence of standards for finish of cutting face		
4. What is the frequency and extent of maintenance and inspection carried out for ensuring accuracy of NC cutter and or flame planer		
5. In the case of NC, are the disks, tapes etc. maintained in good condition		
6. What measures are adopted for training operators and for maintaining accuracy ?		
Note: In the case of 2 and 3 above, check items are to include confirmation of edge preparations free from piercing hole. NC for section bars is also to be in accordance for maintaining accuracy.		
8.4 Bending and Stress Relieving		
1. Existence of standards for maximum heating temperatures during water cooling and at the time of bending and distortion removal of steel by quick heating and cooling		
2. Existence of regulations for plate thickness and bending		

radii for flanging		
3. What are the methods for training operators for maintaining quality during bending operations?		
8.5 Control of Welding Procedure		
1. Are all welding procedures approved?		
8.6 Treatment of serious non-conformities		
1. Are repair plans approved in the case of serious non-conformities?		
2. Are NDE plans approved ?		
3. Were tests extended when considered necessary on review of previous test results?		
8.7 Hydrostatic and Tightness tests		
1. Is the test plan approved?		
2. Are vacuum tests applied ?		
3. Are local air injection tests applied during sub- assembly stages?		
4. Are test plans submitted to and approved with regards to sr. no. 2 and 3 above?		

9. Safety and Environment

Requirements	Results	Remarks
Availability of safety arrangements for working at height and associated Safe Working Procedures (SWP)		
Availability of safety arrangements for working in confined spaces and associated SWP		
Availability of PPEs		
Procedures to ensure safe scaffolding, nets, safety belts etc.		
Means of access for carrying out surveys		
Procedures for safe installation of machinery & electrical equipment and subsequent surveys		
Procedure for prevention of asbestos		
Reception facilities for handling various types of pollutants and their disposal (applicable only for repair yards)		

Concluding Remarks and Recommendations:

Appendix – D

Format of Certificate of Approval for Shipbuilding/Repair Yard

CERTIFICATE NO:

SHIPYARD APPROVAL CERTIFICATE

*This certificate is issued under the provisions of the **DGS Order No. XXXXXXX***

Under the authority of The Government of India

By (Recognized Organization acting on behalf of the Government of India)

This is to certify that the shipyard has been assessed in accordance with the requirements in the referred notification/order and considered satisfactory for construction / repair* of Indian Ships.

Shipyard Name :
REGISTERED OFFICE & WORKS :
Capability & Competency : (Ship Type & Size)
CONDITIONS OF APPROVAL :
VALIDITY : The Certificate is valid until DD/MM/YYYY

Issued at.....
(Place of issue of certificate)

(dd/mm/yyyy).....
(Date of issue) (Signature of Surveyor issuing the certificate)

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE ANNUAL AUDIT HAS BEEN COMPLETED*

Annual Audit Due On : **Month & YYYY**
Month & YYYY
Month & YYYY
Month & YYYY

The validity of this certificate is continued on satisfactory completion of annual audit in accordance with above schedule.

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Appendix – E

Format of Certificate of Works Approval

Certificate No.:

WORKS APPROVAL CERTIFICATE

This certificate is issued under the provisions of the **DGS Order No. XXXXXXX**

Under the authority of The Government of India

By (Recognized Organization acting on behalf of the Government of India)

This is to certify that the works has been assessed in accordance with the requirements in the referred notification/ order and considered satisfactory for manufacturing products as detailed below.

MANUFACTURER :
REGISTERED OFFICE :
WORKS ADDRESS :
WORKS TYPE :
PRODUCT TYPE :
APPLICABLE RULE(S)/STANDARD(S)/CODE :
CONDITIONS OF APPROVAL :

This Certificate Is Valid until:<**DD/MONTH/YYYY**>

Issued at.....
(Place of issue of certificate)

(dd/mm/yyyy).....
(Date of issue) (Signature of Surveyor issuing the certificate)

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE ANNUAL AUDIT HAS BEEN COMPLETED*

Annual Audit Due On : **Month & YYYY**
Month & YYYY
Month & YYYY
Month & YYYY

The validity of this certificate is continued on satisfactory completion of annual audit in accordance with above schedule.

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Appendix – F

Format of Certificate of Type Approval

CERTIFICATE NO:

TYPE APPROVAL CERTIFICATE

This certificate is issued under the provisions of the **DGS Order No. XXXXXXX**

Under the authority of The Government of India

By (person or Recognized Organization acting on behalf of the Government of India)

This is to certify that the product is in accordance with the applicable rules/standards/codes as described below. The product is considered to be suitable for use on Indian Ships.

MANUFACTURER :
REGISTERED OFFICE & WORKS :
PRODUCT NAME :
MODEL NO./TRADE NAME :
PRODUCT DESCRIPTION :
APPLICABLE RULE(S)/STANDARD(S)/CODE/IMO :
REQUIREMENTS :
CONDITIONS OF APPROVAL :

This Certificate Is Valid until:<DD/MONTH/YYYY>

Issued at.....
(Place of issue of certificate)

(dd/mm/yyyy).....
(Date of issue) (Signature of Surveyor issuing the certificate)

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE ANNUAL AUDIT HAS BEEN COMPLETED*

Annual Audit Due On : **Month & YYYY**
Month & YYYY
Month & YYYY
Month & YYYY

The validity of this certificate is continued on satisfactory completion of annual audit in accordance with above schedule.

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Signature _____

Surveyor's Name _____

Seal or stamp of the Surveyor

Place _____

Date _____

Appendix – G

Format of Certificate of Product/Equipment

CERTIFICATE NO:

CERTIFICATE OF APPROVAL

*This is to certify that the product is in accordance with the applicable rules/standards/codes as described below.
The product is considered to be suitable for use on Indian Ships.*

MANUFACTURER :
REGISTERED OFFICE & WORKS :
PRODUCT NAME :
MODEL NO./TRADE NAME :
PRODUCT DESCRIPTION :
APPLICABLE RULE(S)/STANDARD(S)/CODE/IMO :
REQUIREMENTS :
CONDITIONS OF APPROVAL :

This Certificate Is Valid until:<DD/MONTH/YYYY>

Issued at.....
(Place of issue of certificate)

(dd/mm/yyyy).....
(Date of issue) (Signature of surveyor issuing the certificate)

(Seal or stamp of the authority, as appropriate)

ENDORSEMENT WHERE THE ANNUAL AUDIT HAS BEEN COMPLETED*

Annual Audit Due On _____ : **Month & YYYY**
Month & YYYY
Month & YYYY
Month & YYYY

The validity of this certificate is continued on satisfactory completion of annual audit in accordance with above schedule.

Signature _____

Surveyor's Name _____ *Seal or stamp of the Surveyor*

Place _____

Date _____

Signature _____

Surveyor's Name _____ *Seal or stamp of the Surveyor*

Place _____

Date _____

Signature _____

Surveyor's Name _____ *Seal or stamp of the Surveyor*

Place _____

Date _____

Signature _____

Surveyor's Name _____ *Seal or stamp of the Surveyor*

Place _____

Date _____
