IRCLASS
Indian Register of Shipping

CLASSIFICATION NOTES:

APPROVAL OF SERVICE SUPPLIERS

REVISION 6

JULY 2025

CLASSIFICATION NOTES

Approval of Service Suppliers

Revision 6, July 2025

TABLE 1 – AMENDMENTS INCORPORATED IN THIS EDITION

Clause	Subject/ Amendments
Section 4: Certification	
	The amendments are effective from 1 January 2026
4/ 4.1.4, 4.3.2	Amended to clarify that "QSCS certified Society" is a Classification Society subject to verification of compliance with QSCS.
Annexure I: Special Requirements for Various Categories of Service Suppliers	
	The amendments are effective from 1 July 2026
14/ 14.4.4	Amended to specify that sound calibrators and sound level meters are to be calibrated in accordance with the relevant standards.
14/ 14.5.2	MSC.1/ Circ. 1509 is added to the list of reference documents for the supplier
	The amendments are effective from 1 January 2026
21/ 21.3.1, 21.7.1	Amended to include reference document (IACS Rec. No.180).

CLASSIFICATION NOTES

Approval of Service Suppliers

Revision 6, July 2025

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Section 1

General

1.1 General

1.1.1 This Classification Note provides requirements to be complied with, as a minimum, by firms providing services, such as measurements, tests or maintenance of safety systems and equipment, where the results of the service provided by the Service Supplier are used by a Surveyor in making decisions.

1.2 Objective

1.2 1 This Classification Note specifies requirements for approval and certification of service suppliers and is applicable to both initial and renewal audits. IRS will apply procedures in this document and as relevant in Annexure I in respect of special requirements for various categories of service suppliers.

1.2.2 Additional requirements if specified by the flag Administration are to be taken into account.

1.3 Definitions

1.3.1 *Manufacturer*: A company that manufactures equipment required to be periodically serviced and/ or maintained.

1.3.2 *Service Supplier* (may be referred to here-after simply as ‘supplier’): A person or company, not employed by IRS, who at the request of an equipment manufacturer, shipyard, vessel's owner or other client acts in connection with inspection work and provides services, for a ship or an offshore unit, such as measurements, tests or maintenance of safety systems and equipment; the results of which are used by surveyors in making decisions affecting classification or statutory certifications and services.

1.3.3 *Agent*: A Person or Company authorized to act for or to represent a manufacturer or approved service supplier.

1.3.4 *Subsidiary*: A company partly or wholly owned by a manufacturer or approved service supplier.

1.3.5 *Subcontractor:* A person or company providing services to a manufacturer or approved service supplier, with a formal contract defining the assumption of the obligations of the service supplier.

Section 2

Application

2.1 This Classification Note applies in general, to the approval of the following categories of Service Suppliers:

2.1.1 Statutory Services

- Firms engaged in servicing inflatable liferafts, inflatable lifejackets, hydrostatic release units, marine evacuation systems
- Firms engaged in inspections and testing of radio communication equipment
- Firms engaged in inspections and maintenance of self-contained breathing apparatus
- Firms engaged in annual performance testing of Voyage Data Recorders (VDR) and simplified Voyage Data Recorders (S-VDR)
- Firms engaged in sound pressure level measurements of public address and general alarm systems on board ships
- Firms engaged in inspections of low location lighting systems using photo luminescent materials and evacuation guidance systems used as an alternative to low-location lighting systems
- Firms engaged in the maintenance, thorough examination, operational testing, overhaul and repair of lifeboats, and rescue boats, launching appliances and release gear
- Firms engaged in inspection, performance testing and maintenance of Automatic Identification Systems (AIS).
- Firms engaged in commissioning testing of Ballast Water Management System (BWMS)

2.1.2 Classification and/ or Statutory Services:

- Firms engaged in thickness measurements on ships or mobile offshore units
- Firms carrying out an in-water survey on ships and mobile offshore units by diver or remotely operated vehicle (ROV)
- Firms engaged in inspections and maintenance of fire extinguishing equipment and systems
- Firms engaged in tightness testing of closing appliances such as hatches, doors etc. with ultrasonic equipment
- Firms engaged in measurements of noise level on board ships
- Firms engaged in examination of Ro-Ro ship’s bow, stern, side and inner doors
- Firms engaged in testing of coating systems in accordance with in accordance with the requirements of IMO performance standards for protective coatings
- Firms engaged in tightness testing of primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service
- Firms engaged in visual and/or sampling checks for preparation of Inventory of Hazardous Materials (IHM)
- Firms engaged in magnetic compass inspections and adjustments

- Firms engaged in survey using Remote Inspection Techniques (RIT) as an alternative means for close up survey of the structure of ships and mobile offshore units
- Firms engaged in cable transit seal systems inspection on ships and mobile offshore units.

2.2 Detailed requirements specific to the various categories of suppliers are indicated in Annexure I. National and/ or international regulations may give additional requirements. References to such national and/or international requirements are also provided in Annexure I.

Section 3

Procedure for Initial Approval

3.1 Documentation

3.1.1 The following documents are to be submitted to IRS for review. General requirements concerning suppliers are given in 3.2 and specific requirements as relevant, in Annexure I.

- Outline of company, e.g. organisation and management structure, including subsidiaries to be included in the approval/ certification.
- List of nominated agents, subsidiaries and subcontractors.
- Experience of the company in the specific service area.
- For categories of Service Suppliers that require certification from manufacturers (for e.g. inflatable liferafts, inflatable lifejackets, hydrostatic release units, rescue boats, marine evacuation systems, lifeboat, launching appliances, on load release gear and davit-launched liferaft automatic release hooks, VDR& S-VDR); documentary evidence from the manufacturer, that the Service Supplier has been certified or licensed to service the particular makes and models of equipment for which approval is sought is to be provided.
- List of operators/ technicians/ inspectors/ personnel documenting training and experience within the relevant service area, and qualifications according to recognized national, international or industry standards, as relevant.
- Description of equipment used for the particular service for which approval is sought.
- A guide for operators of such equipment.
- Training programme for operators/technicians/inspectors/personnel.
- Check lists and record formats for recording results of the services referred to in Annexure I
- Quality Manual and/or documented procedures covering requirements in 3.5
- Documented procedures for communication with the crew prior to commencing work, so that it is safe to decommission the equipment being maintained, and to provide a safe system of work in place
- Evidence of approval/acceptance by other bodies, if any.
- Information on the other activities that may present a conflict of interest.

- Record of customer complaints and of corrective actions requested by certification bodies.

- Operators/ technicians/ inspectors documentation that they have acknowledged the code of conduct.

3.2 General Requirements

3.2.1 *Extent of Approval*: The supplier is to demonstrate as required by 3.2.2 to 3.2.11, that it has the competence and control needed to perform the services for which approval is sought. Provisions in Annexure I may also be referred for specific requirements, relevant to a particular service.

3.2.2 *Training of personnel*: The supplier is responsible for the qualification and training of its personnel to a recognized national, international or industry standard as applicable. Where such standards do not exist, the supplier is to define standards for the training and qualification of its personnel relevant to the functions each is authorized to perform. The personnel are also to have adequate experience and be familiar with the operation of any necessary equipment. In case of hazardous material the personnel are to be qualified / licenced to a National / International standard for the relevant hazard. Operators/technicians/ inspectors are to have had a minimum of one year tutored on the job training. Where it is not possible to perform internal training, a program of external training may be considered as acceptable.

3.2.3 *Supervision:* The supplier is to provide supervision for all services provided. The responsible supervisor is to have had a minimum of two years of experience as an operator /technician/inspector within the activity for which the supplier is approved. For a supplier consisting of one person, that person is to meet the requirements of a supervisor.

3.2.4 *Personnel records:* The supplier is to keep records of the approved operators/technicians / inspectors / personnel. The record is to contain information on age, formal education, training and experience for the services for which they are approved.

3.2.5 *Equipment and facilities:* The supplier is to have the necessary equipment and facilities for the service to be supplied. A record of the equipment used is to be kept and available. The record is to contain information on maintenance and results of calibration and verifications. IRS will assess and record the validity of previous measuring results when the equipment is found not to conform to requirements and take appropriate action on the equipment affected.

3.2.6 *Control of data*: In case computers are used for the acquisition, processing, recording, reporting, storage, measurement assessment and monitoring of data, the ability of software used for the intended purpose is to be documented and confirmed by the service supplier. This has to be undertaken prior to initial use of software and is to be reconfirmed by service supplier as necessary.

Note: Commercial off-the-shelf software (e.g. word processing, database and statistical programme), in general use within their designed application range may be considered to be sufficiently validated and do not require any subsequent confirmation.

3.2.7 Where several servicing stations are owned by a given company, each station is to be assessed and approved except as specified in 3.5.3

3.2.8 *Procedures*: The supplier is to have documented work procedures covering all services supplied.

3.2.9 *Subcontractors:* The supplier is to give information of agreements and arrangements if any parts of the services provided are subcontracted. Particular emphasis is to be given to quality management by the supplier in following-up of such subcontracts. Subcontractors providing anything other than equipment is to also meet the requirements of 3.2 and 3.5.

3.2.10 *Verification*: The supplier is to verify that the services provided are carried out in accordance with approved procedures.

3.2.11 *Reporting*: The report is to detail the results of inspections, measurements, tests, maintenance and/or repairs carried out. Guidelines, as provided in Annexure I may be taken into account. A copy of the Certificate of Approval is to be attached to each report.

3.2.12 Documented procedures and instructions are to be available for the recording of damages and defects found during inspection, servicing and repair work. This documentation is to be made available upon request.

3.3 *Auditing of the Supplier*: Once the submitted documents have been audited satisfactorily, IRS will undertake an audit of the supplier to confirm that the supplier is considered capable of conducting the services for which the approval/ certification is sought.

3.4 Certification would be based on the practical demonstration of the performance of the specific service as well as satisfactory reporting being carried out [i.e. (e.g.) onboard demonstration of thickness measurement as well as reporting]. Demonstration of the specific service is to be witnessed (1st service) within 6 months of the audit; else the firm needs to be audited again prior approval. However, if the firm is already certified by an IACS Quality System Certification Scheme (QSCS) certified society, refer to Sec. 4.1.4.

3.5 Quality System

3.5.1 The supplier is to have a documented system covering at least the following:

- code of conduct for the relevant activity
- maintenance and calibration of equipment
- training programmes for operators/technicians/inspectors
- supervision and verification to ensure compliance with operational procedure
- recording and reporting of information
- quality management of subsidiaries, agents and subcontractors
- job preparation
- periodic review of work process procedures, complaints, corrective actions, and issuance, maintenance and control of documents

3.5.2 A documented quality system complying with the current version of ISO 9000 series and including the above items would be considered acceptable.

3.5.3 If a manufacturer of equipment (and/or its service supplier) applies to IRS for inclusion of its nominated agents and/or subsidiaries in the approval, then it must have implemented a quality system certified in accordance with the current version of ISO 9000 series. The quality system is to contain effective controls of the manufacturer's (and/or service supplier's) agents and/or subsidiaries. The nominated agents/ subsidiaries are also to have in place an equally effective quality system complying with the most current version of ISO 9000 series. Such approvals would be based upon an evaluation of the quality system implemented by the parent company against the most current version of ISO 9000 series. IRS may require follow-up audits on such agents or subsidiaries against the most current version of ISO 9000 series to confirm adherence to this quality system.

3.6 Relationship of Service Suppliers with the Original Equipment Manufacturer

3.6.1 A company which works as a service station for manufacturer(s) of equipment (and as a service supplier in this field), may be assessed by the manufacturer(s) and nominated as their agent. The manufacturer is to ensure that appropriate instruction manuals, material etc. are available for the agent as well as proper training of the agent's technicians. Such suppliers would be approved either on a case by case basis, or in accordance with 3.5.3.

Section 4

Certification

4.1 Certification towards Initial Approval

4.1.1 Upon satisfactory completion of both the audit of the supplier and the demonstration test, as applicable, IRS will issue a Certificate of Approval stating that the supplier's service operation system has been found to be satisfactory and that the results of services performed in accordance with that system may be accepted and utilized by IRS Surveyors in making decisions affecting classification or statutory certification, as relevant.

4.1.2 The Certificate would clearly state the type and scope of services and any limitations or restrictions imposed including type of equipment and/or names of manufacturers of equipment where this is a limiting restraint. The supplier would also be included in IRS record of approved service suppliers.

4.1.3 Certificate of Approval will be issued with validity for a period of 3 years from the date of completion of the initial audit.

4.1.4 Where the firm is already certified by a Classification Society subject to verification of compliance with QSCS in accordance with Section 5 of Annex 1 to the QSCS (IACS Procedures, Volume 3) according to the provisions of this document, this may be verified through documentary review that a practical demonstration has already been carried out. Certificate issued in accordance with the above will have a validity similar to that specified in the certificate issued by the QSCS certified society.

4.2 Information regarding alterations to the Certified Service Operating System

4.2.1 When any alteration to the certified service operating system of the supplier is made, such alteration is to be immediately informed to IRS. Additional audit may be required when deemed necessary by IRS.

4.3 Certification towards Renewal of Approval

4.3.1 Renewal of the certificate of approval is to be made at intervals not exceeding 3 years by verification through audit of the supplier; confirming that approved conditions are maintained or, where applicable, on expiry of the supplier's approval received from an equipment manufacturer, whichever comes earlier. In the latter case, IRS is to be informed in due course by the Service Supplier. New certificate would be issued with a validity of 3 years from the date of expiry of existing certificate.

4.3.2 At renewal audits, verification by documentary review of jobs undertaken since the previous audit and that have been accepted by a IRS surveyor or a Classification Society subject to verification of compliance with QSCS in accordance with Section 5 of Annex 1 to the QSCS (IACS Procedure, Volume 3), is acceptable to satisfy the requirement of practical demonstration in Sec 3.4 above.

4.3.3 The supplier is to apply for renewal of the Certificate of approval at least three months before the validity expires.

4.3.4 Documents would be reviewed by IRS with respect to the following:

i) Changes to quality system manual;
ii) Approval cancellation notification from other Class Society, if any;
iii) Possible terms of termination of authorization from manufacturers for categories of service supplier that require authorization from manufacturer;
iv) Feedback received from surveyors in respect of the services of the supplier, if any.

Section 5

Cancellation of Approval

5.1 IRS reserves the right to cancel the approval and to inform other IACS Members accordingly.

5.2 Approval may be cancelled in the following cases:

5.2.1 Where the service was improperly carried out or the results were improperly reported.

5.2.2 Where a Surveyor finds deficiencies in the approved service operating system of the supplier and appropriate corrective section is not taken.

5.2.3 Where alterations have been made to the Company's Quality System relevant to the service supplier certificates, without written notification to IRS.

5.2.4 Where willful acts or omissions are ascertained.

5.2.5 Where any deliberate misrepresentation has been made by the Service Supplier.

5.2.6 Expiration or cancellation of the Supplier's parent company's approval automatically invalidates approval of all agents and subsidiaries if these are certified according to 3.5.3.

5.3 A supplier whose approval was cancelled may apply for re-approval provided it has corrected the non-conformities which resulted in cancellation and IRS is able to confirm that it has effectively implemented the corrective action.

5.4 A firm, whose certificate does not remain valid due to non-conduct of required renewal audit will be deleted from the list of approved suppliers of IRS. The firm may be re-approved upon request by the firm. The re-approval will be subject to satisfactory verification, the scope of which will be Initial Approval.

ANNEXURE I

Special Requirements for Various Categories of Service Suppliers

1 Firms engaged in Thickness Measurements on Ships or Mobile Offshore Units

1.1 Firms carrying out thickness measurement onboard ships or mobile offshore units are subject to approval in accordance with the procedures and would be certified as one of the following three categories depending upon their expertise and demonstration of shipboard capability:

- Category 1: Certified to do measurements onboard IW vessels of all types and non-ESP ships less than 500 GT.
- Category 2: Certified to do measurements on board non-ESP ships, (i.e., General Dry Cargo Ship, Passenger Ship, Ro-Ro Vessel, Gas Carrier, Other Ship types and Mobile offshore units.)
- Category 3: Certified to do measurements on board ESP ships.

Category 3 firms can undertake measurement on all types of vessels (Category 1, 2, 3). Category 2 firms can undertake measurement on Category 1 & 2 vessels. Category 1 firms are restricted to undertake measurement only on IW vessels and non-ESP ships less than 500 GT.

A firm may request for an up-gradation of its approval from lower category ship types to higher category at any time but only after one year of initial approval. For this, an audit would again be required to be undertaken and relevant shipboard activity has to be demonstrated on a higher category vessel for verification of expertise and capability.

1.2 During renewal audit of existing firms it is to be clearly specified in the audit report of the Surveyor whether the recommendation for renewal (of the approval certificate) has any limitation e.g. Category 1 or 2 or 3.

1.3 Extent of engagement - Thickness measurement of structural material of ships

1.4 Supervisor - The responsible supervisor is to be qualified according to a recognized national or international industrial NDT standard (e.g. EN 473 level II as amended or ISO 9712 level II as amended).

1.5 Operators - The operators carrying out the measurements are to be certified to a recognized national or international industrial standard (e.g. EN 473 level I as amended or ISO 9712 level I as amended) and are to have adequate knowledge of ship structures sufficient to elect a representative position for each measurement.

1.6 Equipment - On coated surfaces, instruments using pulsed echo technique (either with oscilloscope or digital instruments using multiple echoes, single crystal technique) are required. Single echo instruments may be used on uncoated surfaces, which have been cleaned and ground.

1.7 Procedures - Documented work procedures are at least to contain information on inspection preparation, selection and identification of test locations, surface preparation, protective coating preservation, calibration checks, and report preparation and content.

1.8 Reporting - The report is to be based on the provisions of the Rules and reporting formats (TM forms), as relevant.

1.9 Verification - The supplier is to have the Surveyor's verification of each separate job, documented in the report by the attending Surveyor(s) signature.

1.10 Where the firm employs climbers the following conditions are to be complied with

1.10.1 Personnel –In addition to the requirements in 1.4 & 1.5, supervisors / operators are to be qualified for rope access operations to a recognized national or international rope access standard. Supervisors are to be a level III certified IRATA / SPRAT technician or equivalent.

1.10.2 Procedures - In addition to the documented procedures required by Sec.3.5, firm is to have procedures for the following specifically covering rope access related tasks related to thickness measurements

a) Risk assessment and mitigation including emergency preparedness, rescue and retrieval of workmates and casualty management
b) Planning and management of jobs including preparation of inspection plan, communication, data recording, storage, and report preparation
c) Compliance with applicable laws and regulations of the area where the operation is being conducted
d) Maintenance, storage, inspection testing and certification of the rope and equipment
e) A documented training plan for the personnel.

   [Note - Ropes and equipment are to be certified to national / international standards. Equipment includes items like descender devices, harnesses, rope clamps, anchor devices, connectors, pulleys].

f) Control of working methods including use of work equipment, communication, protection of third parties, exclusion zones

1.11 The information on the status of approval reported by the other Class Societies would be reviewed prior issuing new certificates of approval or renewing/endorsing the certificate of approval of TM firm.

1.12 In cases where IRS has received an application for approval or renewal/endorsement of certificate from a TM Firm for which other Societies have reported cancellation of approval, any additional information may be sought from those Societies as considered necessary by IRS.

1.13 When IRS becomes aware of notification of cancellation of a TM Firm by another Class Society, each Society would independently re-assess the continuing validity of their own approval of that TM Firm, if any.

2 Firms Engaged in Tightness Testing of Closing Appliances such as Hatches, Doors, etc. with Ultrasonic Equipment

2.1 Extent of engagement

2.1.1 Ultrasonic tightness testing of closing appliances such as hatches, doors, etc.

2.2 Operators

2.2.1 The operator is to have the following qualifications:

- Have knowledge of different closing appliances such as hatches, doors, etc. Including their design, functioning and sealing features
- Have experience with the operation and maintenance of different closing appliances such as hatches, doors, etc.
- Be able to document a theoretical and practical training onboard in using the ultrasonic equipment specified.

2.3 It is to be demonstrated to the Surveyor that the ultrasonic equipment is fit for the purpose of detecting leakages in closing appliances.

2.4 Procedures - The supplier is to have documented work procedures which are to include the manual for the ultrasonic equipment specified, its adjustment, its maintenance, its operation and approval criteria.

3 Firms Carrying out In-Water Survey on Ships and Mobile Offshore Units by Diver or Remotely Operated Vehicle (ROV)

3.1 Extent of engagement

3.1.1 In -water survey in lieu of a docking survey and / or the internal hull survey of compartments filled with water on ships and mobile offshore units by diver or Remotely Operated Vehicle (ROV).

3.2 Training of Personnel

3.2.1 The supplier is responsible for the qualification of its divers, remotely operated vehicle operators and supervisors and for their training in the use of the equipment utilized when carrying out inspection. Knowledge of the following is to be properly documented:

- Ship's underwater structure and appendages, propeller, rudder and its bearings, etc
- Non-destructive testing in accordance with a recognized national or international industrial NDT standard. This requirement only applies if an in-water survey company performs non-destructive testing

- Certification as a thickness measurement firm when conducting thickness measurements under-water
- Bearing clearance measurements on rudders and propeller shaft
- Under-water video monitoring with TV monitors on deck, as well as still picture work
- Operation of under-water communication system
- Any special equipment necessary for the work carried out

3.3 A plan for training of personnel in the reporting system, minimum rule requirements for relevant ship or unit types, ship's or unit's underwater structure, measuring of bearing clearances, the recognition of corrosion damage, buckling and deteriorated coatings, etc. is to be included.

3.4 Supervisor

3.4.1 Diving Supervisor – Diving supervisor is to be qualified according to the supplier's general requirements and is to have a minimum of two years' experience as a diver carrying out inspection.

3.4.2 ROV Supervisor – ROV supervisor is to have a minimum of two years' experience conducting inspections with ROVs.

3.5 Divers and Operators

3.5.1 Divers carrying out inspection- The diver carrying out the inspection is to have had at least one year's experience as an assistant diver carrying out inspections (including participation in a minimum of 10 different assignments).

3.5.2 ROV operators – ROV operators are to have at least one year of experience working with ROVs conducting inspections on vessels.

3.6 Equipment

3.6.1 The following are to be available: -

- Closed circuit colour television with sufficient illumination equipment
- Two way communication between diver and surface staff
- Video recording device connected to the closed circuit television
- Still photography camera
- Equipment for carrying out thickness gauging, non-destructive testing and measurement, e.g. clearances, indents etc., as relevant to the work to be performed.
- Equipment for cleaning of the hull

3.6.2 In addition to the equipment listed in 3.6.1 the following are to be available for firms carrying out survey by ROV

- Remotely Operated Vehicle
- Adequate controls or programming for the ROV functions required.

3.7 Procedures and Guidelines

3.7.1 The supplier is to have documented operational procedures and guidelines for how to carry out the inspection and how to handle the equipment. These are to include:

- Two-way communication between diver and surface
- Video recording and closed circuit television operation
- Guidance of the diver along the hull to provide complete coverage of the parts to be inspected.

3.7.2 In addition to the above refer 3.7.1, documented operational procedures and guidelines for firms carrying out in water survey by ROV are also to include:

- Guidance for the operation and maintenance of the Remotely Operated Vehicle, if applicable.
- Methods and equipment to ensure the ROV operator can determine the ROVs location and orientation in relation to the vessel

3.8 Verification - The supplier is to have the Surveyor's verification of each separate job, documented in the report by the attending Surveyor(s) signature.

4 Firms Engaged in Inspection and Maintenance of Fire Extinguishing Equipment and Systems

4.1 Extent of Engagement

4.1.1 Inspections and maintenance of fire-extinguishing equipment and systems such as fixed fire extinguishing systems, portable fire extinguishers and fire detection and alarm systems.

4.2 Extent of Approval

4.2.1 Service Suppliers are to have professional knowledge of fire theory, fire-fighting and fire-extinguishing appliances sufficient to carry out the maintenance and/or inspections, and to make the necessary evaluations of the condition of the equipment.

4.2.2 In demonstrating professional knowledge, Service Suppliers are to have an understanding of the various types of fires and the extinguishing media to be used on them.

4.2.3 For fixed fire-extinguishing systems, Service Suppliers are to demonstrate an understanding of the principles involved with gas, foam, deluge, and sprinkler and water-mist systems, as relevant for the approval(s) being sought.

4.3 Procedures

4.3.1 Service Suppliers are to have documented procedures and instructions on how to carry out the servicing of the equipment and/or system. These are to either contain or make reference to the Manufacturer’s servicing manuals, servicing bulletins, instructions and training manuals, as appropriate, and to international requirements.

4.3.2 Additionally they are to make reference to any requirements (e.g. what markings should be appended to the equipment/system).

4.4 Reference Documents

4.4.1 The Service Supplier is to have access to the following documents:

- Manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate.
- Type Approval certificates showing any conditions that may be appropriate during the servicing and/or maintenance of fire-extinguishing equipment and systems
- IMO Resolution A. 951(23) Improved Guidelines for marine Portable fire extinguishers.
- SOLAS, MSC.1/Circ. 1318/ Rev.1 (Revised Guidelines for the maintenance and inspections of fixed carbon dioxide fire-extinguishing systems. International Code for Fire Safety Systems (FSS Code), ISO 6406 (Periodic inspection and testing of seamless steel gas cylinders), and any documentation specified in the authorization or license from the equipment manufacturer
- MSC.1/Circ. 1432 Revised guidelines for the maintenance and inspection of Fire protection systems and Appliances, as amended by MSC.1/ Circ. 1516.
- MSC.1/Circ. 1312 Revised guidelines for the performance and testing criteria, and surveys of Foam concentrate for fixed fire-extinguishing systems as corrected by MSC/Circ.1312/Corr.1
- MSC/Circ. 670 Guidelines for the performance and testing criteria, and surveys of high-expansion foam concentrates for fixed fire-extinguishing systems
- MSC/Circ.798 Guidelines for the performance and testing criteria, and surveys of medium-expansion foam concentrates for fixed fire-extinguishing systems
- MSC.1/Circ.1370 – Guidelines for the design, construction and testing of fixed hydrocarbon gas detection systems
  • Guidelines adopted by IMO for fire extinguishing equipment and systems specially intended for service by service suppliers
- MSC.1/Circ. 1275 Unified interpretation on the number and arrangement of portable fire extinguishers in the various types of spaces on board ships.
- ISO6406 Periodic inspection and testing of seamless steel gas cylinders.
  • Latest notices/circulars from flag administrations, related to fire fighting equipment and systems.

4.5 Equipment and Facilities

4.5.1 General Requirements

4.5.1.1 If Service Suppliers undertake shore-based inspection and maintenance, the workshops are to be clean, suitably ventilated and arranged, with due cognizance of the spares and extinguishing media being stored, to ensure safe and effective working procedures.

4.5.1.2 Service Suppliers undertaking inspection and maintenance of equipment and systems onboard are to provide the appropriate facilities to either complete the work onboard or remove the necessary items to their workshops. When the testing of cylinder at high pressure is undertaken, necessary safety arrangements are to be in place.

4.5.2 Equipment

4.5.2.1 Sufficient and appropriate spares and tools are to be available, which should include:

1) General
   a) Reflecting mirrors and lighting to inspect inside of the fire extinguishers
   b) Various scale to weigh items.
   c) Pressure gauges or manometers.
   d) Liquid/gas, flow meters, as appropriate.
   e) Cylinder dryers.
   f) Gases (carbon dioxide, halon & nitrogen) filling equipment & contents of filling.
   g) Means to hydrostatically pressure test components/systems/storage bottles.
   h) In case of foam concentrates and portable fire-extinguishers, chemical analysis equipment and a testing bay, respectively.
   i) Specific equipment/spares as may be specified by Manufacturer's.
   j) Recharging facilities for pressurized bottles, extinguishers and cartridges

2) Fixed fire-extinguishing systems
   a) Gas level meters or measuring scales.
   b) Tools for ventilation test.

3) Portable fire extinguishers
   a) Equipment for fixing fire extinguishers, such as clamp
   b) Spanners to open & close caps.
   c) Caps of fire extinguishers for the pressure test
   d) Pumps for the hydraulic pressure test.

4) Air compressors for the self-contained breathing apparatus (means to hydrostatically pressure test components/systems/storage bottles)

5) Fire detection & alarm systems
   a) Equipment for the operation test.
   b) Tools for inspection of electrical equipment, such as a tester and

c) Specific equipment/spares as may be specified by Manufacturer's.

5 Firms engaged in servicing of inflatable liferafts, inflatable lifejackets, hydrostatic release units, marine evacuation systems.

5.1 Extent of engagement

- Servicing of inflatable liferafts, inflatable lifejackets, hydrostatic release units.
- Servicing of marine evacuation systems.

5.2 Equipment and premises

5.2.1 IMO Res. A. 761 (18) as amended by MSC.55(66) gives recommendations on conditions for the approval of servicing stations for inflatable liferafts which are to be complied with, as relevant. For firms undertaking servicing of inflatable liferafts for extended service intervals, sufficient and accurate tools and measuring equipment are to be provided for periodic onboard inspection.

5.3 Procedures and Instructions

5.3.1 The supplier is to have documented procedures and instructions or how to carry out service of equipment. The procedure is to include in the quality manual confirmation that pyrotechnics will be procured from approved importers/ distributors. Where inflatable liferafts are subject to extended service intervals in accordance with the requirements of SOLAS Regulation III/20.8.3, MSC.1/Circ. 1328 are to be followed in addition to Resolution A.761 (18) as amended by MSC.55 (66).

The procedures for servicing and inspection are to include provision for periodic onboard inspection and address control of the humidity around the life-raft and behind the protective barrier and control of gas cylinder.

5.4 The supplier is to provide evidence that it has been authorized or licensed by the equipment manufacturer to service the particular makes and models of equipment for which approval is sought by the equipment's manufacturer. Firms undertaking servicing of liferafts for extended service intervals are to have qualified persons who have been specifically trained and certified by the life-raft manufacturer for the purpose.

5.5 Reference Documents - The Service Supplier is to have access to the following documents:

- IMO - Resolution A.761(18) - Recommendation on Conditions for the Approval of Servicing Stations for Inflatable Liferafts - (adopted on 4 November 1993), amended by Resolution MSC.55(66) and by MSC.388(94)
- IMO - Resolution MSC.55(66)
- IMO - Resolution MSC.388(94)
- IMO – MSC.1/Circ.1328 – Guidelines for the Approval of Inflatable Liferafts Subject to Extended Service Intervals Not Exceeding 30 Months
- Manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate

- Type Approval certificates, showing any conditions that may be appropriate during the servicing and/or maintenance of inflatable liferafts, inflatable lifejackets, and hydrostatic release units
- LSA code/Chap., 1995 SOLAS Conference Resolution 4 regarding marine evacuation systems

6 Firms engaged in inspection and testing of radio communication equipment

6.1 Extent of engagement:

- Surveys, inspection, testing, and/or measurement of radio equipment aboard ships or mobile offshore units for compliance with SOLAS regulations
- Annual testing of EPIRBs for compliance with SOLAS Regulation IV/15.9
- The requirements of this sub-section also apply to Service Suppliers involved in inspection, performance testing and maintenance of Automatic Identification Systems (AIS). The Service Supplier is to be familiar with the equipment with which it will be involved, such as being a service agent for the equipment manufacturer

6.2 Reference Documents : The Service Supplier is to have access to the following documents:

- Manufacturer’s servicing manuals, servicing bulletins, instructions and training manuals, as appropriate.
- IMO – International Convention on Safety of Life at Sea (SOLAS), 74/78, as amended
- IMO – Resolution A.789 (19) – Specification on the Survey & Certification Functions of Recognized Organizations Acting on Behalf of the Administration.
- MSC.1/Circ. 1040/Rev.2 – Guidelines on Annual Testing of Emergency Position-Indicating Radio Beacons (EPIRBs).
- MSC.1/Circ.1252 – Guidelines on Annual Testing of the Automatic Identification System (AIS).
- SN/Circ.227, SN/Circ.227/Corr.1& 245 – Guidelines for the installation of a Ship borne Automatic Identification System (AIS) and amendments thereto.
- MSC/Circ.1072 – Guidance on provision of Ship Security Alert Systems.
- ITU – Radio regulations.
- IMO – Performance standards for the equipment for which the service supplier is approved.
- Latest notices/circulars from flag administrations, related to servicing and testing of radio communication equipment and Automatic Identification System (AIS).

6.3 Supervisor

6.3.1 The supervisor is to have a minimum two years education from a technical school experience as inspector, and should preferably hold a General Operator's Certificate (GOC) or a GMDSS Radio electronic Certificate (REC), recognized by the ITU, to operate or test radio transmitters. He should be aware of any local conditions for radio signal propagation, of regional radio stations and their facilities, and of the GMDSS infrastructure.

6.4 Radio Inspector

6.4.1 The inspector carrying out the inspection is to have passed the internal training of the supplier in inspection/ testing of Radiotelephony, GMDSS, automatic identification system (AIS) equipment and initial, periodical and renewal surveys, as applicable. The inspector is also to have at least one year's technical education and should preferably hold a General Operator's Certificate (GOC) training or as alternative hold evidence that he followed a technical course approved by the relevant Administration, at least one year's experience as an assistant radio inspector and should preferably hold as appropriate National Radio Operators Certificate, recognized by the ITU, such as a GMDSS General Operator's Certificate (GOC) or a GMDSS Radio electronic Certificate (REC). He should be aware of any local conditions for radio signal propagation, of regional radio stations and their facilities, and of the GMDSS infrastructure.

6.5 Equipment and Facilities

6.5.1 The supplier is to have the major and auxiliary equipment required for correctly performing the inspection. A record of the equipment used is to be kept. The record is to contain information on manufacturer and type of equipment, and a log of maintenance and calibrations.

6.5.2 A standard which is relevant to the radio equipment and automatic identification system (AIS) equipment to be tested and available and is to be cited in the inspection report.

6.5.3 For equipment employing software in conjunction with the testing/examination, this software is to be fully described and verified.

6.6 Minimum required Instruments

6.6.1 Equipment for testing radio equipment

-- Equipment for measuring frequency, voltage, current and resistance
-- Equipment for measuring output and reflects effect on VHF and MF/HF
-- Equipment for measuring modulation on MF/HF and VHF (AM, FM, PM)
-- Acid tester for checking specific gravity of lead batteries.
-- Tester for checking of correct output from Free-Float Satellite EPIRB (correct encoding)

6.6.2 Equipment for testing the performance of Automatic Identification Systems (AIS).

-- AIS tester

6.7 Procedures and Instructions

6.7.1 The supplier is to have documented procedures and instructions for testing and examination of radio equipment and automatic identification system (AIS) equipment. Procedures and instructions for operating of each item of the testing/inspection equipment are also to be kept and be available at all times. Checklists containing all items of radio and automatic identification system (AIS) inspection including reporting are to be available.

6.8 Reporting

The report is to be prepared in the form acceptable to society surveyor and to include at least the following reporting forms:-

6.8.1 For Radio equipment – Annual testing of EPIRB as per MSC.1/Circ. 1040/ Rev2.

6.8.2 For AIS – Appendix to IMO MSC.1/Circ. 1252.

7 Firms engaged in inspections and maintenance of self-contained breathing apparatus

7.1 Extent of Engagement - Inspections and maintenance of self-contained breathing apparatus, Emergency Escape Breathing Devices (EEBD)

7.2 Extent of Approval

- The supplier is to document and demonstrate that it has knowledge of the equipment and systems sufficient to carry out the inspections and testing of self-contained breathing apparatus to identify standards and to make the necessary evaluation of the condition of the equipment
- In demonstrating professional knowledge, Service Suppliers are to have an understanding of the operational requirements involved with self-contained breathing apparatus and how these are to be maintained
- Additionally, Service Suppliers are to demonstrate the necessary safety requirements applicable to such equipment

7.3 Procedures

- Service Suppliers are to have documented procedures and instructions on how to carry out the servicing of the equipment and/or system. These are to either contain or make reference to the Manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate
- Additionally they are to make reference to any requirements (e.g. what markings are to be appended to the equipment/system) and how they should be applied

7.4 Reference Documents - The Service Supplier is to have access to the following documents:

- Manufacturers' servicing manuals, servicing bulletins, instructions and training manuals, as appropriate
- Type Approval certificates showing any conditions which may be appropriate during the servicing and/or maintenance of self-contained breathing apparatus

7.5 Equipment and Facilities

7.5.1 General Requirements

- If Service Suppliers undertake shore-based inspection and maintenance, they are to maintain and implement procedures for workshop cleanliness, ventilation and arrangement, with due cognizance of the spares and pressurised bottles being stored, to ensure safe and effective working procedures
- Service Suppliers undertaking inspection and maintenance of equipment and systems onboard are to provide the appropriate facilities to either complete the work onboard or remove the necessary items to their workshops

7.5.2 Equipment

- Sufficient and appropriate spares and tools are to be available for repair, maintenance and servicing of self-contained breathing apparatus in accordance with the requirements of the Manufacturers
- These are to include, as required by the self-contained breathing apparatus equipment and/or systems:
- Various scales to weigh items
- Means to hydrostatically pressure test components/systems/storage bottles
- Flow meters; and
- Pressure gauges or manometers
- Equipment for checking air quality
- Recharging facilities for breathing apparatus

8 Firms engaged in the examination of Ro-Ro ships bow, stern, side and inner doors

8.1 Extent of Engagement

8.1.1 Inspection of securing and locking devices, hydraulic operating system, electric control system for the hydraulics, electric indicator systems, and supporting, securing and locking devices and tightness testing.

8.2 The supplier is to be certified to the most current version of ISO 9000 series.

8.3 Supervision

8.3.1 In addition to the Ch.5.2.3, the supervisor is to have had a minimum of two years' experience as operator/technician/inspector within the activity, a Supervisor is to have a minimum two years related education from a technical school.

8.4 Training of personnel - Operators carrying out Non-Destructive Test (NDT) are to be qualified to a recognized National or International Standard for the methods used.

8.5 Reference documents - The supplier is to have access to the following reference documents:

- IMO - International Convention on the Safety of Life at Sea (SOLAS) 74/78, as amended
- ISO 9001 : 2015 - Quality Management Systems - requirements
- UR Z24 - Survey Requirements for Shell and Inner Doors of Ro-Ro ships

8.6 Required Equipment

8.6.1 For inspection of Supporting, Securing and Locking Devices, Hinges and Bearings.

-- Equipment for measuring clearances (i.e. feeler gauges, vernier calipers, micrometers).
-- Non- destructive test (i.e. dye penetrant, magnetic particle inspection)

8.6.2 For tightness testing

-- Ultrasonic leak detector or equivalent

8.6.3 For Inspection of Hydraulic Operating System

- Pressure gauges
-- Particle counters for analysing the quality of hydraulic fluid

8.6.4 For Inspection of Electric Control System and Indication System

-- Digital multi-meter
-- Earth fault detector

8.7 Procedures and Instructions

8.7.1 The supplier is to have access to drawings and documents, including the operating and Inspection Manual.

8.7.2 The supplier is to have access to the service history of the doors.

8.7.3 The supplier is to use, complete and sign a checklist which has been found acceptable by IRS.

9 Firms engaged in annual performance testing of Voyage Data Recorders (VDR) and simplified Voyage Data Recorders (S-VDR)

9.1 Extent of engagement – Testing and servicing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) in accordance with SOLAS Chapter V Regulation 18.8 and IMO- MSC.1/Circular. 1222, Rev 1 - Guidelines on Annual testing of Voyage data recorders (VDR) & Simplified Voyage Date Recorders (S-VDR), as applicable.

9.2 Extent of Approval

9.2.1 The Supplier is to provide evidence that he has been authorized or licensed by the equipment's manufacturer to service the particular makes and models of equipment for which approval is sought.

9.2.2 Where the Service Supplier is also the Manufacturer of the Voyage Data Recorder (VDR) or Simplified Voyage Data Recorder (S-VDR) and has elected to apply IMO - MSC.1/Circular.1222 Rev-1 - Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) in its entirety for the purpose of acting as a Service Supplier engaged in annual performance testing, the following is to apply:

- The Manufacturer is responsible for appointing Manufacturer's Authorised Service Stations to carry out annual performance testing
- The Manufacturer is required to be an Approved Service Supplier and is to satisfy the requirements for Service Suppliers engaged in annual performance testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR), as applicable
- The Manufacturer's Authorised Service Station is not required to be an Approved Service Supplier
- The Manufacturer is to demonstrate that IMO - MSC.1/Circular.1222, Rev-1- Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) is applied in its entirety

9.3 Procedures

9.3.1 The Service Supplier is to have documented procedures and instructions.

9.3.2 Where the Service Supplier is also the Manufacturer of the Voyage Data Recorder (VDR) or Simplified Voyage Data Recorder (S-VDR) and has selected to apply IMO - MSC.1/Circular.1222, Rev-1- Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) in its entirety for the purpose of acting as a Service Supplier engaged in annual performance testing, the following is to apply:

- The Manufacturer is to have documented procedures for the assessment and authorisation of Manufacturer's Authorised Service Stations who carry out annual performance testing
- The Manufacturer is to have documented procedures for the review of Manufacturer's Authorised Service Stations annual performance test reports, analysis of the Voyage Data Recorder (VDR) and Simplified Voyage Data Recorder (S-VDR) 12 hour log and the issue of annual performance test certificates to the Owner/Operator
- The Manufacturer is to maintain a list of Manufacturer's Authorised Service Stations that can be accessed (by any available means, e.g. via a nominated contact point or from the Manufacturer's website) upon request

9.4 Reference Documents

The Service Supplier is to have access to the following documents:
• IMO - International Convention on the Safety of Life at Sea (SOLAS), 74/78, Ch.V, Reg.18.8. – Approval, surveys and performance standards of navigational systems and equipment and voyage data recorder
• IMO - MSC.1/Circular.1222, Rev-1 - Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) - (14 June 2019)
• IMO - Resolution A.861 (20) as amended - Performance Standards for Shipborne Voyage Data Recorders (VDRs) - (adopted on 27 November 1997).
• IMO – MSC.333 (90) as amended – Revised Performance Standards for Shipborne Voyage Data Recorders (VDRs) - (adopted on 22 May 2012). (Applicable for VDRs installed on or after 01/07/2014)
• IMO - Resolution MSC.163 (78) as amended - Performance Standards for Shipborne Simplified Voyage Data Recorders (S-VDRs) - (adopted on 17 May 2004)
• Latest notices/circulars from flag administrations, related to annual testing of VDR & S-VDR.

9.4.2 The Service Supplier is to have access to applicable industry performance standards,

e.g.:

- IEC 61996– Maritime navigation and radio communication equipment and systems – Ship borne voyage data recorder (VDR).
- IEC 61996-2 – Maritime navigation and radio communication equipment and systems – Ship borne voyage data recorder (VDR) – Part 2: Simplified voyage data recorded (S-VDR) – Performance requirements, method of testing and required test results.

9.4.3 The Service Supplier is also to have access to any documentation specified in the authorization or license from the equipment manufacturer.

9.5 Equipment and Facilities - In addition, the Service Supplier is to have equipment as specified in the authorization or license from the equipment Manufacturer.

9.6 Reporting

9.6.1 The Service Supplier is to issue a certificate of compliance as specified in the International Convention on Safety of Life at Sea (SOLAS 1974), as amended, Ch.V, Reg.18.8.

9.6.2 Annual Performance Test of VDR and S-VDR is to be recorded in the form of the model test report given in the Appendix to MSC.1/Circular.1222, Rev-1 signed and stamped by the Service Supplier and attached to the annual performance test certificate.

9.6.3 Where the Service Supplier is also the Manufacturer of the Voyage Data Recorder (VDR) or Simplified Voyage Data Recorder (S-VDR) and has selected to apply IMO - MSC.1/Circular.1222, Rev-1 - Guidelines on Annual Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR) in its entirety for the purpose of

acting as a Service Supplier engaged in annual performance testing, the Manufacturer is to make arrangements for the following:

- Review of the Manufacturer's Authorised Service Station annual performance test report
- Analysis of the recorder's 12 hour log
- Checking of the master record/database for the recorder

9.6.4 Issue of the annual performance test certificate to the Owner/Operator within 45 days of completion of the annual performance test.

10 Firms engaged in inspections of low location lighting systems using photo luminescent materials and evacuation guidance systems used as an alternative to low-location lighting systems.

10.1 Extent of engagement – Luminance measurements on board ships of low location lighting systems using photo luminescent materials.

10.2 Operators – The operator is to have the following qualifications:

- Have adequate knowledge of the applicable international requirements (namely SOLAS reg. II_2/13.3.2.5 IMO Res. A 752(18)- Guidelines for the Evaluation, Testing and Application of Low-Location Lighting on Passenger Ships, ISO 15370-2010, FSS Code Chapter 11)
- Be able to document a theoretical and practical training onboard in using equipment specified

10.3 Equipment – The measuring instrument is to incorporate a fast-response photometer head with CIE (International Commission on Illumination) photopic correction and have a measurement range of at least 10^{-4} cd/m^2 to 10 cd/m^2.

10.4 Procedures – Documented work procedures are at least to contain information on inspection preparation, selection and identification of test locations.

10.5 Reporting – The report is to conform to Annex C of ISO 15370-2010.

10.6 Verification – The supplier is to have the Surveyor's verification of each separate job, documented in the report by the attending Surveyor's signature.

10.7 Reference Documents

The Service Supplier is to have access to the following documents:

- IMO - International Convention on the Safety of Life at Sea (SOLAS), 74/78 Ch.II-2, Pt.D, Reg.13.3.2.5 – Marking of escape routes
- IMO – Fire Safety Systems (FSS Code), Ch.11 – Low-location lighting systems
- IMO - Resolution A.752(18) - Guidelines for the Evaluation, Testing and Application of Low-Location Lighting on Passenger Ships - (adopted on 4 November 1993)

- ISO 15370:2010 - Ships and marine technology - Low-location lighting on passenger ships – Arrangement
- MSC/Circ.1168 – Interim guidelines for the testing, approval and maintenance of evacuation guidance systems used as an alternative to low-location lighting systems.

11 Firms engaged in sound pressure level measurements of public address or general alarm systems on board ships

11.1 Extent of engagement – Sound pressure level measurements of public address and general alarm systems on board ship.

11.2 Operators – The operator is to have the following qualifications:

- Have adequate knowledge of the applicable international requirements (SOLAS Reg. III/4 and III/6, LSA CODE Chapter VII/7.2. IMO Code on alarms and indicators 1995)
- Be able to document a theoretical and practical training onboard in using equipment specified.

11.3 Equipment

11.3.1 The measuring instrument is to be an integrating sound level meter with frequency analyzer capabilities complying with IEC (International Electro Technical Commission) 60651and IEC 61672, type 1 precision class with, at least an A-weighting frequency response curve and 1.3 octave and I octave band filters, complying to IEC 61260, as appropriate for the measurements to be carried out. In addition microphones is to be of the random incidence type, complying with IEC 60651.

11.4 Procedures – Documented work procedures are to at least contain information on inspection preparation, calibration, selection and identification of test locations.

11.5 Reporting – The report is to describe, as a minimum, the environmental conditions of the tests and, for each test location the ambient noise level or the speech interference level, as appropriate for the measurements to be carried out.

11.6 Verification – The supplier is to have the Surveyor’s verification of each separate job, documented in the report by his signature.

11.7 Reference documents - The Service Supplier is to have access to the following documents:

- SOLAS 74/78, Ch III, Pt A, Reg 4 – Evaluation, testing and approval of life-saving appliances and arrangements
- SOLAS 74/78, Ch III, Pt B, Reg 6 – Communications
- International Life-Saving Appliance (LSA) Code, Ch.VII, Reg.7.2 – General alarm and public address system
- IMO - Code on Alarms and Indicators, 1995 as amended
- IEC 61672 - Electro acoustics - Sound level meters

- IEC 61260 - Electro acoustics - Octave-band and fractional-octave-band filters.

12 Firms engaged in testing of coating systems in accordance with IMO Resolution MSC.215 (82) as amended and IACS UI SC223 and/or MSC.288 (87) as amended and IACS UI SC259 (as amended)

12.1 Laboratories

12.1.1 Extent of Engagement - Testing of coatings systems in according to IMO Resolution MSC.215(82), as corrected by IMO MSC.1 /Circ. 1381 and amended by IMO Resolution 341(91) and IACS UI SC223and/or MSC.288(87), as corrected by IMO MSC. 1/Circ. 1381 and amended by IMO Resolution 341(91) and IACS UI SC259 (as amended).

12.1.2 The supplier is to provide IRS the following information:

- A detailed list of the Laboratory test equipment for the coating approval as per IMO Resolution MSC.215 (82) as amended and/or MSC.288 (87) as amended.
- A detailed list of reference documents comprising a minimum those referred to in IMO Resolution MSC.215 (82) as amended and/or MSC.288 (87) as amended for the coating approval.
- Details of testing panel preparation, procedure of test panel identification, coating application, test procedures and a sample test report.
- Details of exposure method and site for weathering primed test panels.
- A sample daily or weekly log/form for recording test condition and observations including unforeseen interruption of the exposure cycle with corrective actions.
- Details of any sub-contracting agreements.
- Comparison test report with an approved coating system or laboratory if available.

12.1.3 Reporting – Reference is made to the following IACS Recommendations:

- Rec. 101: IACS Model Report for IMO Resolution MSC.215(82) Annex 1 “Test Procedures for Coating Qualification”

- Rec. 102: IACS Model Report for IMO Resolution MSC.215(82) Annex 1 “Test Procedures for Coating Qualification”, Section 1.7 – Crossover Test

- Rec. 103: IACS Model Report for IMO Resolution MSC.288(87) Annex 1 “Test Procedure for Coating Qualification for Cargo Oil Tanks of Crude Oil Tankers”.

12.1.4 Audit of the test laboratory is to be based on this procedure and the standards listed in the IMO Resolution MSC.215 (82) as amended and/or MSC.288 (87) as amended for the coating approval.

13 Firms engaged in maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear

13.1 Extent of Engagement - Maintenance, thorough examination, operational testing, overhaul and repair of the following :

- lifeboats(Including free fall lifeboats), all rescue boats (including inflatable rescue boats and fast rescue boats)

- launching appliances, and on-load & off load release gear for lifeboats (including primary and secondary means of launching appliances for free-fall lifeboats), rescue boats and fast rescue boats and davit-launched liferafts.

13.2 Extent of Approval

13.2.1 The requirements in this sub-section apply equally to manufacturers and Ship's Operators when they are acting as Service Suppliers.

13.2.2 Any Service Supplier engaged in maintenance, thorough examination, operational testing, repair and overhaul of lifeboats & rescue boats, launching appliances, and release gear carried out in accordance with SOLAS regulation III/20 is to be approved for these operations for each make and type of equipment for which they provide the service, in accordance with IMO Resolution MSC.402(96)/Corr. 1 (Section 7 of Annex).

Such approval is to include, as a minimum:

- employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program is to be based on requirements in 13.3 for each make and type of equipment for which service is to be provided; and,

- compliance with provisions of 13.4, 13.5 and 13.6

13.2.3 The service supplier is to demonstrate having a documented and certified quality system complying with the most current version of ISO 9000 series.

13.2.4 In cases where an equipment manufacturer is no longer in business or no longer provides technical support, Service Suppliers may be approved for the equipment on the basis of prior approval for the equipment and/or long term experience and demonstrated expertise as an authorized service provider.

13.3 Certification of Personnel

Personnel are to be certified in accordance with a recognized national, international or industry standard as applicable or an equipment manufacturer's established certification program. Certification of personnel is to comply with following provisions:

13.3.1 Service Suppliers' personnel are to be certified by the manufacturer or the service supplier for each make and type of equipment to be worked on. Service supplier is permitted to certify its own personnel only.

13.3.2 The education for initial certification of personnel is to be documented and address, as a minimum:

a) Causes of lifeboat & rescue boat accidents
b) Relevant rules and regulations, including International Conventions
c) Design and construction of lifeboats (including free fall lifeboats), rescue boats and fast rescue boats, including on load release gear and launching appliances
d) Education and practical training in the procedures specified in section 6 of the annex to IMO Resolution MSC.402(96) Corr1 for which certification is sought
e) Detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboats (including free fall lifeboats), rescue boats and fast rescue boats, launching appliances and on load release gear, as applicable;
f) Procedures for issuing a report of service and statement of fitness for purpose based on IMO Resolution MSC.402(96) Corr.1. and
g) Work health and safety issues while conducting activities on-board.

13.3.3 The training for the personnel is to include practical technical training on thorough examination, operational testing, maintenance, repair and overhaul techniques using the equipment for which the personnel are to be certified. The technical training is to include disassembly, reassembly, correct operation and adjustment of the equipment. Classroom training is to be supplemented by field experience in the operations for which certification is sought, under the supervision of a certified person.

13.3.4 Prior to issue of personnel certification, a competency assessment is to be satisfactorily completed, using the equipment for which the personnel are to be certified.

13.3.5 Upon completion of training and competency assessment, a certificate is to be issued, defining the level of qualification and scope of the certification (i.e. makes & types of equipment and specifically state which activities (Annual thorough examination and operational test or 5 yearly thorough examination, overhaul, overload operational tests; repairs) are covered by the certification). At the time of initial certification and at each renewal of certification, the service supplier is to provide documentation to verify personnel's satisfactory completion of education, training and a competency assessment using the equipment for which the personnel are certified. The expiry date is to be clearly written on the certificate and is to be three years from the date of issue. The validity of any certificate would be suspended in the event of any shortfall in performance and revalidated, only after a further competency assessment.

13.3.6 A competency assessment is to be conducted to renew the certification. In cases where refresher training is found necessary a further assessment is to be carried out after completion.

13.4 Reference Documents - The Service Supplier is to have access to the following documents:

a) IMO – Resolution MSC.402(96)/Corr.1 - Requirements for Maintenance, thorough examination, Operational testing, Overhaul and Repair of lifeboats and Rescue boats, Launching Appliances and Release Gear
b) IMO – Resolution A.689(17) Recommendation on testing of life saving appliances and for life saving appliances installed on board on or after 1 July 1999.
c) IMO Resolution MSC.81(70), as amended, revised recommendation on testing of life-saving appliances.
d) Manufacturer's instruction (including updates, amendments and safety notices) for repair work involving disassembly or adjustment of on load release mechanisms and davit winches.
e) Type approval certificate showing any conditions that may be appropriate during the thorough examination, operational testing, maintenance, repair and overhaul of lifeboats, launching appliances and on load release gear.

13.5 Equipment and Facilities - The Service Supplier is to have access to the following:

a) Sufficient tools, and in particular, any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship
b) Access to appropriate parts and accessories as specified by the equipment manufacturer for maintenance and repair
c) For servicing and repair work involving disassembly or adjustment of on load release mechanisms, availability of genuine replacement parts as specified or supplied by the equipment manufacturer.

13.6 Reporting - The report is to conform to the requirements of IMO Resolution MSC.402(96)/ Corr.1. All reports and checklists are to be completed and signed by the Service technician/Supervisor and Company's representative or Master of the Vessel. When thorough examinations, operational testing, overhaul and repair are completed, a statement confirming that the lifeboat arrangements remain fit for purpose should be promptly issued by the Service Supplier that conducted the work. A copy of valid documents of certification and authorization as appropriate are to be included with the statement.

14 Firms engaged in noise level measurements onboard ship

14.1 Extent of Engagement - Sound pressure level measurements onboard ships.

14.2 Training, Qualification and Experience

14.2.1 Supervisor

The supervisor is to have minimum 2 years' experience as an operator in sound pressure level measurements onboard Ship. The responsibility for the execution of the assignment and for the final report is with supervision.

14.3 Operators - The operator is to have the following qualifications:

- Knowledge in the field of sound measurements and handling of Measurement equipment
- Adequate knowledge of the applicable international requirements (SOLAS Regulation II-1/3-12,
- IMO Code on noise levels onboard Ships, MLC 2006)
- At least 1-year experience as an assistant operator before carrying out a measurement
- Training concerning the procedures specified in IMO Code on noise levels onboard Ships
- Be able to document theoretical and practical training onboard in using Sound level meter.

14.4 Equipment

14.4.1 Sound level meters

Measurement of sound pressure levels is to be carried out using precision integrating sound Level meters. Such meters are to be manufactured to IEC 61672-1(2002-05) type/class [1] standard as applicable, or to an equivalent standard acceptable to the Administration.

[1] Recommendation for sound level meters.

14.4.2 Octave filter set

When used alone, or in conjunction with a sound level meter, as appropriate, an octave filter set is to conform to IEC 61260 (1995)[2], as amended, or an equivalent standard acceptable to the Administration.

[2] Octave-band and fractional-octave-band filters.

14.4.3 Sound calibrator

Sound calibrators are to comply with the standard IEC 60942 (2003-01) and are to be approved by the manufacturer of the sound level meter used.

14.4.4 Calibration

The edition of the calibration standard is to correspond with the edition of the manufacturing standard for the instruments. Sound calibrator and sound level meters are to be verified at least every two years by a national Standard laboratory or a competent laboratory accredited according to ISO 17025:2017. The calibration of sound calibrators is to be carried out in accordance with IEC 60942 Appendix B, whilst the calibration of sound level meters is to be in accordance with IEC 61672-3. A record with a complete description of the equipment used is to be kept, including a calibration log.

14.4.5 Microphone wind screen

A microphone wind screen is to be used when taking reading outside, e.g. on navigating bridge wings or on deck, and below deck where there is any substantial air movement. The wind screen should not affect the measurement level of similar sounds by more than 0.5dB (A) in “no wind” conditions.

14.5 Procedures and instructions

14.5.1 Documented work procedures are at least to contain information on inspection preparation, selection & identification of sound level measurement locations, Calibration Checks and report preparation.

The supplier is to have documented procedures and instructions to carry out service of the equipment.

14.5.2 The supplier is to have access to the following documents:

- SOLAS 1988, as amended (reg. II-1/3-12)
- Resolution A.468(XII) and IMO Resolution MSC.337(91) code on noise levels on board ships.
- Resolution A.343(IX) Recommendation on methods of measuring noise levels at listening posts.
- IMO MSC.1/Circ.1509 Unified Interpretations of the Code on Noise Levels on Board Ships (Resolution MSC.337(91)), as amended.
- Latest notices/circulars from flag administrations, related to noise level onboard ship.

14.6 Reporting

14.6.1 A noise inspection report is to be made for each ship. The report is to comprise information on the noise levels in the various spaces on board. The report is to show the reading at each specified measuring point. The points are to be marked on a general arrangement plan, or on accommodation drawings attached to the report, or are to otherwise be identified.

The format for noise inspection reports is set out in Appendix 1 of IMO Code on noise levels onboard Ships. The report is to include a copy of the Certificate of Approval.

14.7 Verification

The supplier is to have the Surveyor’s verification of each separate job, documented in the report by his signature.

15 Firms engaged in tightness testing of primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service

15.1 Extent of engagement - Firms carrying out the following:

- Global Vacuum Testing of Primary and Secondary Barriers
- Acoustic Emission (AE) Testing
- Thermographic Testing

15.2 Requirements for firms engaged in global testing of primary and secondary barriers

15.2.1 Testing Procedures – Testing is to be carried out in accordance with cargo containment system designer's procedures as approved by IRS.

15.2.2 Authorization - The supplier is to be authorized by the system designer to carry out the testing.

15.2.3 Equipment – Equipment is to be maintained and calibrated in accordance with recognized national or international industrial standards.

15.2.4 Reporting – The report is to contain the following:

- Date of testing
- Identity of test personnel
- Vacuum decay data for each tank
- Summary of test results

15.3 Requirements for firms engaged in acoustic emission (AE) testing

15.3.1 Testing procedures – The supplier is to have documented procedures based upon recognized national or international industrial standards to perform ultrasonic leak test using AE sensors for the secondary barrier of membrane cargo containment systems. The procedures are to include details of personnel responsibilities and qualification, instrumentation, test preparation, test method, signal processing, evaluation and reporting. *Note: The differential pressure during testing is not to exceed the containment system designer's limitations.*

15.3.2 Supervisor – The responsible supervisor is to be certified to a recognized national or international industrial standard (e.g. Level II, ISO-9712 as amended or SNT-TC-1A as amended) and have one year experience at Level II.

15.3.3 Operators – The operators carrying out the acoustic emission (AE) testing are to be certified to a recognized national or international industrial standard (e.g. Level I, ISO-9712 as amended or SNT-TC-1A as amended) and are to have adequate knowledge of ship structures sufficient to determine sensor placement.

15.3.4 Equipment – Equipment is to be maintained and calibrated in accordance with recognized national or international industrial standards or equipment manufacturer's recommendations.

15.3.5 Evaluation of acoustic emission (AE) testing – Is to be carried out by the supervisor or individuals certified to a recognized national or international industrial standard (e.g. Level II, ISO-9712 as amended or SNT-TC-1A as amended) and have one year experience at Level II.

15.3.6 Reporting – The report is to contain the following:

- Date of testing
- Supervisor and operator(s) certifications

- Description of time and pressure of each cycle of test
- List and sketch detailing location of possible defects

15.4 Requirements for firms engaged in thermographic testing

15.4.1 Testing Procedures – Testing is to be carried out in accordance with the cargo containment system designer's procedures as approved by the society.

15.4.2 Authorization - The supplier is to be authorized by the system designer to carry out the testing.

15.4.3 Supervisor – The responsible supervisor is to be certified to a recognized national or international industrial standard (e.g. Level II, ISO-9712 as amended or SNT-TC-1A as amended) with additional certification in infrared/ thermal testing. SNT-TC-1A certified personnel are to provide evidence that training on level II or above has been administered by an independent body centrally certified to ASNT or a comparable nationally recognized certification scheme.

15.4.4 Operators – The operators carrying out the imaging are to be certified to a recognized national or international industrial standard (e.g. Level I, ISO-9712 as amended or SNT-TC- 1A as amended) with additional certification in infrared/thermal testing and are to have adequate knowledge of ship structures sufficient to determine position for each identified image, and of the containment system to understand the basis of the testing. SNT-TC-1A certified personnel are to provide evidence that training on level II or above has been administered by an independent body centrally certified to ASNT or a comparable nationally recognized certification scheme.

15.4.5 Equipment – Thermal cameras and sensors are to be in accordance with the system designer's procedures with regards to sensitivity, accuracy and resolution. Equipment are to be in accordance with recognized standard (IEC, etc.) with regards their safety characteristics for the use in hazardous areas (in gas explosive atmosphere), maintained and calibrated in accordance with the maker's recommendations.

15.4.6 Evaluation of thermographic images – Is to be carried out by the supervisor or individuals certified to a recognized national or international industrial standard (e.g. Level II, ISO-9712 as amended or SNT-TC-1A as amended) with additional certification in infrared/thermal testing. SNT-TC-1A certified personnel are to provide evidence that training on level II or above has been administered by an independent body centrally certified to ASNT or a comparable nationally recognized certification scheme.

15.4.7 Reporting – The report is to contain the following:

- Date of testing
- Supervisor and operator(s) certifications
- Differential pressures of all phases
- List and sketch detailing location of thermal indications
- Thermographic images of all phases of testing for thermal indications
- Evaluation of thermal images indicating possible leaks.

16. Firms engaged in visual and/ or sampling checks for preparation of Inventory of Hazardous Materials (IHM)

16.1 Extent of Engagement - Visual/ sampling checks and testing for hazardous materials onboard ships, including advice on numbers and locations of samples and preparation of reports on the quantities, locations and estimates of these materials.

16.2 Extent of Approval

16.2.1 The firm is to demonstrate that it has the competence and control needed to undertake the development of IHM. The hazardous materials for which the firm is approved are to be clearly specified.

16.2.2 The firm is to provide evidence of all the necessary training, qualifications, licenses or equivalent thereto and the work and safety procedures for visual and/ or sampling checks and the handling of specified hazardous material(s), in accordance with recognized national or international standards or the equivalent thereto, and other associated work practices as applicable.

16.2.3 Visual and/ or sampling is to be executed by personnel having professional knowledge as required and trained and equipped in particular with regards to the evaluation and sampling of hazardous materials as listed below:

Appendix 1 (of Hong Kong convention)

- Asbestos;
- Polychlorinated biphenyls (PCB);
- Ozone depleting substances; and
- Anti-fouling systems containing organotin compounds as a biocide.

Appendix 2 (of Hong Kong convention)

- Cadmium and Cadmium Compounds;
- Hexavalent Chromium and Hexavalent Chromium Compounds;
- Lead and Lead Compounds;
- Mercury and Mercury Compounds;
- Polybrominated Biphenyl (PBBs);
- Polybrominated Diphenyl Ethers (PBDEs);
- Polychlorinated Naphthalenes (more than 3 chlorine atoms);
- Radioactive Substances;
- Certain Short Chain Chlorinated Paraffins (Alkanes, C10-C13, chloro).

Annexure 1 of EU Ship Recycling Regulation

- Perfluorooctane sulfonic acid (PFOS)

Annexure 2 of EU Ship Recycling Regulation

- Brominated Flame Retardant (HBCDD)

16.3 The firm is required to have documented work and safety procedure for executing work which is to contain at least the following information:

- information on survey preparation
- safety procedures relevant to the hazards
- selection and identification of visual and/or sampling check locations
- material preparation
- sample removal
- reinstatement of safe conditions for the material once the sample is taken
- sample storage, identification and transport requirements; and
- report preparation and content.

Firms are to have professional knowledge of ship structures, equipment, hazardous materials and material used for ship structures and equipment, taking of samples handling of such materials.

16.4 The firm is to have access to the following documents:

(i)Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships,2009, (HKC)
(ii)IMO Res. MEPC.269(68) - 2015 Guidelines for the Development of the Inventory of Hazardous Materials, and
(iii)Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling and amending Regulation (EC) No 1013/2006 and Directive 2009/16/EC – (EUSRR)
(iv)IACS Recommendation 113 - Expert Parties Engaged in Visual and/or Sampling Checks for Preparation of Inventory of Hazardous Materials.
(v)Flag specific requirements, if any

16.5 Laboratory and Equipment

The firm is to have access to appropriate laboratories for testing of samples. The analysis of the samples is to be carried out by suitable laboratories, accredited or certified according to recognized standards. Analysis methods employed by the laboratory are to be in line with the IMO Resolution MEPC.269(68). Recognized National/International testing standard may be adopted for hazardous material for which specific test method is not specified. Specific equipment used on board the ship for the purpose of sampling checks are to be duly calibrated and/or certified according to recognized standards.

16.6 Reporting – The firm is to document each job by including signatures of designated responsible personnel in the reports.

17 Firms engaged in magnetic compass inspections and adjustments

17.1 Extent of engagement - Inspection of magnetic compass, drawing up of deviation tables and making adjustments if required.

17.2 Personnel are required to possess professional knowledge of the following:

- Compass design and general principles.
- Types of correctors used in ships
- Compass compensations
- Methods of taking a bearing / position fixes
- Analyses of a ships deviation book
- Fields of magnets, terrestrial magnetism, ships magnetism, their varying strengths and the effects on deviation in compasses.
- Checking accuracy of instruments used for adjusting compasses

17.3 Supervisors - The supervisor is to have a minimum of 2 years working experience as an inspector involved in the inspection of compasses and the practical work of adjusting compasses on board ships.

17.4 Inspectors - The inspector is to hold a certificate of competency as 'Compass Adjuster' issued by a national administration or equivalent and a minimum 1 year experience with at least 5 on the job trainings.

17.5 Procedures - Service suppliers are to have documented procedures and instructions on how to carry out the inspection and adjustments of the equipment and filling up of deviation record sheets.

17.6 The service supplier is to have access to the following documents

- SOLAS requirements (chapter V regulation 19.2.1).
- Applicable flag state requirements
- Relevant National / international standards (e.g. ISO 25862)

17.7 Equipment - Sufficient and appropriate instruments and tools are to be available for the inspection and adjustment of compasses.

18 Firms engaged in survey using Remote Inspection Techniques (RIT) as an alternative means for close up survey of the structure of ships and mobile offshore units

18.1 Extent of engagement – Close-up Survey of ships' structure and mobile offshore units' structure by remote inspection techniques. For in-water close-up survey of the internal compartments by Remotely Operated Vehicle (ROV), suppliers are also to hold separate approval as a "Firm carrying out an in-water survey on ships and mobile offshore units by diver or Remotely Operated Vehicle (ROV)" (see Annex 1, Section 3).

18.2 Training and qualification of operators – The supplier is responsible for the training and qualification of its operators to undertake the remote inspections. UAV Pilots are to be qualified and licenced in accordance with applicable national requirements.

18.3 Knowledge of the following is to be documented:

- Marine and/or offshore nomenclatures
- The structural configuration of relevant ships types and MOUs, including internal structure
- The remote inspection equipment and its operation
- Survey plans for examination of hull spaces of various configurations, including appropriate flight plans if using a UAV.
- Thickness measurement (TM) and non-destructive test (NDT) in accordance with a recognised National or International Industrial NDT Standard when these are part of the service. Suppliers undertaking TMs are to hold separate approval as a 'Firm engaged in thickness measurements on ships' (see Annex 1, Section 1)

18.4 Training Plan – the supplier is to maintain a documented training plan for personnel. The plan is to include requirements for training in the minimum rule requirements for the structure of relevant ships types and MOUs, the recognition of structural deterioration (including corrosion, buckling, cracking and deteriorated coatings) and use of the reporting system.

18.5 Supervisor – The supervisor is to be certified according to the recognized national requirements or an equivalent industrial standard and is to have a minimum of two years' experience in the inspection of ship's and/or MOU's structure.

18.6 Operators – The operator carrying out the inspection shall certified according to the recognized national requirements or an equivalent industrial standard and have had at least one year's experience as an assistant carrying out inspections of ship's and/or MOU's structure (including participation in a minimum of five different assignments). The operators of those RIT which require, according to the international and national legislations, to be licensed for their use shall hold valid documentation issued by the appropriate Bodies (e.g. UAV Pilots are to be qualified and licenced in accordance with applicable national requirements).

18.7 Equipment – The following are to be available:

- Remotely operated platform with data capture devices capable of operation within an enclosed space.
- Means of powering the platforms with sufficient capacity to complete the required inspections, including spare batteries if applicable.
- Data collection devices which may include cameras capable of capturing in high definition both video images and still images.
- Illumination equipment.
- High definition display screen with live high definition feed from inspection cameras (When this is part of the RIT).
- Means of communication.
- Data recording devices, as applicable.
- Equipment for carrying out thickness gauging and/or non-destructive testing, as relevant to the work to be performed (when this is part of the service).

18.8 Procedures and guidelines – The supplier is to have documented operational procedures and guidelines for how to plan, carry out and report inspections; how to handle/operate the equipment; collection and storage of data. These shall include:

- Requirements for preparation of inspection plans when UAV are part of the equipment
- flight plans are to be included
- Operation of the remotely operated platforms
- Operation of lighting
- Calibration of the data collection equipment
- Operation of the data collection equipment
- Two-way communication between the operator, platform, Surveyor, other personnel such as support staff and ships officers and crew.
- Guidance of the operator to provide complete coverage of the structure to be inspected.
- Guidance for the maintenance of the remotely operated platforms, data capture and storage devices and display screens, as applicable.
- Requirements for the collection and validation of data.
- If data is to be stored, then requirements for location attribution (geo-tagging), validation and storage of data.
- Requirements for the reporting of inspections, including the recording of damages and defects found during inspection and repair work.

18.9 Documentation and records - The supplier is to maintain the following:

- Records of training.
- Operator statutory and regulatory certificates and licences.
- Equipment register for UAVs, Robots, data collection devices, data analysis devices and any associated equipment necessary to perform inspections.
- Equipment maintenance manuals and records / logbook.
- Records of calibration.
- UAV / Robot operation logbook.

18.10 Verification – The supplier is to have the Surveyor’s verification of each separate job, documented in the report by the attending Surveyor(s) signature.

19 Firms engaged in testing of navigational equipment and systems

19.1 General – Firms would be approved for the ‘functional level’ and not for the ‘manufacturer level’. Approval of the firm by IRS does not include the ability to service the equipment down to the ‘manufacturer level’. If a firm is not able to cover all groups of navigational equipment, the groups of equipment for which the firm is approved would be listed on the issued certificate.

19.2 Extent of engagement - Performing inspection and testing of navigational equipment and systems on board ships for compliance with SOLAS requirements. The service supplier engagements are divided into 5 groups of services as listed under 19.6. It is preferable that the service supplier should seek approval for all of these groups in order to be approved as service supplier for navigational equipment and systems. However, approval of service suppliers according to a limited number of groups may be considered on a case by case basis.

19.3 Reference documents – The service supplier is to have access to the following documents:

- SOLAS Chapter V
- All IMO performance standards relevant for each group of services (see 19.6) as well as all IEC cross-product standards (IEC 60945 and IEC 61162 series).

Note: The service supplier is to be aware of the different interpretations or requirements issued by flag Administrations regarding particular equipment or systems. The service supplier has to have a system in place for updating the validity of such interpretations / requirements.

19.4 Personnel - The service supplier is to provide evidence that the person carrying out the inspection has education from a technical school (a minimum two years' programme of engineering or physical science) or from a nautical institution with relevant seagoing experience as a certified ship's officer. Personnel are to be trained in testing navigational equipment and systems, preferably by the manufacturer of the equipment. Personnel are also to have passed training concerning initial, annual, periodical and renewal surveys and have proficiency in the English language commensurate with the work. Personnel testing colour calibration on ECDIS are to, in addition, have a documented Ishihara colour vision deficiency test or equivalent and have colour vision not worse than would be required for seagoing service as an Officer.

19.5 Procedures and Instructions - The supplier is to have documented procedures and instructions for carrying out the testing and examination of navigational equipment and systems. Such procedures and instructions are to ensure that the level of performance tests is in compliance with the relevant technical standards. The procedures are to cover all types of equipment within the relevant group for which approval is sought. Dedicated checklists with appropriate pass criteria for each test / inspection are to be available.

19.6 Equipment/ Publications - The service supplier is to, as a minimum, have the applicable publications for the different groups of services (See Table 19.6). The supplier is to have the major and auxiliary equipment (e.g. multi meter, earth fault finder, NMEA logger, AIS test set, sound generator, sound level meter, etc.) required for correctly performing the testing. A record of the test equipment used is to be kept. The record is to contain information on manufacturer and type of equipment, and a log of maintenance and calibrations.

Table 19.6: Applicable Publications for the different groups of Services		
Groups	Systems	Publications
GROUP 1	Heading information systems incl. bearing devices	IMO A.382(X) - Magnetic compass
		IMO A.424(XI) - Gyro compass
		IMO A.821(19) - Gyro compass for HSC
		IMO MSC.86(70), Annex 2 - TMHD (fitted before 1 July 2002)
		IMO MSC.116(73) – THD
		IMO MSC.166(78) - TMHD
	Rate of turn indicators	IMO A.526(13) - R.O.T.I.
GROUP 2	Speed and distance measuring equipment (SDME)	IMO A.478(XII) - SDME (fitted before 1 January 1997)
		IMO A.824(19) - SDME (fitted before 1 July 2002)
		IMO MSC.96(72) - SDME
		IMO MSC.334(90) - SDME
	Echo sounding equipment	IMO A.224(VII) - Echo sounder (fitted before 1 January 2001)
		IMO MSC.74(69), Annex 4 - Echo sounder
GROUP 3	Positioning Systems	IMO A.815(19) - World-wide Radio navigation System
		IMO A.529(13) - Accuracy Standards for Navigation
		IMO A.818(19) - Loran-C / Chayka
		IMO A.819(19) - GPS (fitted before 1 July 2003)
		IMO MSC.112(73) - GPS
		IMO MSC.53(66) - GLONASS (fitted before 1 July 2003)
		IMO MSC.113(73) - GLONASS
		IMO MSC.74(69), Annex 1 - GPS / GLONASS (fitted before 1 July 2003)
		IMO MSC.115(73) - GPS / GLONASS
		IMO MSC.114(73) - DGPS / DGLONASS
		IMO MSC.233(82)-GALILEO
		IMO MSC.379(93)-BDS
		IMO MSC.401(95) and IMO MSC.432(98)-Multi-system
		IMO MSC.449(99) and IMO MSC.452(99)-IRNSS
	Radar systems incl. plotting aids	IMO A.222(VII) - Radar (fitted before 1 September 1984)
		IMO A.477(XII) - Radar (fitted before 1 July 1999)
		IMO MSC 64(67), Annex 4 - Radar
		IMO A.278(VIII) - Symbols for Radar
		IMO A.422(XI) - ARPA (fitted before 1 January 1997)
		IMO A.823(19) - ARPA
		IMO A.820(19) - Radar HSC
		IMO MSC.192(79)-Radar

	ECDIS, charts and nautical publications	Updated list of available charts and ENC (http://catalogue.ukho.gov.uk/home.asp; http://www.hidrografico.pt/website/ic_enc/viewer.htm) Relevant IMO SLS.14 Circulars related Nautical charts and publications.
		IMO A.817(19) – ECDIS
		IMO MSC.64(67), Annex 5 - ECDIS back-up
		IMO MSC.86(70), Annex 4 - ECDIS RCDS mode
		IMO MSC.232(82)-ECDIS(fitted after 1 January 2009)
	AIS	IMO MSC.74(69), Annex 3 - AIS
		IMO SN Circ.217 - Presentation of AIS
GROUP 4	Alarm Systems	IMO MSC.128(75) - BNWAS
		IACS BDEAP (SC181)
		IMO MSC.282(86) – BNWAS
	Indicators	(IMO requirements for rudder, propeller, thrust, pitch and operational mode indicators requirements not yet available)
	Sound reception systems	IMO MSC.86(70), Annex 1
GROUP 5	Heading / Track control systems (HCS / TCS)	IMO A.342(IX) - HCS (fitted before 1 January 1999)
		IMO MSC.64(67), Annex 3 - HCS
		IMO A.822(19) - HCS for HSC
		IMO MSC.74(69), Annex 2 – TCS
	Integrated Bridge System (IBS)	IMO MSC.64(67), Annex 1 – IBS
	Integrated Navigational System (INS)	IMO MSC.86(70), Annex 3 - INS

19.7 Reporting - The service supplier is to confirm by means of a documented report that the equipment has been tested satisfactorily.

19.8 Review and Verification – The surveyor is to be on-board to the extent necessary to control the process. The surveyor is to confirm that no further testing is required or specify the additional testing. The surveyor is to verify the report of the service supplier and fill up the appropriate records suitably.

20. Firms engaged in watertight cable transit seal systems inspection on ships and mobile offshore units

20.1 Extent of Engagement

20.1.1 Inspection of the watertight cable transit seal systems for compliance with the relevant approval certificates and product installation manuals, (types of penetrating cables, dimensions, fill ratio and insulation details, as applicable).

20.2 Extent of Approval

20.2.1 This sub-section applies equally to manufacturers or shipyards when they are acting as Service Suppliers.

20.2.2 Any Service Supplier engaged in the inspections of watertight cable transit seal systems is to be qualified in these inspections for each make and type of equipment for which they provide the inspection, and provide manufacturers documentary evidence that they have been so authorized or they are certified in accordance with an established system for training and authorization. Such qualification is to include, as a minimum:

- employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program is to be based on 20.3 for each make and type of equipment for which inspection is to be provided, and

- compliance with provisions of 20.4, 20.5 and 20.6.

20.2.3 In cases where an equipment manufacturer is no longer in business or no longer provides technical support, Service Suppliers may be authorised for the equipment on the basis of prior authorization for the equipment and/or long term experience and demonstrated expertise as an authorized service provider.

20.3 Qualifications and Training of Personnel

20.3.1 Personnel for the work specified in 20.1.1 are to be trained and qualified in the inspection for which they are authorised, for each make and type of equipment for which they provide the inspection.

20.3.2 The education for initial certification of personnel is to be documented and addressed, as a minimum:

- Procedures and instructions for the inspection of the watertight cable transit seal systems
- Common problems found with the initial installation and in-service inspections of watertight cable transit seal systems
- Relevant rules and regulations, including International Conventions
- Procedures for reporting on initial installation and in-service inspections of watertight cable transit seal systems in the cable transit seal systems register.

20.3.3 The education and training for the personnel is to include practical technical training on actual inspection using the watertight cable transit seal systems for which the personnel are to be certified. The technical training is to include disassembly, reassembly and adjustment of the equipment. Classroom training is to be supplemented by field experience in the inspections for which certification is sought, under the supervision of an experienced senior certified person.

20.3.4 At the time of initial certification and at each renewal of certification, the service supplier is to provide documentation to verify personnel's satisfactory completion of a competency assessment using the equipment for which the personnel are certified.

20.3.5 The Service Supplier will be required to undergo refresher training as appropriate to renew the certification.

20.4 Reference Documents

20.4.1 The Service Supplier is to have access to the following documents:

- Manufacturer's servicing manuals, servicing bulletins, instructions and training manuals as appropriate.
- Type approval certificate showing any conditions that may be appropriate during the installation or maintenance of the watertight cable transit seal system.

20.5 Equipment and Facilities

20.5.1 The Service Supplier is to have access to the following:

- Sufficient tools, and in particular any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship.

20.6 Reporting

20.6.1 On completion of inspection, the Service Supplier will issue a report confirming the condition of the watertight cable transit seal system. They will also record the results of their inspection in the cable transit seal system register.

21. Firms engaged in commissioning testing of Ballast Water Management Systems (BWMS)

21.1 Extent of engagement

21.1.1 Sampling and analysis of ballast water and verification of the self-monitoring equipment during commissioning testing of Ballast Water Management Systems (BWMS).

21.2 Procedure

21.2.1 Service suppliers are to have documented procedures including:

- Procedures for sampling collection and handling, analysis, assessment of BWMS correct operations, documenting, and reporting. The procedures are to outline how the ballast water sampling and analysis is conducted with respect to each size class of organisms;

- Operating procedures for the ballast water test equipment specified including calibration, adjustment and maintenance

21.2.2 Service suppliers are to be familiar with the BWMS operation including features and limits of each treatment technology, and self-monitoring parameters.

21.2.3 Service Suppliers are to be independent of the BWMS manufacturer or supplier including shipyards.

21.3 Operators

21.3.1 Service Suppliers are expected to be able to perform both the biological sampling and assessment of self-monitoring parameters and has responsibility for documenting that the requirements applicable to the operator are complied with. Therefore, service suppliers who conduct commissioning testing are to meet the following requirements:

(a) Common requirements

- demonstrate knowledge in the use of different ballast water testing equipment for the purpose of assessing biological efficacy;

- have documented evidence of sufficient engineering and biological knowledge to conduct the commissioning testing;

- have knowledge of IMO BWM.2/Circ.70/Rev.1, - 'Guidance for the Commissioning Testing of Ballast Water Management Systems', IACS Recommendation 180 ‘Recommendation for conducting commissioning testing of Ballast Water Management Systems’ and IMO BWM.2/Circ.42/Rev.2 - 'Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)', as may be amended;

(b) Requirements for operators performing sampling and analysis of ballast water

- be trained in the proper use of portable indicative analysis equipment. Review of training records and/or interviews should be conducted to confirm the equipment will be properly used during testing;

- be trained in the proper use of detailed analysis methods and equipment in case the Service Supplier offers detailed analysis. Review of training records and/or interviews should be conducted to confirm the equipment will be properly used during testing;

- be familiar with and understand the design concepts of the Guidelines G2 sampling devices installed on the vessel’s water ballast system. Personnel are to understand the need to maintain the G2 sampling devices clean and free of contaminants and

the importance of controlling the ballast water sample flow rates from the G2 device (to avoid organism mortality in the sample);

- be familiar with the technologies utilized by the indicative sampling equipment and understand water quality issues that are both conducive to successful use of the equipment and circumstances that could challenge the use of the equipment;

- be trained in the proper disposal procedures for water samples following testing.

(c) Requirements for operators performing verification of self-monitoring equipment

- have knowledge of the system design limitations of the BWMS (as stated in the BWMS type approval certificate) and knowledge of the BWMS self-monitoring parameters, such as flow rate, pressure, TRO concentration, UV transmittance/intensity, etc. and how the BWMS notifies the operator in case it is operated outside its system design limitations. This knowledge is relevant for evaluating whether the self-monitoring equipment of the BWMS indicates correct operation of the BWMS. In case Service Supplier is not present during ballasting operations, the Service Supplier is to have knowledge of how to access the BWMS log to evaluate that the BWMS operated correctly during ballasting operations;

- have the procedures and knowledge to be able to assess the applicable self-monitoring parameters (e.g., flow rate, pressure, TRO, UV intensity, etc.) of the BWMS, taking into account the system design limitations of the BWMS;

21.4 Equipment and Facilities

21.4.1 Equipment, procedures and methods for detailed analysis, where applicable, are to be in accordance with relevant International standard and/or accepted Industry standards.

21.4.2 Testing is to be conducted using indicative analysis equipment accepted by IRS. Information and reference to the acceptance documents for the equipment used is to be submitted to the IRS in the report which includes the results from the commissioning test as per IMO BWM.2/Circ.70/Rev.1, as may be amended. In case the indicative analysis equipment used has not been previously accepted by IRS, the following information is to be submitted:

- Equipment information - type, model, technology used, evidence of calibration, detection range, organism type/size classes that can be analyzed.
- Results of tests conducted for the verification of accuracy, detection range and repeatability.
- Certificate of standards, if available.

21.4.3 The OEM instruction manuals are to be available for indicative analysis equipment planned to be used. The manuals are to include, at least, clear guidance for the proper storage, handling, operation, maintenance, repair, and calibration.

Note: Each Service Supplier applicant will make available to the Surveyor, their confidential internal procedures for conducting the indicative testing. Not all the equipment listed in the references may be used. Instruction manuals are to be available for all equipment planned to be used. The Service Supplier will need to use specialty devices (e.g., sieves, screens, etc.) to separate the different organism sizes classes (i.e., ≥ 10 µm to < 50 µm, and ≥ 50 µm, and indicator microbes) to support analysis of each size class.

21.4.4 Equipment used for the analysis of other physical-chemical water parameters is to be suitable for the intended use.

21.4.5 Indicative analysis equipment is to be properly stored or transported to avoid damage and disturbance to calibrations, etc. when transporting from the Service Suppliers' facilities to the vessels.

21.5 Sampling and Analysis

21.5.1 Service Suppliers are to follow relevant guidelines on sampling of ballast water. A standard operating procedure is to be defined for sampling of uptake water. Discharge sampling is to comply with the IMO's 'Guidelines for Ballast Water Sampling (G2)'.

21.5.2 The representative samples are to be analyzed as a minimum for the two size classes of organisms, namely ≥ 50 µm and ≥ 10 µm to < 50 µm, specified in IMO Circular BWM.2/ Circ.70/Rev.1 - Guidance for the Commissioning Testing of Ballast Water Management Systems using indicative analysis methods. Detailed analysis of all organism type/ size classes or combination of detail and indicative analysis can also be performed.

21.5.3 Service Suppliers are to maintain a record of the following:

- Operation of the BWMS during test period, including any recorded data or operator observations associated with the performance deviations, alarms or abnormal/unexpected operations
- Applicable self-monitoring parameters.

21.5.4 In case the commissioning testing requires the Service Supplier's personnel to work in hazardous areas (e.g., pump room for tankers, etc.), the Service Supplier is to have equipment certified for use in such spaces.

21.6 Reporting

21.6.1 Service Suppliers are to provide reports detailing the results of sampling and analysis of ballast water and assessment of self-monitoring parameters during commissioning testing. The format is to be acceptable to IRS. The report, as a minimum, is to contain the following:

- Manufacturer's name
- Model name
- BWMS Technology limiting operating conditions and system design limitations
- BWMS treatment mode of operation, e.g., high power, low power, single pass, IMO mode, USCG Mode, etc

- Treatment rated capacity (TRC) in [m^3/hr]
- Relevant performance parameters (e.g. TRO, UV dose, UVI, flow rate or other relevant performance parameter)
- Alarms developed during operation
- Type Approval issued by and Certificate No.
- Results of Sample analysis
- Pump and ballast tanks used for the commissioning test, including the flow rates and volumes of the ballasting and deballasting operations
- Comments/ options: Filter and other major components, process measurements.

21.7 Reference Documents

21.7.1 The Service Supplier is to have access to the following documents, as may be amended:

- IMO Resolution MEPC.300(72) ― Code for Approval of Ballast Water Management Systems (BWMS Code)
- IMO Resolution MEPC.173(58) ― Guidelines for Ballast Water Sampling (G2)
- IMO Circular BWM.2/Circ.42/Rev. 2 ― Guidance on Ballast Water Sampling and Analysis for Trial Use in accordance with the BWM Convention and Guidelines (G2)
- IMO Circular BWM.2/Circ.70/Rev.1 - Guidance for the Commissioning Testing of Ballast Water Management Systems
- IMO Circular BWM.2/Circ.61 - Guidance on Methodologies that may be used for Enumerating Viable Organisms for Type Approval of Ballast Water Management Systems
- IMO Circular BWM.2/Circ.67 - Data gathering and analysis plan for the experience-building phase associated with the BWM Convention
- IMO Circular BWM.2/Circ.69 - Guidance on System Design Limitations of Ballast Water Management Systems and their Monitoring
- IMO Resolution A. 1156(32) – Survey Guidelines under the Harmonized System of Survey and Certifications (HSSC), as amended (for BWMS that were Type Approved to the 2016 G8).
- IACS Recommendation 180 ‘Recommendation for conducting commissioning testing of Ballast Water Management Systems’

End of Classification Note