財團法人驗船中心
CR CLASSIFICATION SOCIETY

GUIDELINES FOR APPROVAL OF SERVICE SUPPLIERS

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GUIDELINES FOR APPROVAL OF SERVICE SUPPLIERS

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CHAPTER 1 GENERAL REQUIREMENTS

1.1 General

1.1.1 The Guidelines for Approval of Service Suppliers (hereinafter referred to as the Guidelines) apply to assessment and approval of service suppliers who offer services such as measurements, tests or maintenance of safety systems and equipment, the results of which are used by the Surveyor of the Society (hereinafter referred to as the Surveyor) in making decisions affecting classification or statutory certification and services.

1.1.2 The objective of the Guidelines is to confirm that if a service supplier has capacity to evaluate that the products have such quality as required by the Rules for the Construction and Classifiaction of Steel Ships and other applicable rules published by CR Classification Society (hereinafter referred to as the Society).

1.1.3 Firms applying for approval are to comply with both general requirements given in Chapter 1 and specific requirements given in Chapter 2 of the Guidelines.

1.1.4 Firms not listed in Chapter 2 are to comply with Chapter 1 of the Guidelines as well as the requirements which are deemed necessary by the Society.

1.1.5 In case a requirement in the Guidelines is difficult to be met, appropriate measures as an alternative way to comply with the requirement may be permitted by the Society.

1.1.6 Where firms own several servicing stations, each station is to be assessed except for those specified in 1.5.2(d)(v) to 1.5.2(d)(viii).

1.2 Definitions

1.2.1 Manufacturer

Manufacturer means a company that manufactures equipment required to be periodically serviced and/or maintained.

1.2.2 Service supplier

Service supplier means a person or company, not employed by the Society, 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 a mobile offshore drilling unit such as measurements, tests or maintenance of safety systems and equipment, the results of which are used by the Surveyor in making decisions affecting classification or statutory certification and services.

1.2.3 Agent

Agent means a person or company authorised to act for or to represent a manufacturer or approved/recognized service supplier.

1.2.4 Subsidiary

Subsidiary means a company partly or wholly owned by a manufacturer or approved service supplier.

1.2.5 Subcontractor

Subcontractor means a person or company providing services to a manufacturer or approved/recognized service supplier, with a formal contract defining the assumption of the obligations of the service supplier.

1.2.6 Quality system

Quality system means a collection of business processes focused on consistently meeting customer requirements and enhancing their satisfaction. It is aligned with company's purpose and strategic direction. The requirements of quality system are to be refered to 1.5 in the Guidelines.

1.2.7 Quality manual

Quality manual means an official document detailing how its quality management system operates.

1.3 Assessment

To obtain or maintain the approval as a service supplier, the following assessments are to be carried out by the Society, such as initial assessment, renewal assessment, and occasional assessment. In such assessments, quality system is always to be considered to confirm the supplied services with such quality as required. Section 1.5 and 1.6 are also to be refered for the assessments.

1.3.1 Before assessment, all preparations are to be made by the service supplier, and the management representative or a person familiar with the quality system for the service supplier is also to be present during the assessment.

1.3.2 When necessary preparations have not been made or no responsible person specified in 1.3.1 above is present during the assessment, the Society may suspend the assessment.

1.3.3 If corrective actions are considered necessary by the Society, the service supplier is to take corrective actions according to assessment record specified in 1.4.3 from the Society.

1.3.4 Initial assessment

The service supplier is to be assessed by the Society based on the results of document examination and on-site examination as follows:

(a) Document examination

The service supplier intending to be approved is to submit one copy for each of the following documents to the Society for examination:

(i) outline of the company;
(e.g., location, history, organisation, number of employees, main services and records thereof, and management structure, including subsidiaries to be included in the approval)

(ii) list of nominated agents, subsidiaries and subcontractors;

(iii) experience of the company in the specific service area;
(e.g., including outline of service and description of service conditions)

(iv) for categories of service suppliers that require authorization from manufacturers, manufacturer's documentary evidence that the service supplier has been authorized or licensed to service the particular makes and models of equipment for which approval is sought is to be provided;

(v) documenting information of operators, technicians, inspectors and supervisors;
(e.g., list of name, qualifications, training and experience within the relevant service area, including training programs)

(vi) description of equipment used for the particular service for which approval is sought;

(vii) a guide for operators of such equipment needed to perform the service being provided;

(viii) check lists and record formats for recording results of the services;

(ix) quality manual and its supplementary documents or documented procedures (e.g., training procedures, work procedures, control procedures of measuring equipment) as specified in 1.5.1;

(x) documented procedures for communication with the crew prior to commencing work to ensure that it is safe to decommission the equipment being maintained, and to provide a safe system of work in place;

(xi) evidence of approval or acceptance by other bodies, if any;

(xii) information on other activities which may present a conflict of interest;

(xiii) record of customer claims and of corrective actions requested by certification bodies; and

(xiv) other documents deemed necessary by the Society.

(b) On-site examination

When the documents submitted to the Society for the document examination are deemed satisfactory, an on-site examination is to be carried out as follows:

(i) The service supplier is to be assessed to ascertain that it is duly organised and managed in accordance with the submitted documents as specified in 1.3.4(a) and quality system as specified in 1.5.

(ii) It is to be verified that the service supplier is capable of conducting the service correctly and effectively for which approval is sought.

1.3.5 Renewal assessment

Renewal assessment is to be made in accordance with the requirements of initial assessment specified in 1.3.4 before the expiry date of the initial or last renewal approval. At least 3 months before the expiry date, the service supplier is to apply to the Society for renewal of the certificate of approval.

1.3.6 Occasional assessment

In cases where an approved service supplier intends to alter to the details of its approval at a time other than during a rewnewal assessment, the service supplier is to inform the Society of its intent in a timely manner so that the Society can carry out an occasional assessment if it deems necessary. All necessary items in the occasional assessment need to be confirmed by the Society. Besides, the Society may, at its own discretion, require periodical audits in the validity period of the certificate.

1.4 Approval

1.4.1 When the result of an initial assessment or a renewal assessment is satisfactory, the Society may issue a certificate of approval stating that the service supplier's service operation system has been found satisfactory and that the results of services performed in accordance with that system may be accepted and utilised by the Surveyor in making decisions affecting classification or statutory certification, as relevant. The certificate is to 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.

1.4.2 Validity of the certificate

(a) For all service suppliers, the valid term is 3 years from date of initial or renewal approval.

(b) Agents or subsidiaries

The valid term of approval of agents or subsidiaries certified according to 1.5.2(d)(v) to 1.5.2(d)(viii) is until the expiry date of the parent company's approval.

1.4.3 Issuance of assessment record

As a result of an assessment, an assessment record stating corrective action requests on the quality sytem or others, is to be issued to the service supplier.

1.4.4 Cancellation of approval

(a) The Society reserves the right to cancel the approval in the following cases:
  (i) The service was improperly carried out, or the results were improperly reported.
  (ii) Deficiencies are found by the Surveyor in the approval service operating system of the service supplier, and appropriate corrective actions are not taken.
  (iii) Alterations have been made to the company's quality system relevant to the service supplier certificates, without documented notification to the Society.
  (iv) One of the assessments specified in 1.3.5 to 1.3.~~7~~6 is not carried out in time.
  (v) Wilful acts or omissions are ascertained.
  (vi) Any deliberate misrepresentation has been made by the service supplier.

(b) The service supplier whose approval has been cancelled by the Society, may apply for re-approval provided it has corrected the non-conformities which resulted in cancellation, and the Society is able to confirm that the service supplier has effectively implemented the corrective actions.

(c) Expiration or cancellation of the service supplier's parent company approval automatically invalidates approval of all agents and subsidiaries certified according to 1.5.2(d)(v) to 1.5.2(d)(viii).

1.5 Quality System

1.5.1 To maintain quality required to the services to be provided, each service supplier is to have a documented quality system complying with the most recent version of the ISO 9000 series and at least covering as follows:

(a) code of conduct for the relevant activity;

(b) maintenance and calibration of equipment;

(c) training programs for operators, technicians, inspectors and supervisors;

(d) supervision and verification to ensure compliance with operational procedures;

(e) recording and reporting of information relevant to the service;

(f) quality management of subsidiaries, agents and subcontractors;

(g) job preparation; and

(h) periodic review of work procedures, complaints, corrective actions, and issuance, maintenance and control of documents.

1.5.2 The service supplier's management is to establish and maintain a documented quality system that is in conformity with the following requirements:

(a) Training procedures

(i) The service supplier is responsible for the qualifications and training of their personnel to a recognized national, international or industry standards as applicable. This includes establishment and maintenance of documented procedures for implementing the training.

(ii) Where such standards do not exist, the service supplier is to define the standards for training and qualifications of their personnel relevant to the services which the service supplier intending to seek for approval.

(iii) The service supplier's management is to establish and maintain documented information of operators, technicians, inspectors and supervisors.
(e.g. list of name, qualifications, training and experience within the relevant service area, including training programs)

(b) Documented procedures to control, calibrate and maintain for measuring and testing equipment

The service supplier's management is to establish and maintain a documented procedure to control, calibrate and maintain the equipment and facilities specified in 1.6.2.

(c) Work procedures

(i) The service supplier's management is to establish and maitain documented work procedures for all services to be provided.

(ii) Documented procedures and instructions are to be available for the recording of damage and defects found during surveys, servicing and repair work. This documentation is to be made available upon request.

(d) Subcontracting control

(i) In case where any parts of the services provided are sub-contracted, the service supplier' s management is to examine and evaluate the subcontractor's quality system and works to verify that the subcontractor has enough capability to provide the subcontracted services with the required quality and submit information of agreements and arrangements to the Society.

(ii) Ordering documents are to contain data clearly necessary for the subcontracting.

(iii) The service supplier's management is to establish and maintain a documented procedure for implementing the subcontracting control specified in 1.5.2(d)(i) and 1.5.2(d)(ii) above.

(iv) Subcontractors providing anything other than subcontracted personnel or equipment are also to meet the requirements of the Guidelines.

(v) If a manufacturer of equipment (and/or its service supplier) applies to the Society 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 most current version of ISO 9000 series.

(vi) The quality system specified in 1.5.2(d)(v) is to contain effective controls of the manufaturer's (and/or service supplier's) agents and/or subsidiaries. the nominated agents/subsidiaries are to also have in place an equally effective quality system complying with the most curent version of ISO 9000 series.

(vii) The approvals of the nominated agents/subsidiaries specified in 1.5.2(d)(v) to 1.5.2(d)(vi) are to be based upon an evaluation of the quality system implemented by the parent company against the most current version of ISO 9000 series.

(viii) The Society may require follow-up assessments on such agents/subsidiaries against the most current version of ISO 9000 series to conform adherence to the quality system.

(e) Quality verification measures

(i) The service supplier's management is to verify quality of the services provided.

(ii) The service supplier's management is to perform the internal quality audits periodically. As to the results of the audits, the following (1) to (3) are to be ensured:

(1) The audit results are to be reported to the service supplier's management and the sections audited.

(2) Based on the audit results, the service supplier's management is to review the quality system when necessary.

(3) The audit results and the records of the management review are all to be maintained.

(iii) The service supplier's management is to establish and maintain a documented procedure for implementing the verification specfied in 1.5.2(e)(i) and the internal quality audit specified in 1.5.2(e)(ii) above.

(f) Documented procedures, etc. for reporting to the Society

(i) The service supplier's management is to establish and maintain a documented procedure for reporting the results of the services provided to the Society in accordance with 1.6.3(b).

(ii) Documented procedures and instructions are to be available for the recording of damage and defects found during surveys, servicing and repair work.

(g) Relationship between service suppliers and equipment manufacturers

(i) A company which works as a service station for manufacturer(s) of equipment and as a service supplier in this field, is to be assessed by the manufaturer(s) and nominated as their agent.

(ii) The manufacturer is to ensure that appropriate instruction manuals, material etc. are available for agent as well as proper training for the agent's technicians.

(iii) Such suppliers are to be approved either on a case by case basis, or in accordane with 1.5.2(d)(v) to1.5.2(d)(viii).

1.6 Other Requirements

1.6.1 Personnel

(a) Qualification

(i) The personnel is to have adequate experience and be familiar with the operation of any necessary equipment for the service.

(ii) Operators, technicians, and 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 accecptable.

(iii) The responsible supervisor is to have had a minimunm of two years of experience as an operator, technician, or inspector within the service area for which the service supplier is approved.

(b) Supervision

The suppiler is to supervise all services provided. For a supplier consisting of one person, that person is to meet the requirements of a supervisor.

(c) Personnel records

The service supplier is to keep records of the approved operators/technicians/inspectors. The records are to contain information about age, formal education, training and experience within the relevant service area for which they are approved.

1.6.2 Measuring and testing equipment

(a) Equipment and facilities

The service supplier is to have the necessary equipment and facilities for the service to be provided.

(b) Records

The service supplier is to keep records of the equipment and facilities used for the service to be provided. These records are to contain information on maintainance and calibration.

1.6.3 Verification and reporting

(a) Verification

The service supplier is to verify that the services provided are carried out in accordance with approved procedures.

(b) Reporting

(i) The report is to be prepared in a form accecptable to the Society.

(ii) The report is to detail the results of surveys, measurements, tests, maintainance and/or repairs carried out and is also to comply with 2.1 to 2.16, as appropriate.

(iii) The report is to include a copy of the Certificate of Approval.

CHAPTER 2 SPECIFIC REQUIREMENTS

2.1 Firms Engaged in Thickness Measurements on Ships or Mobile Offshore Units

2.1.1 Application

This section applies to firms engaged in carrying out thickness measurements of the structural members of ships or mobile offshore units. All firms are to be certified as one of the following two categories:

(a) Category I: authorised to carry out thickness measurements on all types and sizes of ships.
Firms in Category I are to be certified according to 2.1.2 to 2.1.6.

(b) Category II: authorised to carry out thickness measurements on all fishing vessels and non-ESP ships less than 500 gross tonnage.
Firms in Category II are to be certified according to 2.1.7.

2.1.2 Document examination:

(a) Training procedures

The documented training procedures specified 1.5.2(a) are to at least include information on ways to acquire knowledge about the following items:

(i) Common hull structures and structural members;

(ii) Midship section shapes of representative ship types;

(iii) Frequent locations of damage and corrosion for representative ship types; and

(iv) the Society's requirements related to thickness measurements.

(b) Work procedures

The documented work procedures specified in 1.5.2(c) are to include information on at least the following items:

(i) Inspection preparation;

(ii) Selection and identification of test locations;

(iii) Surface preparation and protective coating preservation;

(iv) Calibration checks; and

(v) Reporting measurement results in writing and using electronic data as well as obtaining the Surveyor's verification.

2.1.3 Operators and Supervisors

(a) Operators

The operators carrying out the measurements are to be certified to a recognised 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.

(b) Supervisors

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

2.1.4 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.

2.1.5 Demonstration tests

(a) Demonstration tests on actual ships are to be conducted to verify that the thickness measurements specified in the documents submitted to the Society can be carried out.

2.1.6 Reporting to the Society

(a) Verification

The supplier must have the Surveyor's verification of each separate job, documented in the report by the attending Surveyor signature.

(b) Reporting

The report is to be based on the requirements given in 2.1, 2.5, 2.6, 2.7, and 2.9 ~ 2.15 in Part I of the Rules for Steel Ships, as relevant.

2.1.7 For firms in Category II : limited approval of firms locally engaged in ultrasonic thickness measurements of ship's structure

(a) Application

Firms carrying out thickness measurements on all fishing vessels and non-ESP ships less than 500 gross tonnage, may be qualified according to the requirements in this paragraph.

If the company in addition complies with the requirements for firms in Category I, it may carry out thickness measurements onboard all fishing vessels and non-ESP ships less than 500 gross tonnage.

(b) Objective

The objective of this limited approval programme is to ensure that firms engaged in thickness measurements have qualified personnel that are able to measure thicknesses, recognise corroded or pitted areas and understand ship's drawings in addition to having the necessary technical equipment to render professional assistance.

(c) Procedure for approval

(i) The following documents shall be submitted to the Society for review:

(1) Description of company's management structure and manning.

(2) Name of operators and supervisor, documenting training, experience and qualifications.

(3) Description of equipment used including routines for maintenance and calibration.

(4) Aa guide for operators of such equipment.

(ii) Operator

The requirements for the operators are to be in accordance with 2.1.3(a) above.

(iii) Equipment

The requirements of equipment are to be in accordance with 2.1.4 above.

(iv) Work execution

(1) The firm is to attend the planning meeting that is held before each job is started.

(2) Measurements that are not carried out in cooperation with the Society, unless otherwise agreed, will not be accepted. The firm is to inform the owner accordingly.

(3) The operator is to notify the surveyor of any structural deficiencies detected.

(d) Reporting

(i) Measured thicknesses are to be continuously recorded and to be made available for the attending Society's surveyor.

(ii) The operator shall report in a recognised system and may illustrate the result by sketches or on the drawings.

(iii) In addition to the measured values, the original scantlings, the minimum thickness and the substantial corrosion limits, are to be included in the report.

(iv) Final reporting are to be presented to the surveyor within 2 weeks after the job is terminated. The firm shall have the surveyor's verification of each separate job, documented in the report by his signature.

(v) The report shall include a copy of the certificate of approval, containing the names of all approved operators.

(e) Certification

Any alteration to the certified service operation system shall immediately be reported to the Society.

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

2.2.1 Application

This section applies to firms engaged in the ultrasonic tightness testing of closing appliances such as hatches, doors etc.

2.2.2 Document examination:

(a) Training procedures

The documented training procedures specified in 1.5.2(a) are to include information on ways to acquire knowledge about the following items:

(i) operation of ultrasonic test equipment;

(ii) the designs, functions and sealing features for each type of closing appliance, such as hatches and doors, etc.;

(iii) theoretical and practical aspects of the onboard operation of ultrasonic test equipment;

(iv) safe onboard work operations; and

(v) the Society's requirements and inspection instructions for the ultrasonic tightness testing of hatches, doors etc, if any.

(b) Work procedures

The documented work procedures specified in 1.5.2(c) are to contain information on at least the following items:

(i) preparation of ultrasonic tightness testing of hatches, doors etc.;

(ii) manuals of the hatches, doors etc. construction for operators;

(iii) adjustment and operation of the ultrasonic test equipment;

(iv) maintenance of the ultrasonic test equipment;

(v) criteria for evaluating test results; and

(vi) reporting test results and obtaining the Surveyor's verification.

2.2.3 Qualifications of operators and supervisors

(a) Operators and supervisors carrying out ultrasonic tightness testing of hatches are to have sufficient knowledge as to the above 2.2.2(a)(i) through (v).

(b) Operators carrying out the ultrasonic tightness testing of closing appliances, such as hatches and doors, etc., are to have the following competence and experience:
(i) Suitable qualifications determined by relevant public organizations or those considered equivalent thereto; and
(ii) Experience operating and maintaining various closing appliances, such as hatches and doors, etc.

(c) Supervisors carrying out the ultrasonic tightness testing of hatches, doors etc. with ultrasonic equipment are to have 2 years or more experience as an operator.

2.2.4 Equipment

(a) Service suppliers are to have equipment for the ultrasonic testing of closing appliances, such as hatches and doors, etc., which complies with the following functional requirements:
(i) The transmitter is to indicate a uniform value at any point in a tested area under the condition in which the closing appliance, such as a hatch, and door, etc. is completely open.
(ii) The measurement sensitivity of the receiver is to be adjustable.
(iii) The receiver is to be provided with an audible signal and a visual readout in decibels.

(b) The ultrasonic test equipment is to be deemed appropriate by the Society for the purpose of detecting leakages in closing appliances such as hatches and doors, etc.

(c) At least once every two years, calibration tests are to be carried out by the manufacturer or laboratories authorized by the manufacturer.

2.2.5 Demonstration tests

(a) Demonstration tests on actual ships are to be conducted in the presence of the Surveyor to verify that suppliers have the appropriate competence to carry out the ultrasonic tightness testing of hatches, doors, etc. specified in the documents submitted to the Society.

(b) In cases where a supplier has been approved by another classification society, a part of or the entire demonstration test may be dispensed with.

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

2.3.1 Application

This section applies to firms engaged In-Water Survey in lieu of a Bottom Survey in dry dock and/or the internal hull survey of compartments filled with water on ships and mobile offshore units by diver or ROV (remotely operated vehicle).

2.3.2 Document examination:

(a) Training procedures

The documented training procedures specified in 1.5.2(a) are to at least include information on ways to acquire knowledge about the following items:

(i) ship underwater structure and appendages (including propeller shafts, propellers, rudders and their bearings, etc.);

(ii) ship terminology in english;

(iii) underwater non-destructive testing in accordance with recognized national or international industrial ndt standards accepted by the Society. (This only applies to firms carrying out In-Water Surveys of ships which also perform non-destructive testing.);

(iv) bearing clearance measurements for rudders and propeller shafts;

(v) underwater video monitoring with TV-monitors on deck, as well as still picture work;

(vi) operation of underwater communication systems;

(vii) other special equipment and tools used for In-Water Surveys;

(viii) the Society's requirements related to In-Water Surveys, if any; and

(ix) Certification as a thickness measurement firm when conducting thickness measurements under water.

(b) Work procedures

The documented work procedures specified in 1.5.2(c) are to include information on at least the following items:

(i) survey preparation;

(ii) guidance to divers along the hull parts to be surveyed;

(iii) two-way communication between divers and the Surveyor;

(iv) video recording and closed circuit television operation;

(v) reporting survey results and obtaining the Surveyor's verification;

(vi) guidance for the operation and maintenance of the ROV, if applicable; and

(vii) Methods and equipment to ensure the ROV operator can determine the ROV location and orientation in relation to the ship/the unit.

2.3.3 Qualifications of diver and supervisor

(a) Divers, diving supervisors, ROV operators and ROV supervisors carrying out In-Water Surveys are to have sufficient knowledge of the above 2.3.2(a)(i) through (viii).

(b) Divers carrying out In-Water Surveys are to have at least 1 year experience and participated in 10 different assignments as an assistant diver.

(c) Diving supervisors are to have at least 2 years of experience as a diver in carrying out In-Water Surveys.

(d) ROV operators carrying out In-Water Surveys are to have at least 1 year experience in carrying out In-Water Surveys by ROV.

(e) ROV supervisors are to have at least 2 years of experience as a ROV operator in carrying out In-Water Surveys.

2.3.4 Equipment

The service supplier is to possess the equipment listed in the following (a) through (g):

(a) closed circuit colour television with sufficient illumination equipment;

(b) still photography camera;

(c) video recording device connected to the closed circuit television;

(d) two-way communication between diver and surface staff;

(e) equipment for carrying out thickness measurements, non-destructive testing and measurements, e.g. clearances, indents, etc.;

(f) equipment for cleaning of the hull; and

(g) ROV and adequate controls or programming for the ROV functions required, if applicable.

2.3.5 Demonstration tests

(a) Demonstration tests on actual ships are to be conducted in the presence of the Surveyor to verify that the In-Water Surveys specified in the documents submitted to the Society can be carried out.

(b) Where other means (e.g., video tapes) are available which enable the Society to verify the In-Water Survey operations of service suppliers in lieu of demonstration tests, the demonstration tests may be dispensed with.

2.3.6 Reporting to the Society

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

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

2.4.1 Application

This section applies to firms engaged in inspection and maintenance of the following firefighting equipment and systems:

(a) fixed fire-extinguishing systems;

(b) portable fire extinguishers; and

(c) fire detection and alarm systems.

2.4.2 Approval

(a) Service suppliers are to have professional knowledge of the following (i) to (iii):
  (i) fire theory;
  (ii) fire-fighting and fire-extinguishing appliances sufficient to carry out the maintenance and/or inspection; and

(iii) necessary evaluations of the condition of fire-fighting and fire-extinguishing appliances.

(b) Service suppliers are to have an understanding of the various types of fires and the extinguishing media to be used on them.

(c) Service suppliers who wish to be approved for performing survey and maintenance of fixed fire-extinguishing systems, are to have an understanding of the principles involved with gas, foam, deluge, sprinkler or water-mist systems, as relevant for the approval being sought.

2.4.3 Document examination:

(a) Training procedures

The documented training procedures required by 1.5.2(a) are to contain information on the items listed in 2.4.3(c) and 2.4.4(a).

(b) Work procedures

The documented work procedures required in 1.5.2(c) are at least to contain information on items listed in the following (i) to (vi):

(i) preparing and implementing of inspection and maintenance of firefighting equipment and systems;

(ii) recording of conditions of defects found during inspection and maintenance;

(iii) reporting the results of inspection and maintenance and the Surveyor's verification;

(iv) issuing of inspection and maintenance record certificates;

(v) references to the manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate, and to international requirements; and

(vi) requirements related to markings and their method of application to the equipment/system.

(c) Reference documents

Service suppliers are to have access to the documents listed in the following (i) to (xv):

(i) manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate;

(ii) type approval certificates showing any conditions that may be appropriate during the servicing and/ormaintenance of fire-extinguishing equipment and systems;

(iii) MSC.1/Circ.1318 as amended;

(iv) SOLAS 1974 as amended;

(v) International Code for Fire Safety Systems as amended;

(vi) ISO 6406 as amended;

(vii) documentation specified in the authorization or license from the equipment manufacturer;

(viii) MSC.1/Circ.670 as amended;

(ix) MSC.1/Circ.798 as amended;

(x) MSC.1/Circ.799 as amended;

(xi) MSC.1/Circ.1312 (MSC.1/Circ.1312/Corr.1 and as amended);

(xii) MSC.1/Circ.1432 as amended;

(xiii) A.951(23) as amended;

(xiv) MSC.1/Circ.1370 as amended; and

(xv) guidelines adopted by IMO for fire extinguishing equipment and systems specifically intended for service by service suppliers.

2.4.4 Operators and supervisors

(a) Training

Operators and supervisors are to have sufficient knowledge as to the following (i) to (v):

(i) construction and services of fire fighting equipment and systems;

(ii) operational methods of the equipment used for survey and maintenance;

(iii) SOLAS 1974 as amended and MSC.1/circ.1432 as amended;

(iv) flag administration requirements; and

(v) requirements and survey and maintenance instructions issued by the Society, if any.

(b) Qualifications

(i) As for competence and experience, operators are to comply with the requirements specified in the following (1) and (2):

(1) Operators are to have qualifications for the inspection and maintenance of fire fighting equipment and systems approved by the authorities concerned; and

(2) Operators are to have at least 1 year experience of on-the-job training for survey and maintenance.

(ii) Supervisors carrying out survey and maintenance are to have at least 2 year experience as an operator.

2.4.5 Equipment

(a) If service suppliers undertake shore-based surveying and maintenance, they are to maintain and implement procedures for workshop cleanliness, ventilation and arrangement, with due cognisance of the spares and extinguishing media being stored, to ensure safe and effective working procedures.

(b) If service suppliers undertake inspection and maintenance onboard, they are to provide the appropriate facilities to either complete the work onboard or remove the necessary items to their workshops.

(c) Service suppliers are to have the equipment for inspection and maintenance specified in the following (i) to (x):

(i) various scales to weigh items

(ii) means to hydrostatic pressure test components/systems/storage bottles

(iii) liquid/gas, flow meters, as appropriate

(iv) pressure gauges or manometers

(v) testing bay (in the case of portable fire-extinguishers)

(vi) chemical analysis equipment (in the case of foam concentrates)

(vii) specific equipment/spares as may be specified by manufacturer

(viii) levelmeasuring equipment for bottles

(ix) recharging facilities for pressurized bottles, extinguishers and cartridges

(x) specific equipment as may be specified by manufacturer

2.4.6 Demonstration

(a) On board demonstration is to be carried out in the presence of the Surveyor to verify that the service suppliers have appropriate competence for inspection and maintenance of fire fighting equipment and systems. However, the submission of survey and maintenance record certificates may be accepted instead substitution for fire fighting equipment and systems for which demonstrations are difficult to carry out.

(b) In cases where the service supplier has been approved by other classification societies, a part of or the entire the demonstration may be dispensed with.

2.5 Firms Engaged in Servicing Inflatable Liferafts, Inflatable Lifejackets, Hydrostatic Release Units, Marine Evacuation Systems

2.5.1 Application

This section applies to firms engaged in servicing the life-saving appliances listed below:

(a) inflatable liferafts;

(b) inflatable lifejackets;

(c) hydrostatic release units; and

(d) marine evacuation systems.

2.5.2 Document examination:

(a) Training procedures

The documented training procedures required by 1.5.2(a) are to contain information on the items listed in 2.5.2(c)(i) to (vi) as well as the following (i) to (v). In addition, the service supplier is to provide the latest versions of all relevant documents.

(i) the construction and service of the life-saving appliances;

(ii) the operational methods of the equipment used to service life-saving appliances;

(iii) SOLAS 1974 as amended and LSA Code as amended;

(iv) special requirements of the concerned flag administration (if any); and

(v) the Society's rules related to life-saving appliances as well as inspection instructions for life-saving appliances issued by the Society, if any.

(b) Work procedures and instructions

The service supplier is to have documented work procedures, as required by 1.5.2(c), and instructions containing at least the information specified in the following (i) to (iv). Where inflatable liferafts are subject to extended service intervals in accordance with the requirements of SOLAS Regulation III/20.8.3 as amended, MSC.1/Circ.1328 as amended is to be followed in addition to A.761(18) (as amended by MSC.55(66), etc.).

(i) information relevant to how to carry out services of life-saving appliances, including the preparation and implementation of such services;

(ii) information relevant to recording the conditions of defects found during servicing;

(iii) information relevant to reporting the results of service to the Surveyor and to receiving the Surveyor's verification of the results; and

(iv) information relevant to the issuing service record certificates.

(c) Reference documents

The service supplier is to have access to the documents listed in the following (i) to (vi):

(i) IMO - Resliution A.761(18) (as amended by MSC.55(66), etc.);

(ii) IMO - Resliution MSC.55(66) as amended;

(iii) IMO - Resliution MSC.1/Circ.1328 as amended;

(iv) manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate;

(v) 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; and

(vi) LSA Code/Chapter IV, 1995 SOLAS Conference Resolution 4 regarding marine evacuation systems.

2.5.3 Qualifications of operators and supervisors

The service supplier is to provide evidence that it has been authorized or licensed to service the particular makes and models of equipment for which approval is sought by manufacturer of the equipment.

2.5.4 Equipment

The service supplier is to have the equipment for servicing of the life-saving appliances specified in the following (a) to (f), in addition to any equipment required after taking into account A.761(18) (as amended by MSC.55(66), etc.). Where inflatable liferafts are subject to extended service intervals, MSC.1/Circ.1328 as amended is also to be followed.

(a) Pressure gauges.

(b) Thermometers.

(c) Barometers.

(d) Air pumps capable of air cleaning and drying (including all necessary high-pressure hoses and adapters).

(e) A weight scale for inflation gas cylinders.

(f) Inflation gases.

2.5.5 Demonstration

(a) Demonstration is to be carried out to verify that the supplier has appropriate competence for the servicing of life-saving appliances.

(b) In cases where a service supplier has been approved by other classification societies, a part of or the entire demonstration may be dispensed with.

2.6 Firms Engaged in Inspections and Testing of Radio Communication Equipment

2.6.1 Application

This section applies to the following firms:

(a) Service suppliers engaged in surveys, inspection, testing, and/or measurement of radio equipment aboard ships or mobile offshore units for compliance with SOLAS regulations;

(b) Service suppliers engaged in annual testing of 406 MHz satellite EPIRBs for compliance with SOLAS regulation IV/15.9; and

2.6.2 Document examination:

(a) Training procedures

(i) The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.6.2(c)(i) to (ix) as well as the following (1) and (2). In addition, the service supplier is to provide the latest versions of all relevant documents.

(1) radiotelephony; and

(2) Global Maritime Distress and Safety System.

(ii) In accordance with the procedure specified in (i), inspection instructions issued by the Society are to be furnished to radio inspectors without fail.

(b) Work procedures and instructions

The service supplier is to have documented work procedures, as required by 1.5.2(c), and instructions containing at least the information on the following (i) to (iii). The procedures and instructions are also to be kept and be available at all times.

(i) how to prepare testing, examination/inspection of radio equipment;

(ii) how to carry out testing, examination/inspection of radio equipment, including instruction for how to operate each item of testing, examination/inspection equipment; and

(iii) how to report the results of testing, examination/inspection of radio equipment to the Surveyor and receiving the Surveyor's verification of the results.

(c) Reference documents

The service supplier is to have access to the documents listed in the following (i) to (ix):

(i) SOLAS 1974 as amended;

(ii) IMO - Resliution A.789(19) as amended;

(iii) MSC/Circ.1040/Rev.1 as amended;

(iv) MSC.1/Circ.1252 as amended;

(v) SN/Circ.227, SN/Circ.227/Corr.1 and SN/Circ.245 as amended;

(vi) ITU Radio Regulations;

(vii) IMO Performance Standards for the equipment for which the service supplier is approved;

(viii) flag state administration requirements; and

(ix) requirements of the Rules of the Society related to communcation equipment, if any.

2.6.3 Qualifications of radio inspectors and supervisors

(a) Radio inspectors carrying out inspections of radio equipment are to satisfy the requirements in the following (i) to (vi), with regard to competence and experience.

(i) radio inspectors are to have passed the internal training of the service supplier in Radiotelephony, GMDSS, and initial and renewal surveys, as applicable;

(ii) either of the following (1) or (2) is to be fulfilled:

(1) The radio inspector holds evidence that he followed a technical course relevant to radio equipment approved by the relevant Administration; or

(2) The radio inspector has a minimum 1 year technical school training;

(iii) the radio inspector is to have at least 1 year experience as an assistant radio inspector;

(iv) the radio inspector is to have passed the internal training of the service supplier regarding SOLAS Convention, ITU Radio Regulations and IMO Assembly Resolution concerning performance standards, and to be familiar with these technical requirements;

(v) the radio inspector is to preferably hold an appropriate National Radio Operators Certificate, recognized by the ITU, such as a GMDSS General Operator's Certificate (GOC) or a GMDSS Radioelectronic Certificate (REC);

(vi) the radio inspector is to be aware of any local conditions for radio signal propagation, of regional radio stations and their facilities, and of the GMDSS infrastructure; and

(b) Supervisors for inspections of radio equipment are to satisfy the requirements in the following (i) to (iv):

(i) the supervisor is to have a minimum of 2 years education from a technical school relevant to radio;

(ii) the supervisor is to preferably have a General Operator's Certificate (GOC) or a GMDSS Radioelectronic Certificate (REC), recognized by the ITU, to operate or test radio transmitters;

(iii) the supervisor is to be aware of any local conditions for radio signal propagation, of regional radio stations and their facilities, and of the GMDSS infrastructure; and

(iv) the supervisors is to have a minimum of 2 years experience as radio inspector.

2.6.4 Equipment

(a) The service 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.

(b) A standard which is relevant to the radio equipment to be tested is to be available for the equipment and is to be cited in the inspection report.

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

(d) The service supplier is to have at least the equipment listed in the following (i) to (v):

(i) equipment for measuring frequency, voltage, current and resistance;

(ii) equipment for measuring output, reflect effect and modulation on VHF and MF/HF;

(iii) oscilloscope;

(iv) acid tester for checking specific gravity of lead batteries;

(v) tester for checking of correct output from free-float satellite EPIRB; and

2.6.5 Demonstration

An onboard demonstration is to be carried out at the presence of the Surveyor to verify that the service supplier provides the radio inspections specified in the documents submitted.

2.7 Firms Engaged in Inspections and Maintenance of Self-Contained Breathing Apparatus

2.7.1 Application

This section applies to firms engaged in inspection and maintenance of the following breathing apparatuses:

(a) self-contained breathing apparatuses; and

(b) emergency escape breathing devices (EEBD).

2.7.2 Approval

(a) Service suppliers are to have the documents containing and have knowledge of the items specified in the following (i) and (ii):

(i) the equipment and systems sufficient to carry out the inspections and testing of self-contained breathing apparatus to identify standards; and

(ii) necessary evaluations of the conditions of self-contained breathing apparatuses.

(b) Service suppliers are to have an understanding of the operational requirements involved with self-contained breathing apparatuses and how these are to be maintained.

(c) Service suppliers are to demonstrate the necessary safety requirements applicable to self-contained breathing apparatuses.

2.7.3 Document examination:

(a) Training procedures

The documented training procedures required by 1.5.2(a) are to contain information on the items listed in 2.7.3(c) and 2.7.4(a).

(b) Work procedures

The documented work procedures required in 1.5.2(c) are at least to contain information on items listed in the following (i) to (vi):

(i) preparing and implementing of inspection and maintenance of breathing apparatus;

(ii) recording of conditions of defects found during inspection and maintenance;

(iii) reporting the results of inspection and maintenance and the Surveyor's verification;

(iv) issuing of inspection and maintenance record certificates;

(v) references to the manufacturer's servicing manuals, servicing bulletins, instructions and training manuals, as appropriate, and to international requirements; and

(vi) requirements related to markings and their method of application to the equipment/system.

(c) Reference documents

Service suppliers are to have access to the documents listed in the following (i) and (ii):

(i) manufacturers servicing manuals, servicing bulletins, instructions and training manuals, as appropriate; and

(ii) type Approval certificates showing any conditions which may be appropriate during the servicing and/or maintenance of self-contained breathing apparatuses.

2.7.4 Operators and supervisors

(a) Training

Operators and supervisors are to have sufficient knowledge as to the following (i) to (v):

(i) construction and services of breathing apparatus;

(ii) operational methods of the equipment used for survey and maintenance;

(iii) SOLAS 1974 as amended and MSC.1/circ.1432 as amended;

(iv) flag administration requirements; and

(v) requirements and survey and maintenance instructions issued by the Society, if any.

(b) Qualifications

(i) As for competence and experience, operators are to comply with the requirements specified in the following (1) and (2):

(1) Operators are to have qualifications for the inspection and maintenance of breathing apparatuses approved by the authorities concerned; and

(2) Operators are to have at least 1 year experience of on-the-job training for survey and maintenance.

(ii) Supervisors carrying out survey and maintenance are to have at least 2 year experience as an operator.

2.7.5 Equipment

(a) If service suppliers undertake shore-based surveying and maintenance, they are to maintain and implement procedures for workshop cleanliness, ventilation and arrangement, with due cognisance of the spares being stored, to ensure safe and effective working procedures.

(b) If service suppliers undertake inspection and maintenance onboard, they are to provide the appropriate facilities to either complete the work onboard or remove the necessary items to their workshops.

(c) Service suppliers are to have the equipment for inspection and maintenance specified in the following (i) to (viii):

(i) various scales to weigh items

(ii) means to hydrostatic pressure test components/systems/storage bottles

(iii) flow meters

(iv) pressure gauges or manometers

(v) equipment for checking air quality

(vi) recharging facilities for breathing apparatuses

(vii) sufficient and appropriate spares and tools for repair and servicing

(viii) specific equipment as may be specified by manufacturer

2.7.6 Demonstration

(a) On board demonstration is to be carried out in the presence of the Surveyor to verify that the service suppliers have appropriate competence for inspection and maintenance of breathing apparatuses. However, the submission of survey and maintenance record certificates may be accepted instead substitution for fire fighting equipment and systems or breathing apparatuses for which demonstrations are difficult to carry out.

(b) In cases where the service supplier has been approved by other classification societies, a part of or the entire the demonstration may be dispensed with.

2.8 Firms Engaged in Examination of Ro-Ro Ships Bow, Stern, Side and Inner Doors

2.8.1 Application

(a) This section applies to firms engaged 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.

(b) The service supplier is to be certified to the most current version of ISO 9000 series.

2.8.2 Document examination:

(a) Training procedures

The documented training procedures specified in by 1.5.2(a) is to include information on ways to acquire knowledge about the following items:

(i) SOLAS 1974 as amended;

(ii) ISO 9002 as amended; and

(iii) IACS UR Z24 as amended.

(b) Work procedures

The documented work procedures specified in 1.5.2(c) are to include information on at least the following items:

(i) drawings and documents, including the operating and inspection manual;

(ii) the service history of the doors; and

(iii) checklist which has been found acceptable by the Society.

(c) Reference documents

Service suppliers are to have access to the documents listed in the above 2.8.2(a)(i) to (iii).

2.8.3 Qualifications of operators and supervisors

(a) Operators carrying out non-destructive examinations (NDE) are to be qualified to a recognized National or International Standard for the methods used.

(b) Supervisors carrying out examinations are to have the following competence and experience:

(i) Supervisors is to have had a minimum of two years experience as operator/technician/inspector within the activity.

(ii) Supervisor is to have a minimum two years related education from a technical school.

2.8.4 Equipment

(a) Service suppliers engaged in the inspection of supporting securing and locking devices, as well as hinges and bearings are to possess the following equipment for use in said inspections:

(i) equipment for measuring clearances (i.e. feeler gauges, vernier calipers, micrometers).

(ii) equipment for non-destructive examination (i.e. dye penetrant, magnetic particle inspection)

(b) Service suppliers engaged in tightness testing are to possess ultrasonic leak detectors or the equivalent for use in said testing.

(c) Service suppliers engaged in the inspection of hydraulic operating systems are to possess the following equipment for use in said ispections:

(i) pressure gauges; and

(ii) particle counters for analysing the quality of hydraulic fluid.

(d) Service suppliers engaged in the inspection of electric control systems and indicator systems are to possess the following equipment for use during said inspections:

(i) digital multi-meters, and

(ii) earth fault detectors.

2.9 Firms Engaged in Annual Performance Testing of Voyage Data Recorders (VDR) and Simplified Voyage Data Recorders (S-VDR)

2.9.1 Application

This section applies to firms engaged in testing and servicing of voyage data recorders (VDR) and simplified voyage data recorders (S-VDR) in accordance with SOLAS regulation V/18.8 and MSC.1/Circ.1222 as amended, as applicable.

2.9.2 Approval

(a) The service supplier is to provide evidence that he has been authorised or licensed by manufacturer of the equipment to service the particular makes and models of equipment for which approval is sought.

(b) 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 MSC.1/Circ.1222 as amended in its entirety for the purpose of acting as a service supplier engaged in annual performance testing, the following (i) to (iv) are to apply:

(i) The manufacturer is responsible for appointing manufacturer's authorised service stations to carry out annual performance testing;

(ii) 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;

(iii) The manufacturer's authorised service station is not required to be an approved service supplier; and

(iv) The manufacturer is to demonstrate that MSC.1/Circ.1222, as amended, is applied in its entirety.

2.9.3 Document examination:

(a) Training procedures

The documented training procedure required in 1.5.2(a) is to contain information on the items listed in 2.9.3(c)(i) to (vi) as well as the following (i) to (iii). In addition, the service supplier is to provide the latest versions of all relevant documents.

(i) the Society's Rules related to VDRs as well as inspection instructions issued by the Society;

(ii) SOLAS 1974 as amended; and

(iii) procedures for the continuous education and training of service suppliers.

(b) Work procedures and instructions

The service supplier is to have documented work procedures, as required by 1.5.2(c), and instructions containing at least the information specified in the following (i) to (iv).

(i) information related to preparing for the performance testing of VDRs and S-VDRs;

(ii) information related to implementing the performance testing of VDRs and S-VDRs;

(iii) information related to reporting the results of the performance testing of VDRs and S-VDRs and receiving the Surveyor's verification of the results; and

(iv) information related to issuing service record certificates.

(c) Reference documents

The service supplier is to have access to the documents and applicable industry performance standards listed in the following (i) to (vi):

(i) SOLAS regulation V/18.8 as amended;

(ii) MSC.1/Circ.1222 as amended
(iii) A.861(20) (as amended by MSC.214(81) and MSC.333(90), etc.);
(iv) MSC.163(78) (as amended by MSC.214(81), etc.);
(v) performance standards such IEC 61996 as amended and IEC 61996-2 as amended; and
(vi) the following documents related to the VDRs which are to be subjected to performance testing:
(1) installation manual;
(2) operation and maintenance manual;
(3) information for use by an investigation authorities; and
(4) any documentation specified in the authorization or license from the equipment manufacturer.

2.9.4 Qualifications of operators and supervisors

In addition to 1.6.1(a), operators are to have conducted performance tests at least once before.

2.9.5 Equipment

The service supplier is to have the equipment specified in the following (a) to (c) available for carrying out of performance testing of VDRs and/or S-VDRs as well as any other equipment as specified in the authorisation or license from the equipment manufacturer:

(a) instruments for measuring frequency, voltage, current and resistance;

(b) playback hardware of recorded data, speakers, printers and memories; and

(c) playback software of recorded data.

2.9.6 Demonstration

On board demonstrations are to be carried out in the presence of the Surveyor to verify that the service supplier has appropriate competence for the performance testing specified in the documents submitted.

2.9.7 Reporting to the Society

(a) The service supplier is to issue a certificate of compliance as specified in SOLAS regulation V/18.8 as amended.

(b) Annual performance testing of VDR and S-VDR is to be recorded in the form of the model test report given in the Appendix to MSC.1/Circ.1222 (as amended, signed and stamped by the service supplier and attached to the annual performance test certificate.

(c) 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 MSC.1/Circ.1222 as amended 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 (i) to (iii):
(i) review of the manufacturer's authorised service station annual performance test report;
(ii) analysis of the recorder's 12 hour log; and
(iii) checking of the master record/database for the recorder.

2.9.8 Issuance of certificates

Issue of the annual performance test certificate to the shipowner/operator within 45 days of completion of the annual performance test.

2.10 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

2.10.1 Application

This section applies to firms engaged in luminance measurements on board ships of low location lighting systems using photo luminescent materials and evacuation guidance systems.

2.10.2 Document examination:

(a) Training procedures

The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.10.2(c) and 2.10.3. Service suppliers are to provide the latest versions of all relevant reference documents.

(b) Work procedures

The documented work procedure required in 1.5.2(c) is to at least contain information on items listed in the following (i) and (ii):

(i) survey preparation; and

(ii) selection and identification of test locations.

(c) Reference documents

Service suppliers are to have access to the documents listed in the following (i) to (v):

(i) SOLAS regulation II-2/13.3.2.5 as amended;

(ii) Chapter 11 of Fire Safety Systems Code as amended;

(iii) A.752(18) as amended;

(iv) ISO 15370-2010 as amended; and

(v) MSC/Circ.1168 as amended.

2.10.3 Qualifications of operators and supervisors

(a) Operators and supervisors are to have sufficient knowledge of the following (i) to (iv):

(i) SOLAS regulation II-2/13.3.2.5 as amended;

(ii) A.752(18) as amended;

(iii) ISO 15370-2010 as amended; and

(iv) Chapter 11 of Fire Safety Systems Code as amended.

(b) Operators are to be able to document theoretical and practical training onboard in using the equipment specified in 2.10.4.

2.10.4 Equipment

Service suppliers are to have the measuring instruments used for surveys of low location lighting systems and evacuation guidance systems. Such measuring instruments are 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.

2.10.5 Demonstration

(a) Verification

Service suppliers are to receive the Surveyor's verification for each separate measurement and have the attending Surveyor's signature in each report of measurement results.

(b) Reporting

Reports are to be made in accordance with Annex C of ISO 15370-2010 as amended.

2.11 Firms Engaged in Sound Pressure Level Measurements of Public Address and General Alarm Systems on Board Ships

2.11.1 Application

This section applies to firms engaged in sound pressure level measurements of general alarm and public address systems on board ships.

2.11.2 Document examination:

(a) Training procedures

The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.11.2(c)(i) to (vii). In addition, the service supplier is to provide the latest versions of all relevant documents.

(b) Work procedures

The service supplier is to have documented work procedures, as required by 1.5.2(c), containing at least information on survey preparation, calibration, selection and identification of test locations.

(c) Reference documents

The service supplier is to have access to the documents listed in the following (i) to (vii):

(i) SOLAS regulation III/4 as amended;
(ii) SOLAS regulation III/6 as amended;
(iii) paragraph 7.2, Chapter VII of the LSA Code as amended;
(iv) IMO - Resliution A.830(19) as amended;
(v) IEC 60651 (2001-10) as amended;
(vi) IEC 61672 as amended; and
(vii) IEC 61260 as amended.

2.11.3 Qualifications of operators

(a) Operators are to have adequate knowledge of the applicable international requirements: SOLAS regulations III/4 and III/6 as amended, paragraph 7.2, Chapter VII of the LSA Code as amended, and A.830(19) as amended.

(b) Operators are to be able to document a theoretical and practical training onboard in using equipment specified.

2.11.4 Equipment

The measuring instrument is to be an integrating sound level meter with frequency analysis capabilities complying with IEC 60651 as amended, and IEC 61672 as amended, class 1, at least an A-weighting frequency response curve and 1/3 octave and 1 octave band filters, complying with IEC 61260 as amended, as appropriate for the measurements to be carried out. In addition, microphones are to be of the random incidence type, complying with IEC 60651 as amended.

2.11.5 Reporting to the Society

(a) Verification

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

(b) 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. The report is to conform to any other specific requirements of the Society.

2.12 Firms Engaged in Testing of Coating Systems

2.12.1 Application

This section applies to firms engaged in testing of coatings systems according to IMO Performance Standard For Protective Coatings (Resolution MSC.215(82) as amended and Resolution 288(87) as amended) and the relevant IACS unified interpretation.

2.12.2 Document examination:

(a) Training procedures

The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.12.4(a). Service suppliers are to provide the latest versions of all relevant reference documents.

(b) Work procedures

The documented work procedure required in 1.5.2(c) is at least to contain information on items listed in the following (i) to (iv):

(i) preparation of the testing of coating systems;

(ii) implementation of the testing of coating systems;

(iii) criteria for the test results of coating systems; and

(iv) issue of statement of compliance.

2.12.3 Initial assessment

(a) Initial assessment

Service suppliers are to submit 3 copies each of the following documents in addition to the documents specified in 1.3.4(a):

(i) a detailed list of the laboratory test equipment for the IMO Resolution MSC.215(82) or MSC.288(87) as may be amended coating approval;

(ii) a detailed list of reference documents comprising a minimum those referred to in MSC.215(82) or MSC.288(87) as may be amended that are available in the laboratory;

(iii) details of testing panel preparation, procedure of test panel identification, coating application, test procedures and a sample test report;

(iv) details of exposure method and site for weathering primed test panels;

(v) a sample daily or weekly log/form for recording test condition and observations including unforeseen interruption of the exposure cycle with corrective actions;

(vi) details of any sub-contracting agreements if available; and

(vii) comparison test report with an approved coating system or laboratory if available.

(b) Audit

Audits of the test laboratories are 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.

2.12.4 Training of operators and supervisors

Operators and supervisors are to have sufficient knowledge of the following (a) and (b):

(a) MSC.215(82) or MSC.288(87) as may be amended; and

(b) operational methods of the equipment used for the testing of coating systems.

2.12.5 Equipment

(a) Service suppliers are to have the equipment for testing of coating systems for seawater ballast tanks, etc. specified in the following (i) to (v):

(i) tanks for testing simulated ballast tank coatings (Equipment for wave movement simulation is not necessary for firms only engaged in cross over testing.);

(ii) condensation chambers (not necessary for firms only engaged in cross over testing);

(iii) infrared (IR) identification equipment;

(iv) detector; and

(v) tensile testing machines.

(b) Service suppliers are to have the equipment for testing of coating systems for cargo oil tanks specified in the following (i) to (v):

(i) gas-tight cabinet test equipment;

(ii) immersion test equipment;

(iii) infrared (IR) identification equipment;

(iv) detector; and

(v) tensile testing machines.

2.12.6 Demonstration

(a) Demonstrations are to be carried out in the presence of the Surveyor to verify that service suppliers have appropriate competence for the services of testing of coating systems. However, the submission of the comparison test report specified in 2.12.3(a)(vii) may be accepted instead where deemed appropriate by the Society.

(b) In cases where the service supplier has been approved by the flag administration, another administration deemed acceptable by the flag administration or another classification society, a part of or the entire the demonstration may be dispensed with.

2.13 Firms Engaged in Maintenance, Through Examination, Operational Testing, Overhaul and Repair of Lifeboats, Rescue Boats, Launching Appliances, and Release Gear

2.13.1 Application

This section applies to firms engaged in maintenance, through examination, operational testing, overhaul and repair of the life-saving appliances listed below:

(a) lifeboats (including free-fall lifeboats), rescue boats, and fast rescue boats;

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

2.13.2 Approval

(a) The contents of this procedure apply equally to manufacturers or ship's operator when they are acting as service suppliers.

(b) Any service suppliers engaged in maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear carried out in accordance with SOLAS regulation III/20, as amended, are 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 (annex, section7).

Such approval shall include, as a minimum:

(i) 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 shall be based on 2.13.4(a) for each make and type of equipment for which service is to be provided; and,

(ii) compliance with provisions of 2.13.3(c), 2.13.6 and 2.13.7.

(c) 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 approved service provider.

2.13.3 Document examination:

(a) Training procedures

The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.13.4(c)(i)(1) to (6) as well as 2.13.3(1)(c)(i) to (iv). In addition, the service supplier is to provide the latest versions of all relevant documents.

(b) Work procedures

The service suppliers are to have documented work procedures, as required by 1.5.2(c), containing information for at least the following (i) to (iv):

(i) information related to preparing and implementing the service of lifeboats, launching appliances, on-load release gear and automatic release hooks;

(ii) information related to recording the conditions of defects found during servicing;

(iii) information related to reporting the results of servicing to the Surveyor and receiving the Surveyor's verification of the results; and

(iv) information related to issuing service record certificates.

(c) Reference documents

The service suppliers are to have access to the documents listed in the following (i) to (v):

(i) IMO – Resolution MSC.402(96)/Corr.1 Requirements for Maintenance, Through Examination, Operational Testing, Overhaul and Repair of Lifeboats and Rescue Boats, Launching Appliances and Release Gear;

(ii) 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;

(iii) IMO - Resolution MSC.81(70), as amended, revised recommendation on testing of life-saving appliances;

(iv) Manufacturer's instructions (including updates, amendments and safety notices) for repair work involving disassembly or adjustment of on-load release mechanisms and davit winches; and

(v) Type approval certificate showing any conditions that may be appropriate during the servicing and/or maintenance of lifeboats, launching appliances and on-load release gear.

2.13.4 Certification of personnel

(a) Personnel for the work specified in 2.13.1 shall be certified by the manufacturer or the service supplier for each make and type of the equipment to be worked on. Approved Service Supplier is allowed to certify its own personnel (i.e. employed by the same service supplier) only.

(b) Education for personnel

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

(i) Causes of lifeboat and rescue boat accidents;

(ii) Relevant rules and regulations, including International Conventions as well as flag Administration requirements, as well as the Rules of the Society related to the servicing of lifeboats, launching appliances and on-load release gear and the inspection instructions for said devices issued by the Society;

(iii) Design and construction of lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, including launching appliances, on load release gear;

(iv) Education and practical training in the procedures specified in section 6 of the Annex to IMO Resolution MSC.402(96)/Corr.1 for which certification is sought;

(v) Detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboats, launching appliances, on load release gear and automatic release hooks, as applicable;

(vi) Procedures for issuing a report of service and statement of fitness for purpose based on IMO Resolution MSC.402(96)/Corr.1 (annex, paragraph 5.3); and

(vii) Work, health and safety issues while conducting activities on board.

(c) Training for personnel

The training for the personnel shall 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 shall include disassembly, reassembly, correct operation and adjustment of the equipment. Classroom training shall be supplemented by field experience in the operations for which certification is sought, under the supervision of a certified person.

(d) Initial certification and renewal of certification

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

(e) Upon completion of training and competency assessment, a certificate shall be issued defining the level of qualification and the scope of the certification (i.e. makes and types of equipment and specifically state which activities (annual thorough examination and operational tests; 5-year thorough examination, overhaul; overload operational tests; repairs) are covered by the certification). The expiry date shall clearly be written on the certificate and shall be three years from the date of issue. The validity of any certificate shall be suspended in the event of any shortfall in performance and only revalidated after a further competency assessment.

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

2.13.5 Demonstration

(a) On board demonstrations are to be carried out in the presence of the Surveyor to verify that the service suppliers have appropriate competence for the services of lifeboats, launching appliances, on-load release gear, or automatic release hooks. However, as for the lifeboats, launching appliances, on-load release gear, and automatic release hooks for which said demonstration is difficult to carry out, may be substituted for by the submission of the service record certificates.

(b) In cases where the service supplier has been approved by other classification societies, a part of or the whole of the demonstration may be dispensed with.

2.13.6 Equipment and facilities

The service supplier is to have 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; and

(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.

2.13.7 Reporting to the Society

The report is to conform to the requirements of IMO Resolution MSC.402(96)/Corr.1 (annex, paragraph 5.3). When repairs, thorough examinations and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose is to be promptly issued by the service supplier that conducted the work. A copy of valid documents of certification and authorization as appropriate shall be included with the statement.

2.14 Firms Engaged in Measurements of Noise Level Onboard Ships

2.14.1 Application

This section applies to firms engaged in measurements of noise level onboard ships.

2.14.2 Document examination:

(a) Training procedures

The documented training procedure required by 1.5.2(a) is to contain information on the items listed in 2.14.3(a) and 2.14.2(c). Service suppliers are to provide the latest versions of all relevant reference documents.

(b) Work procedures

(i) Service suppliers are to have documented work procedures and instructions to carry out service of the equipment specified in 2.14.4.

(ii) Service suppliers are to have documented work procedures, as required by 1.5.2(c), containing at least the information specified in the following (1) to (4):

(1) survey preparation;

(2) selection and identification of sound level measurement locations;

(3) calibration checks; and

(4) report preparation.

(c) Reference documents

Service suppliers are to have access to the documents listed in the following (i) to (iv):

(i) SOLAS regulation II-1/3-12 as amended;

(ii) IMO Code on Noise Levels on Board Ships (A.468(XII) and IMO Res. MSC.337(91)) as amended;

(iii) A.343(IX) as amended; and

(iv) Part II Chapter 34 of Rules for the Construction and Classification of Steel Ships of the Society.

2.14.3 Operators and supervisors

(a) Training

Operators and supervisors are to have sufficient knowledge of the following (i) and (ii):

(i) sound measurements and handling of measurement equipment; and

(ii) the applicable international requirements (SOLAS regulation II-1/3-12 as amended and IMO Code on Noise Levels on Board Ships as amended).

(b) Qualification

(i) As for competence and experience, operators are to comply with the requirements specified in the following (1) to (3):

(1) Operators are to have at least 1 year experience, including participation in a minimum of 5 measurement campaigns as an assistant operator;

(2) Operators are to have passed training concerning the procedures specified in IMO Code on Noise Levels on Board Ships; and

(3) Operators are to be able to document theoretical and practical training onboard in using the equipment specified in 2.14.4.

(ii) Supervisors are to have a minimum of 2 years of experience as an operator in sound pressure level measurements.

2.14.4 Equipment

(a) Service suppliers are to have the equipment for measurements of noise level onboard ships specified in the following (i) to (iv):

(i) 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) as amended, type/class 1 standard as

applicable, or to an equivalent standard acceptable to the Society. Class/Type 1 sound level meters manufactured according to IEC 651/IEC 804 as amended, may be used until 1 July 2016.

(ii) Octave filter sets

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

(iii) Sound calibrators

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

(iv) Microphone wind screen

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

(b) Sound Calibrator and sound level meter are to be verified at least every two years by a national Standard laboratory or a competent laboratory accredited according to ISO 17025 (2005), as amended. A record with a complete description of the equipment used is to be kept, including a calibration log.

2.14.5 Reporting to the Society

(a) Verification

Service suppliers are to receive the Surveyor's verification for each separate measurement and have the attending Surveyor's signature in each report of measurement results.

(b) Reporting

A noise survey 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 and may conform to any other specific requirement of the Society (refer to IMO circular MSC.337(91)).

2.15 Firms Engaged in Tightness Testing of Primary and Secondary Barriers of Gas Carriers with Membrane Cargo Containment Systems For Vessels in Service

2.15.1 Application

This section applies to firms engaged in the following tightness testing of the primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service:

(a) Global vacuum testing of primary and secondary barriers;

(b) Acoustic emission testing; and

(c) Thermo-graphic testing.

2.15.2 Authorization

The service supplier as to the following 2.15.1(a) and (c) is to be authorized by the system designer to carry out the testing.

2.15.3 Quality system and document examination:

(a) Work procedures

(i) Service suppliers engaged in the global vacuum testing of primary and secondary barriers are to carry out the testing in accordance with cargo containment system designer's procedures as approved by the Society.

(ii) Service suppliers engaged in acoustic emission (AE) testing are to comply with the followings:

(1) The service suppliers are 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;

(2) The procedures following 1.5.2(c) are to include details of personnel responsibilities and qualification, instrumentation, test preparation, test method, signal processing, evaluation and reporting; and

(3) The differential pressure during testing should not exceed the containment system designer's limitations.

(b) Service suppliers engaged in thermographic testing are to carry out the testing in accordance with the cargo containment system designer's procedures as approved by the Society.

2.15.4 Operators and supervisors

(a) Service suppliers engaged in acoustic emission (AE) testing

(i) Operators carrying out AE testing are to have the following competence and experience:

(1) Operators 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

(2) Operators are to have adequate knowledge of ship structures sufficient to determine sensor placement.

(ii) Supervisors carrying out AE testing are to have the following competence and experience:

(1) Supervisors are 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

(2) Supervisors are to have had one year experience at Level II.

(b) Service suppliers engaged in thermographic testing

(i) Operators carrying out thermographic testing are to have the following competence and experience:

(1) Operators 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. Certification by the service supplier is not allowed and is to be obtained through an independent certification body.

(2) Operators 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.

(ii) Supervisors carrying out thermographic testing are to have the following competence and experience:

(1) Responsible supervisors are 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. Certification by the service supplier is not allowed and is to be obtained through an independent certification body.

(2) Supervisor are to have had one year of experience as an operator.

2.15.5 Equipment

(a) Equipment used for global vacuum testing of primary and secondary barriers is to be maintained and calibrated in accordance with recognized national or international industrial standards.

(b) Equipment used for acoustic emission testing is to be maintained and calibrated in accordance with recognized national or international industrial standards or equipment manufacturer recommendations.

(c) Equipment use for thermographic testing is to be as follows:

(i) Thermal cameras and sensors are to be in accordance with system designer procedures with regards to sensitivity, accuracy and resolution; and

(ii) Equipment is to be in accordance with recognized standards (IEC, etc.) with regards their safety characteristics for the use in hazardous areas (i.e., in gas explosive atmospheres) as well as be maintained and calibrated in accordance with the manufacturer recommendations.

2.15.6 Evaluation of testing

(a) Evaluation of acoustic emission (AE) testing

Evaluation of acoustic emission (AE) testing is to be carried out by a supervisor or an individual 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.

(b) Evaluation of thermographic images

Evaluation of thermographic images is to be carried out by a supervisor or an individual 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. Certification by the service supplier is not allowed and is to be obtained through an independent certification body.

2.15.7 Reporting to the Society

(a) Reports for global vacuum testing of primary and secondary barriers are to contain the following:

(i) date of test;

(ii) identity of test personnel;

(iii) vacuum decay data for each tank; and

(iv) summary of test results.

(b) Reports for acoustic emission testing are to contain the following:

(i) date of test;

(ii) supervisor and operator(s) certifications;

(iii) description of time and pressure of each cycle of the test; and

(iv) list and sketch detailing location of possible defects.

(c) Report for thermographic testing is to contain the following:

(i) date of test;

(ii) supervisor and operator(s) certifications;

(iii) differential pressures of all phases;

(iv) list and sketch detailing location of thermal indications;

(v) thermographic images of all phases of testing for thermal indications; and

(vi) evaluation of thermal images indicating possible leaks.

2.16 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

2.16.1 Application

This section applies to firms engaged in survey using remote inspection techniques as an alternative means for Close-up Survey of the structure of ships and mobile offshore units (MOUs).

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 2.3 of the Chapter).

2.16.2 Definitions:

(a) Close-up survey

A Close-up Survey is a survey where the details of structural components are within the close visual inspection range of the surveyor i.e. normally within reach of hand.

(b) Remote inspection techniques (RIT)

RIT is a means of survey that enables examination of any part of the structure without the need for direct physical access of the surveyor (refer to IACS Rec.42). Remote inspection techniques may include the use of:

(i) Unmanned Aerial Vehicles (UAV)
(ii) Drones
(iii Unmanned robot arm
(iv) Remotely Operated Vehicles (ROV)
(v) Climbers
(vi) Other means acceptable to the Society.

2.16.3 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 or an equivalent industrial standard acceptable to the Society.

Knowledge of the following is to be documented:

(a) Marine and/or offshore nomenclatures

(b) The structural configuration of relevant ships types and MOUs, including internal structure

(c) The remote inspection equipment and its operation

(d) Survey plans for examination of hull spaces of various configurations, including appropriate flight plans if using a UAV

(e) Thickness measurement (TM) and non-destructive examination (NDE) in accordance with a recognised National or International Industrial NDE 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 2.1 of this Chapter).

2.16.4 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.

2.16.5 Supervisor

The supervisor is to be certified according to the recognized national requirements or an equivalent industrial standard (e.g. XXX Level) and is to have a minimum of two years' experience in the inspection of ship's and/or MOU's structure.

2.16.6 Operators

The operator carrying out the inspection is to be certified according to the recognized national requirements or an equivalent industrial standard (e.g. YYY Level) 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 are to hold valid documentation issued by the appropriate Bodies (e.g. UAV Pilots are to be qualified and licenced in accordance with applicable national requirements).

2.16.7 Equipment

The following is to be available:

(a) Remotely operated platform with data capture devices capable of operation within an enclosed space.

(b) Means of powering the platforms with sufficient capacity to complete the required inspections, including spare batteries if applicable.

(c) Data collection devices which may include cameras capable of capturing in high definition both video images and still images.

(d) Illumination equipment.

(e) High definition display screen with live high definition feed from inspection cameras. (When this is part of the RIT).

(f) Means of communication.

(g) Data recording devices, as applicable.

(h) Equipment for carrying out thickness measurement and/or non-destructive testing, as relevant to the work to be performed (when this is part of the service).

2.16.8 Work procedures and guidelines

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

(a) Requirements for preparation of inspection plans when UAV are part of the equipment flight plansare to be included.

(b) Operation of the remotely operated platforms

(c) Operation of lighting

(d) Calibration of the data collection equipment

(e) Operation of the data collection equipment

(f) Two-way communication between the operator, platform, Surveyor, other personnel such as support staff and ships officers and crew

(g) Guidance of the operator to provide complete coverage of the structure to be inspected

(h) Guidance for the maintenance of the remotely operated platforms, data capture and storage devices and display screens, as applicable

(i) Requirements for the collection and validation of data

(j) If data is to be stored, then requirements for location attribution (geo-tagging), validation and storage of data

(k) Requirements for the reporting of inspections, including the recording of damages and defects found during inspection and repair work

2.16.9 Documentation and records

The supplier is to maintain the following:

(a) Records of training.

(b) Operator statutory and regulatory certificates and licences.

(c) Equipment register for UAVs, Robots, data collection devices, data analysis devices and any associated equipment necessary to perform inspections.

(d) Equipment maintenance manuals and records / logbook.

(e) Records of calibration.

(f) UAV / Robot operation logbook.

2.16.10 Demonstration Tests

(a) Demonstration tests on actual ships are to be conducted in the presence of the surveyor to verify that the Close-up Surveys using remote inspection techniques as an alternative means for Close-up Survey specified in the documents submitted to the Society can be carried out.

(b) Where other means (e.g., video data) are available which enable the Society to verify the Close-up Survey operations of suppliers in lieu of demonstration tests, the demonstration tests may be dispensed with.

2.16.11 Reporting to the Society

(a) Verification

The supplier must have the Surveyor's verification of each separate job, documented in the report by the attending Surveyor(s) signature.

2.17 Firms Engaged in Cable Transit Seal Systems Inspection on Ships and Mobile Offshore Units

2.17.1 Application

This section applies to firms engaged in cable transit seal systems inspection on ships and mobile offshore units.

Inspection of the 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).

2.17.2 Extent of Approval

(a) The contents of this procedure apply equally to manufacturers or shipyards when they are acting as Service Suppliers.

(b) Any service supplier engaged in the inspections of 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 shall include, as a minimum:

(i) 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 shall be based on the paragraph 2.17.3 for each make and type of equipment for which inspection is to be provided, and

(ii) compliance with provisions of paragraphs 2.17.4, 2.17.5 and 2.17.6.

(c) In cases where an equipment manufacturer is no longer in business or no longer provides technical support, Service Suppliers may be authorized 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.

2.17.3 Qualifications and Training of Personnel

(a) Qualifications

(i) Personnel for the work specified in 2.17.1 are to be trained and qualified in the inspection for which they are authorized, for each make and type of equipment for which they provide the inspection.

(ii) The education for initial certification of personnel are to be documented and addressed, as a minimum:

(1) Procedures and instructions for the inspection of the cable transit seal systems

(2) Common problems found with the initial installation and in-service inspections of cable transit seal systems

(3) Relevant rules and regulations, including International Conventions

(4) Procedures for reporting on initial installation and in-service inspections of cable transit seal systems in the Cable Transit Seal Systems Register.

(b) Training Procedures

(i) The education and training for the personnel shall include practical technical training on actual inspection using the cable transit seal systems for which the personnel are to be certified. The technical training shall include disassembly, reassembly and adjustment of the equipment. Classroom

training shall be supplemented by field experience in the inspections for which certification is sought, under the supervision of an experienced senior certified person.

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

(iii) The service supplier is to require refresher training as appropriate to renew the certification.

2.17.4 Reference Documents

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

(a) Manufacturer's servicing manuals, servicing bulletins, instructions and training manuals as appropriate.

(b) Type Approval certificate showing any conditions that may be appropriate during the installation or maintenance of the cable transit seal system.

2.17.5 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.

2.17.6 Reporting

On completion of inspection, the service supplier will issue a report confirming the condition of the cable transit seal system. They will also record the results of their inspection in the Cable Transit Seal System Register.

2.18 Firms Engaged in Commissioning Testing of Ballast Water Management Systems (BWMS)

2.18.1 Application

Commissioning testing of Ballast Water Management Systems (BWMS) according to IMO Guidance for the commissioning testing of ballast water management systems (BWM.2/Circ.70), through sampling and analysis of ballast water, for statutory purposes.

This section applies to service suppliers engaged in commissioning testing of Ballast Water Management Systems (BWMS).

2.18.2 Procedures of approval

The following information and documentation shall be submitted for approval by the Society, prior to any on-site audit:

(a) Service suppliers are to have documented standard operating procedures for the ballast water test equipment specified including calibration, adjustment and maintenance. The procedures should outline how the ballast water sampling is conducted with respect to each size class.

(b) Service suppliers are to be familiar with the BWMS operation, its limitations and self-monitoring parameters. Standard operating procedure should contain additional measurements and observations required to assess that the self-monitoring equipment indicates correct operation of the BWMS.

(c) Service suppliers are to have standard operating procedures including:

(i) sampling collection and handling;

(ii) analytical procedures;

(iii) assessment of BWMS correct operation; and

(iv) documenting and reporting.

2.18.3 Personnel

Service Suppliers are expected to be able to perform both the biological sampling and assessment of self-monitoring parameters. Therefore, operators who conduct commissioning testing are to:

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

(b) have documented evidence of sufficient engineering and biological knowledge to conduct the commissioning testing;

(c) have knowledge of IMO BWM.2/Circ.70/Rev.1, as amended – "Guidance for the 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 amended;

(d) be accredited to relevant standards such as ISO/IEC 17025 or equivalent, as applicable.

2.18.4 Equipment and Facilities

Service Suppliers are to have the necessary equipment and facilities for the service. A record of the equipment used is to be kept and available. The record is to contain information on the maintenance and results of calibration, where applicable.

Equipment, procedures and methods for detailed analysis are to be in accordance with relevant international standard and/or accepted industry standards. Laboratories conducting sample enumeration are to be certified to ISO 17025 standard, or equivalent.

Indicative analysis should be conducted using indicative analysis equipment apporved by the Society. The indicative analysis equipment used should contain the following information:

(a) Equipment information – type, model, technology used, evidence of calibration, detection range, Organism type/size classes that can be analyzed.

(b) Test results conduct for the verification of accuracy, detection range and repeatability.

(c) Certificate of standards, if available.

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

2.18.5 Sampling and Analysis

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 should follow the IMO's "Guidelines for Ballast Water Sampling (G2)".

The representative samples should be analyzed for organism size classes included in the International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004 Regulation D-2 discharge standard using indicative analysis methods, as a minimum. Detailed analysis of all organism type/size classes or combination of detail and indicative analysis can also be performed.

Service Suppliers are to 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.

Service Suppliers are to maintain a record of :

(a) Operation of the BWMS during test period, including any recorded data or operator observations associated with the performance deviations, alarms or abnormal/unexpected operations.

(b) All consumed items used by the BWMS during the testing period.

(c) Applicable self-monitoring parameters.

2.18.6 Reporting

Service Suppliers are to provide reports detailing the results of sample and analysis of ballast water and assessment of self-monitoring parameters during commissioning testing. The report, as a minimum, will contain the following:

(a) Manufacturer's name.

(b) Model name.

(c) BWMS Technology limiting operating conditions and system design limitations.

(d) Operation required, i.e. ballasting, de-ballast, circulation, one pass, in tank, etc.

(e) Treatment rated capacity (TRC) in m^3/h.

(f) Installation location.

(g) Type Approval issued by and Certificate No.

(h) Date installed.

(i) Results of Sample analysis.

(j) Pump flow rate, ballast tanks and volume.

(k) Filter and other major components, Process measurements, as applicable.