STANDARD FOR CERTIFICATION

No. 2.9 Approval Programmes

Approval of Service Suppliers
No. 406

Service Suppliers Engaged in the Inspection and Testing of Radio Communication Equipment and Automatic Identification System on Vessels

MARCH 2014

The electronic pdf version of this document found through http://www.dnv.com is the officially binding version

DET NORSKE VERITAS AS

FOREWORD

DNV is a global provider of knowledge for managing risk. Today, safe and responsible business conduct is both a license to operate and a competitive advantage. Our core competence is to identify, assess, and advise on risk management. From our leading position in certification, classification, verification, and training, we develop and apply standards and best practices. This helps our customers safely and responsibly improve their business performance. DNV is an independent organisation with dedicated risk professionals in more than 100 countries, with the purpose of safeguarding life, property and the environment.

Standards for Certification

Standards for Certification (previously Certification Notes) are publications that contain principles, acceptance criteria and practical information related to the Society's consideration of objects, personnel, organisations, services and operations. Standards for Certification also apply as the basis for the issue of certificates and/or declarations that may not necessarily be related to classification.

Any comments may be sent by e-mail to *rules@dnv.com*

CHANGES – CURRENT

General

This document supersedes No.406, October 2011.

Text affected by the main changes in this edition is highlighted in red colour. However, if the changes involve a whole chapter, section or sub-section, normally only the title will be in red colour.

Det Norske Veritas AS, company registration number 945 748 931, has on 27th November 2013 changed its name to DNV GL AS. For further information, see www.dnvgl.com. Any reference in this document to "Det Norske Veritas AS" or "DNV" shall therefore also be a reference to "DNV GL AS".

Main changes March 2014

- **General**

— The abbreviation AIS has been removed from the document title.

- **Sec.2 Requirements for supplier**

— In [2.11.1] one list item has been modified and one added to align document with IACS UR Z17.

- **Sec.5 Information of alteration to the certified service operation system**

— [5.2] List of Inspectors and Supervisors has been added.

Editorial Corrections

In addition to the above stated main changes, editorial corrections may have been made.

CONTENTS

1 General

1.1 Scope

Suppliers providing services on behalf of the owner, such as inspection and testing of radio communication equipment and automatic identification system (AIS), the results of which may form the basis for the surveyor's decisions, shall be approved by the Society according to criteria established in this approval programme.

Reference is made to:

— DNV Rules for Classification of Ships, Pt.1 Ch.1 Sec.1 B1100 and D200.
— DNV Rules for Classification of High Speed, Light Craft and Naval Surface Craft, Pt.1 Ch.1 Sec.3 A400
— DNV Offshore Codes DNV-OSS-101 Ch.1 Sec.2 [1.9] and [3.2]
— DNV Offshore Codes DNV-OSS-102 Ch.1 Sec.2 A900 and C200
— DNV Offshore Codes DNV-OSS-103 Ch.1 Sec.2 A900 and C200

When work carried out by suppliers are used by surveyors in making decisions affecting statutory certifications, the suppliers are subject to approval by the Society where the Society is so authorised by the relevant flag Administration.

The Society may accept Suppliers approved by the flag Administration. Suppliers approved by other recognised organisations may be accepted only after an evaluation by DNV.

Guidance note:

Approval of inspection and testing of radio communication equipment and AIS are independent processes and the applicant may apply for each approval separately or combined. The applicant may apply for inspection and testing of:

a) radio communication equipment, or

b) AIS, or

c) Both radio communication equipment and AIS.

The application shall clearly state the requested type of inspection; a), b), c) and relevant documents thereafter and, based on [2.1], shall be submitted.

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1.2 Objective

The objective of this approval programme is to ensure that suppliers have qualified personnel and have documented and implemented systems for training, control, verification and reporting. In addition, suppliers shall provide the necessary technical equipment and facilities commensurate with providing a professional service.

1.3 Extent of engagement

This approval programme defines the procedures required for obtaining the Society's approval for inspection, testing and/or measurement of AIS on ships, high speed, light craft and Naval Surface Craft and Mobile Offshore Units for compliance with SOLAS regulations.

For radio equipment this approval programme is in agreement with requirements stated in IACS UR Z17, as amended.

1.4 Validity

The approval is valid for three (3) years.

For cancellation of approval, see Sec.6.

2 Requirements for supplier

A certificate of approval will be awarded and maintained on the basis of compliance with the following:

2.1 Submission of documents

The following documents are to be submitted for review:

a) an outline of the supplier’s organisation and management structure, including any subsidiaries to be included in the approval

b) a list of nominated agents

c) experience of the supplier in the specific service area

d) a list of operators, technicians and inspectors

e) documentation of training and experience within the radio and/or AIS servicing/inspection field, including qualifications according to recognised national, international or industry standards, as relevant, including evidence of approval/acceptance by other certification bodies and/or administrations, if any

f) list of testing equipment (make and type). Minimum required equipment is listed in [2.11]

g) an operators guide for the equipment listed in the item above

h) training programmes for operators, technicians and inspectors

i) checklists/inspection procedures containing all items for the technical execution of a radio and/or AIS inspection, including reporting. The checklist should include what to check, how to check it, what equipment is used to check it, and how to correctly report in the report formats listed in [2.15]. Please also refer to current applicable IMO Resolutions (see Sec.7)

j) quality manual and/or documented procedures covering the requirements given in [2.4]

k) information on other activities which may present a conflict of interest

l) record of customer claims and corrective actions requested by the Society and/or other certification bodies

m) where relevant, list and documented licenses granted by equipment's manufacturer.

2.2 Reference documents

The supplier shall have access to SOLAS 1974 as amended, current applicable IMO Resolutions, specification on the survey and certification functions of recognised organisations acting on behalf of the administration, ITU Radio Regulations and IMO Performance Standards as well as relevant parts, if any, of the Society's Rules and Guidelines.

2.3 Extent of approval

The supplier shall demonstrate, as required in [2.5] to [2.15], that it has the competence and control needed to perform the services.

2.4 Quality assurance system

2.4.1 Quality system

The supplier shall have a documented quality system, covering at least:

— maintenance and calibration of the equipment including a record with information on manufacturer and type of equipment, and a log of maintenance and calibrations
— training programmes for the supervisors and the operators
— supervision and verification of operation to ensure compliance with the approved operational procedures
— quality management of subsidiaries and agents
— job preparation
— recording and reporting of information
— code of conduct for the activity
— periodic review of work process procedures, complaints, corrective actions, issuance, maintenance and control of documents.

2.4.2 Quality assurance system

A documented quality assurance system complying with the most current version of ISO 9000 series and including the above items, will be considered acceptable.

2.5 Training of personnel

The supplier is responsible for the qualification and training of its supervisors and inspectors/operators to a recognised national, international or industry standard as applicable, (see [2.6] and [2.7]).

2.6 Supervisor

The qualifications of the supervisor shall cover either radio or automatic identification system (AIS) or both depending on the type of application as specified in [1.1].

The supervisor shall have minimum two (2) years education from a technical school and experience as a inspector and in addition for inspection of radio equipment, shall be holder of a General Operators Certificate (GOC). Acceptance of alternatives to GOC needs approval by DNV Høvik.

2.7 Radio/AIS inspectors

The qualifications of the inspectors shall cover either radio or AIS or both depending on the type of application as specified in [1.1].

The inspector carrying out the inspection shall have passed the internal training of the supplier and have at least one (1) year's technical school and at least one year experience as an assistant inspector. In addition, the radio

inspectors should be holder of a GOC.

2.8 Personnel records

The supplier is required to keep records of the approved supervisor/inspectors.The record shall contain information on age, formal education, training and experience for the service.

2.9 Equipment

— the supplier shall have the major and auxiliary equipment required for correctly performing the inspection. A record of the equipment used shall be kept. The record shall contain information about the manufacturer and type of equipment, and a log of maintenance and calibrations date
— for equipment employing software in conjunction with testing/examinations, this software shall be fully described and verified.

2.10 Administrative procedures

The supplier shall have an order reference system where each engagement is traceable to the inspection record/ report.

2.11 Minimum required instruments.

2.11.1 Equipment for testing radio equipment

— equipment for measuring frequency, voltage, current and resistance
— equipment for measuring modulation on MF/HF and VHF (AM, FM, PM)
— equipment for measuring power output and reflected power on VHF and MF/HF
— acid tester for checking the specific gravity weight in lead accumulator batteries
— tester for checking of EPIRB output (correct encoding).

2.11.2 Equipment for testing AIS

— AIS tester.

2.12 procedures and instructions

The supplier shall have documented procedures and instructions for how to carry out testing and examination of:

a) radio equipment, when applying for approval of testing of radio equipment (if MODU is included in the application the procedures must also cover this area).
b) AIS equipment, when applying for approval of testing of AIS.

Procedures and instructions for operating of each item of the testing/inspection equipment shall also be kept and be available at all time.

These procedures shall conform to the requirements as described in App.A for radio and App.B for AIS.

2.13 Verification

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

2.14 Sub-contractors

The supplier shall give information of agreements and arrangement if any parts of the services provided are subcontracted. Particular emphasis shall be given to quality management by the supplier in the following-up of such subcontracts. Subcontractors providing anything other than subcontracted personnel or equipment shall also meet the requirements specified in this programme.

2.15 Reporting

The report form used shall be one of the following report forms:

a) For Radio equipment:

— CRC 629a (for ships and HSLC)
— MOD CRC 304a (for MODU)
— the form CRC 630a (annual testing of 406 MHz EPIRB) or equivalent to be used for reporting of annual testing of the EPIRB for all vessels.

b) For AIS:

— Appendix to IMO MSC.1/Circ.1252 (2007) or AIS 001a.

The report shall include a copy of the Certificate of Approval.

3 Approval procedures

3.1 Initial audit

After a successful assessment of the applicant's QA system and technical requirements, a Service Supplier Certificate will be issued with three years validity. During the validity of Certificate, copies of survey reports issued by the applicant shall be forwarded to DNV. Before the expiry date of the certificate, a total of 15 reports (or all reports if less than 15) issued during the validity of the Certificate will be examined in order to evaluate the technical performance of the supplier during the validity of the certificate, based on which DNV will conclude if the Service Supplier certificate may be renewed. If the reports do not show satisfactory results, DNV may refuse to issue a new Service Supplier certificate. If that is the case, the applicant may apply for re-approval after 6 months according to [6.3].

Guidance note:

For the existing approved radio inspection service suppliers who would apply for approval as approved AIS inspection service supplier, the already approved QA system of the radio service supplier is valid. However the process for AIS inspection approval is regarded as initial and all relevant parts of the programme applies for the AIS inspection approval; in particular [2.4] to [2.15] relevant for AIS approval shall be followed and all required documents in [2.1] (except a, k, j and l) covering the AIS inspection shall be submitted for AIS inspection approval.

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3.2 The supplier’s relationship with the manufacturer/ service agent of equipment

3.2.1 To ensure that the inspection is carried out objectively, the Service supplier must not have any economic or other interest in the outcome of a inspection. The supplier is hence not normally allowed to carry out both servicing/repairs and inspection of that same installation. Deviation from the above is to be accepted by acting DNV surveyor.

3.2.2 A supplier which works as a service station for manufacturer(s) of equipment (and as a service supplier in this field), shall be assessed by the manufacturer(s) and nominated as their agent. The manufacturer shall ensure that appropriate instruction manuals, material etc. are available for the agent as well as of proper training of the agent's technicians. Unless coming under the requirement below, such suppliers shall be approved on a case-by-case basis in accordance with this procedure. The Approved Service Supplier Certificate will in this case be issued to the local agent.

3.2.3 If a manufacturer of equipment (and service supplier) applies to the Society for the inclusion of their nominated agents and/or subsidiaries in the certificate of approval, the manufacturer must have implemented a quality assurance system certified in accordance with the most current version of ISO 9000 series. The manufacturer shall ensure effective controls of agents and/or subsidiaries even when the agents/subsidiaries have an equally effective quality control system complying with the most current version of ISO 9000 series. Such approvals shall be based upon an evaluation of the quality assurance system implemented by the parent company against minimum the most current version of ISO 9000 series. The Society will follow-up the adherence to this quality assurance system by performing audits on such agents or subsidiaries against the most current version of ISO 9000 series.

3.2.4 Where several servicing stations/ suppliers are owned by a given company/ parent company, each station is to be assessed and approved as specified in [3.2.3].

3.3 Renewal audit

3.3.1 General

Renewal or endorsement of the certificate of approval shall be made at intervals not exceeding 3 years. Verification shall be through audits confirming, or otherwise, those approved conditions are being maintained. Intermediate audits may be required if found necessary by the Society.

At least three months before the period of validity expires the supplier shall apply to the Society for renewal of the certificate of approval. If such application is received less than three months before the expiry date, DNV may not be able to renew the existing certificate in time, due to our verification procedure.

3.3.2 Technical evaluation

This procedure does not apply to the first renewal. Refer to [3.1] for the first renewal.

For the subsequent renewals, before the expiry date of the certificate, a total of 8 reports (or all reports if less than 8) issued during the validity of the Certificate will be examined in order to evaluate the technical performance of the supplier during the validity of the certificate. Based on this evaluation DNV will conclude if the Service Supplier Certificate may be renewed. If the reports do not show satisfactory results, DNV may

refuse to issue a new Service Supplier Certificate, If that is the case, the applicant my apply for a re-approval after 6 months according to [6.3].

4 Certificate of approval

4.1 Approval of the supplier

If the submitted documentation and the surveyor's audit and the practical demonstration are found satisfactory then the supplier will receive a certificate of approval. The certificate of approval will be published on the Internet at http://exchange.dnv.com.

5 Information of alteration to the certified service operation system

5.1 Alteration

In case where any alteration to the certified service operation system of the supplier is made, then such alteration is to be reported immediately the Society.

A re-audit may be required when deemed necessary by the Society.

5.2 List of inspectors and supervisors

It is not mandatory to include the list of the approved inspectors and supervisors in the certificate. It is the responsibility of the supplier to train Inspectors and Supervisors; and keep a record of the qualified personnel who are allowed to conduct survey on behalf of the society (ref. [2.5], [2.6], [2.7] and [2.8]). However, if the supplier chooses to include the list of the inspectors and supervisors in the certificate, then only inspectors and supervisors included in the certificate are allowed to conduct survey on behalf of the society.

6 Cancellation of the certificate of approval

6.1 Right to cancel

The Society reserves the right to cancel the certificate of approval in the following cases:

- where the service was improperly carried out or the results were improperly reported
- where a Surveyor finds deficiencies in the approval service operation system of the supplier and appropriate corrective action is not taken
- where renewal, unscheduled or intermediate audit, as described in [3.3], has not been carried out
- where the supplier fails to inform of any alteration as in Sec.5 above to the Society
- where willful acts or omissions are ascertained.

6.2 Information

The Society reserves the right to inform interested parties on cancellation of the certificate of approval.

6.3 Re-approval

A supplier whose approval was cancelled, may apply for re-approval after a period of six (6) months provided he has corrected the non-conformities which resulted in cancellation, and the Society is able to confirm he has effectively implemented the corrective action.

A new and complete verification of the service supplier based on the provisions in [3.1] apply.

Re-approval will normally be rejected if the cancellation was based on a grave fault, such as a violation of ethics.

7 References

Latest edition of the following publications as appropriate for the scope of the approval:

- DNV Rules for Classification of Ships, Pt.1 Ch.1 Sec.1 B1100 and D200.
- DNV Rules for Classification of High Speed, Light Craft and Naval Surface Craft, Pt.1 Ch.1 Sec.3 A400
- DNV Offshore Codes DNV-OSS-101 Ch.1 Sec.2 [1.9] and [3.2]
- DNV Offshore Codes DNV-OSS-102 Ch.1 Sec.2 A900 and C200
- DNV Offshore Codes DNV-OSS-103 Ch.1 Sec.2 A900 and C200
- Survey forms (DNV eForms):
  - AIS 001a

  - CRC 629a (Report on Survey of GMDSS Radio Installations)
  - CRC 630a (Annual Testing of 406 MHz EPIRBs)
  - MOD CRC 304a (Radio Report for Mobile Offshore Drilling Unit (MODU Code))

- IMO Res. A.1053(27)
- IMO Res. A.789(19)
- MSC.1/Circ.1039 and 1040
- Applicable IMO Performance Standards
- SOLAS 1974 as amended
- MODU Code
- HSC Code
- ITU Radio Regulations
- Applicable ISO Quality Assurance (QA) Standards.

Appendix A
Guidelines for the technical inspection of radio installations onboard ships fitted for compliance with GMDSS

The guidelines apply to cargo ships above 300 tons gross and to all passenger ships irrespective of size, Dynamically Supported Crafts, and High Speed and Light Craft (HSLC).

Terms and definitions

DSC	Digital Selective Calling
EPIRB	Emergency Position Indicating Radio Beacon
EPIRB testing device	device designed for monitoring transmitted frequencies and the verification of correct coding of the float-free satellite EPIRBS
GMDSS	Global Maritime Distress and Safety System
MMSI	Maritime Mobile Service Identity
NAVTEX	system for reception of messages to seafarers related to safety at sea using NBDP
NBDP	Narrow Band Direct Printing (radio telex)
NICA	Nickel-cadmium
NIFE	Nickel-ferro
Scanning watch receiver	receiver continuously scanning dedicated frequencies used solely for safety purposes
SES	Ship Earth Station

A.1 Introduction

The intention of the Guidelines is to enable the radio inspectors contracted by DNV to carry out the radio inspections in a unified and correct manner on ships of any flag.

A.1.1 Performance of radio inspection

The technical radio inspection must always be performed by a qualified radio inspector from an approved local radio inspection service supplier, hereafter referred to as radio inspector (a list of DNV approved radio inspection service suppliers can be found on the DNV web page: https://exchange.dnv.com), who has adequate knowledge of the current SOLAS conventions and associated performance standards, and the latest Radio Regulations as appropriate. Refer also to [1.4].

Radio inspection should be carried out using suitable test equipment capable of performing all the relevant measurements required by these guidelines.

A.1.2 Interpretations

The radio inspector may occasionally observe that compliance with GMDSS requirements are met in different ways. Therefore, in order to avoid any confusion that may arise, IMO has made a set of clarifications. Relevant IMO clarifications are added where appropriate, also referring to relevant regulation of the 1974 SOLAS Convention as amended.

A.2 Documentation

A.2.1 Initial inspection

For the radio installations of cargo ships the examination of plans and designs should consist of:

— examining the plans for the provision and positioning of the radio installation including sources of energy and antennas (SOLAS 74/88-II-1/43, IV/6 and 14)
— examining the plans for the provision and positioning of the radio life-saving appliances (SOLAS 74/88-III/6).

For the radio installations, including radio life-saving appliances, of cargo ships the inspection during construction and after installation should consist of:

— examining the position, physical and electromagnetic protection and illumination of each radio installation (SOLAS 74/88-IV/6)

Guidance note:

If public correspondence from the communication workstation might cause audible or visual interference to the navigator, such communication shall be performed from an other place or room in the ship.

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— confirming the provision of equipment for the radio installation with due regard to the declared sea areas in which the ship will trade and the declared means of maintaining availability of functional requirements (SOLAS 74/88-III/6, IV/7 to 11, 14 and 15)
— confirming the ability to initiate the transmission of ship-to-shore distress alerts by at least two separate and independent means, each using a different radiocommunication service, from the position from which the ship is normally navigated (SOLAS 74/88-IV/4, 7 to 11).

A.2.2 Ships in service

Prior to the technical inspection, it shall be checked that the radio equipment fitted is in accordance with the information stated in Form R - Record of Equipment.

Identification of radio equipment and the result of the inspection shall be recorded in the relevant survey report forms CRC 629a and CRC 630a.

A.3 Antennae

A.3.1 Examining all antennae, including:

— visually checking all antennae, including INMARSAT antennas, and feeders for satisfactory siting and absence of defects (SOLAS 74/88-IV/14)
— checking insulation and safety of all antennae.

Guidance note:

1) Check for protection against inadvertent touching by the ship's staff.
2) Check for possible mutual electrical interference

— vertical separation and safe distances with respect to transmitting and receiving antennae
— free line of sight - INMARSAT antennae.

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A.4 Inspection of the reserve source of energy and automatic battery charger(s)

A.4.1 Reserve source of energy is a battery:

— checking its siting and installation (SOLAS 74/88-IV/13)

Guidance note:
Lead-Acid accumulator batteries and NICD batteries must not be located in the same battery compartment.

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— where appropriate, checking its condition by specific gravity measurement or voltage measurement

Guidance note:

— For lead accumulators specific gravity readings between 1.24 and 1.30 are acceptable. Readings below 1.24 indicates defective charger/ wrong setting on charger, or that the battery needs to be replaced. Variations in the specific gravity between the battery cells (variation in specific gravity of 0.03 or more) indicates a defective cell, and hence that the battery must be replaced.
— For alkali accumulators, including sealed accumulators, a voltage reading of 1.2 V per cell at maximum discharge current is acceptable.
— If there is doubt as to the condition of accumulators and whether the capacity requirement has been met, the accumulators must be replaced or alternatively undergo capacity testing.

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— with the battery off charge, and the maximum required radio installation load connected to the reserve source of energy, checking the battery voltage and discharge current
— checking there is sufficient capacity to operate the basic or duplicated equipment for 1 hour or 6 hours, as appropriate (SOLAS 74/88-IV/13), and
— checking that the charger(s) are capable of re-charging the reserve battery to the required capacity within 10 hours (SOLAS 74/88-IV/13)
— inspecting mechanical condition of accumulators, connections, cables, fuse circuits etc.
— the battery compartment is to be inspected for mechanical defects and sufficient ventilation. Where outdoors wooden or composite battery compartments are used, the accumulator specifications regarding the ability to withstand extreme temperature variations to be checked.

A.4.2 Automatic chargers

Maintenance voltage for lead accumulators shall be 26.8 V, “boost” 28.8 V. When using NiCd accumulators,

28 and 32 V respectively.

A.4.3 General
The following items are to be checked:

— that dedicated AC and DC fuses/circuit breakers for both basic and duplicated GMDSS equipment are provided
— that the main DC supply line from the radio battery is provided with fuses/ circuit breaker - alternatively has been protected by separate and secured pipes
— that the basic and duplicated GMDSS equipment are electrically separated. A 'line by line black-out test' should be carried out.

A.5 Inspection of maritime VHF

A.5.1 The examination should include:

— checking for operation on channels 6, 13 and 16 (SOLAS 74/88-IV/7 and 14)
— frequency tolerance, transmission line quality and radio frequency power output (SOLAS 74/88-IV/14)
— for correct operation of all controls including priority of control units in conning positions (SOLAS 74/88-IV/14)
— the operation of the VHF control unit(s) or portable VHF equipment provided for navigational safety (SOLAS 74/88-III/6)
— for correct operation by on-air contact with a coast station or other ship
— that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88-IV/13).

A.5.2 VHF DSC controller
The examination should include:

— performing an off-air check confirming the correct Maritime Mobile Service Identity is programmed in the equipment (SOLAS 74/88-IV/14)
— checking for correct transmission/receiving by means of a routine or test call to a coast station, other ship, onboard duplicate equipment or special test equipment
— checking that the equipment is capable of automatically including the ship's position in the distress alert and that such data is provided from an external/internal GPS receiver (SOLAS Reg. IV/18).

A.5.3 VHF channel 70 DSC watch receiver
Clarification:

The requirement may be met by:

— a separate VHF channel 70 DSC watch receiver; or
— a dedicated VHF channel 70 DSC watch receiver combined with the VHF radiotelephone; or
— a standard VHF radiotelephone permanently locked on channel 70.

A.5.4 Power supply
Checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88-IV/13). Tick off as appropriate.

A.5.5 Alarm
Checking the audibility of the VHF/DSC alarm.

A.6 MF or MF/HF radiotelephone equipment including DSC and NBDP

A.6.1 The examination should include:

— checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88-IV/13)
— checking the antenna tuning in all appropriate bands
— checking the equipment is within frequency tolerance on all appropriate bands (SOLAS 74/88-IV/14)
— checking for correct operation by contact with a coast station and/or measuring transmission line quality and radio frequency output
— checking receiver performance by monitoring known stations on all appropriate bands.

if control units are provided outside the navigating bridge, checking the control unit on the bridge has first priority for the purpose of initiating distress alerts (SOLAS 74/88-IV/9, 10, 11 and 14)

— Checking that the equipment is capable of automatically including the ship's position in the distress alert and that such data is provided from an external/internal GPS receiver (SOLAS Reg. IV/18).

A.6.2 Examining the MF or MF/HF DSC controller(s), including:

— checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88-IV/13)
— confirming that the correct Maritime Mobile Service Identity is programmed in the equipment
— checking the off-air self test programme
— checking operation by means of a test call on MF and/or HF to a coast radio station if the rules of the port permit the use of MF/HF transmissions (SOLAS 74/88-IV/9, 10 and 11).
— checking that the equipment is capable of automatically including the ship's position in the distress alert and that such data is provided from an external/internal GPS receiver (SOLAS Reg. IV/18).

A.6.3 Examining the MF or MF/HF DSC watch receiver(s), including:

— confirming that only distress and safety DSC frequencies are being monitored (SOLAS 74/88-IV/9 to 12)
— checking that a continuous watch is being maintained whilst keying MF/HF radio transmitters (SOLAS 74/88 IV/12)
— checking for correct operation by means of a test call from a coats station or other ship.

Clarification:

This requirement can be met by:

— a separate MF/HF DSC scanning watch receiver for distress and safety DSC frequencies only; or
— a dedicated MF/HF DSC scanning watch receiver for distress and safety DSC frequencies only combined with the MF/HF radiotelephone.
— If MF mode DSC only is required, a separate MF DSC watch receiver locked on 2187.5 KHz or a dedicated 2187.5 KHz watch receiver combined with the MF radiotelephone installation will suffice.
If DSC operation is desirable on other frequencies, an additional scanning receiver shall be provided.

A.6.4 Examining the MF/HF radiotelex equipment, including:

— confirming that the correct selective calling number is programmed in the equipment
— checking correct operation by inspection of recent hard copy or by a test with a coast radio station (SOLAS 74/88 IV/10 and 11).

Guidance note:
A test of the telex may be preformed by sending the telex message to the vessels INMARSAT-C installation (i.e. through the INMARSAT system).

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A.6.5 Power supply
Checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy (SOLAS 74/88-IV/13). Tick off as appropriate.

A.6.6 MF or MF/HF DSC alarm
Checking the audibility of the MF or MF/HF DSC alarm.

A.7 INMARSAT ship earth station

A.7.1 INMARSAT ship earth station
Examining the INMARSAT Ship Earth Station(s), including:

— checking that the equipment operates from the main, emergency (if provided) and reserve sources of energy.

A.7.2 Examination of the distress function should include:

— checking the distress function by means of an approved test procedure where possible (SOLAS 74/88-IV/10, 11, 12 and 14)
— checking for correct operation by inspection of recent hard copy or by link test.

A.7.3 Automatic position updating support
Checking that the equipment is capable of automatically including the ship's position in the distress alert and that such data is provided from an external/internal GPS receiver (SOLAS Reg. IV/18).

A.8 Float-free satellite EPIRB

A.8.1 Examining the 406 MHz satellite EPIRB (SOLAS 74/88 IV/7 and 14) or 1.6 GHz INMARSAT including:
The items listed in Form CRC 630a “Annual testing of 406 MHz EPIRBs” to be attended to, filled in, signed

and left onboard for documentation. A copy of the form to be sent DNV Høvik (follow annexed to the report Form CRC 629a).

Guidance note:
If the float-free satellite EPIRB is used as the secondary means of alert (see Record of Equipment, Form R) the EPIRB can be accepted if it is installed in the vicinity of the bridge, e.g. in the wings, on top of the wheelhouse, if accessible by stairs, or if its activation is possible by remote control from the position from which the ship is normally navigated. Where intended for remote activation, the EPIRB should be installed so that it has unobstructed hemispherical line of sight to the satellites.

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A.9 Enhanced group call (EGC) receiver

A.9.1 Examining the EGC receiver should include:

— checking for correct operation and area by monitoring incoming messages or by inspecting recent hard copy
— running the self-test programme if provided.

A.10 HF direct-printing (NBDP) receiver

If appropriate, examining the radio equipment for receipt of maritime safety information by HF NBDP (SOLAS 74/88 Rs.IV/7, 12 and 14) including:

— checking for correct operation by monitoring incoming messages or inspecting recent hard copy
— running the self-test programme if provided.

A.11 NAVTEX receiver

If appropriate, examining the NAVTEX equipment (SOLAS 74/88-IV/7, 12 and 14) including:

— checking for correct operation by monitoring incoming messages or inspecting recent hard copy
— running the self-test programme if provided.

A.12 Two-way VHF radiotelephone apparatus

SOLAS III/6.2.1, IV/4

1) Checking for correct operation on channel 16 and one other channel by testing with another fixed or portable VHF.
2) Checking the battery charging arrangement where rechargeable batteries are used.

Guidance note:
Sealed batteries should normally be provided. If sealed batteries are not provided, documentation should be available so it may be verified that the equipment was installed prior to 1996-11-23. See also guidance note in CRC629a.

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3) Checking expiry date of primary battery where used.
4) Checking outside markings; ship's name and call sign to be permanently fixed and clearly readable.

A.13 Radar transponders

(SOLAS 74/88, III/6, IV/7 and 14)

1) Checking position, mounting and monitoring response on the ship's 9 GHz (x-band) radar. Manufacturer's test procedure to be followed
2) Checking battery expiry date
3) Checking outside markings; ship's name and call sign to be permanently fixed and clearly readable

Guidance note:
One radar transponder shall be mounted in each free-fall life boat, if provided.

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A.14 Methods of maintenance

Check “Flag Info” for special national requirements with regards to carriage of spare parts.

A.14.1 Test equipment

Examining the test equipment and spares carried to ensure carriage is adequate and in accordance with the sea areas in which the ship trades and the declared options for maintaining availability of the functional

requirements (SOLAS 74/88-IV/15).

A.15 Handbooks and documentation

A.15.1 Examination of documentation

For the radio installations, including those used in life-saving appliances, the check that documentation, etc., has been placed on board should consist of:

— checking for a valid radio licence issued by the flag Administration (ITU RR Art.18).

OBSERVE

Flag restrictions regarding the validity of the safety radio certificate in case of outdated radio licence. Flag restrictions regarding the validity of the safety radio certificate in case of outdated radio licence, please contact DNV surveyor for information and handling.

— checking the carriage of up-to-date ITU publications (ITU RR App.11).

Guidance note:
The required publications are:

— List of Coast Stations
— List of Ship Stations
— List of Radio determination and Special Services Stations
— List of Call Signs and Numerical Identities
— Manual for Use by the Maritime Mobile and Maritime Mobile-Satellite Services.
Regarding what editions are the latest, please refer to ITU List of Coast Stations (back cover), which lists the various publication dates.

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— checking the carriage of operating manuals for all equipment (SOLAS 74/88-IV/15)
— checking the carriage of service manuals for all equipment when at-sea maintenance is the declared option (SOLAS 74/88-IV/15).

A.15.2 Radio record

Checking the radio record (log) for correct entries (SOLAS 74/88-IV/17 and ITU RR App.11).

A.15.3 Radio operator's certificates

Checking the radio operator's certificates of competence (SOLAS 74/88-IV/16 and ITU RR Art.47).

OBSERVE

Flag restrictions regarding the validity of the radio certificate in cases where the holder does not possess GOC issued by the flag authorities. Flag restrictions regarding the validity of the radio certificate in cases where the holder does not possess GOC issued by the flag authorities, please contact DNV surveyor for information and handling.

A.16 Signs and labels

Checking that signs/labels indicating the ship's name, call sign, MMSI number and telex identification are permanently posted and is clearly readable for the operator using the relevant GMDSS equipment.

A.17 Special requirements for passenger vessels

This section applies to:

— all Passenger Ships,
— HSLC; of which keels were are laid (or at a similar stage of construction) on or after 2002-07-01.

The following is to be checked by the radio inspector:

1) Check that all two-way communication equipment capable of transmitting the ships position is continuously and automatically updated with the ships position from the ships navigation receiver (i.e. GPS).
2) Activation of the EPIRB to be possible from the conning position. This will require remote activation of the EPIRB, or alternatively the provision of two EPIRBs (as the EPIRB also shall be located where it may float freely, should the vessel sink).
3) If possible, verify that the distress panel and distress alarm panel are operating satisfactory.
4) Check that VHF operating on the aeronautical distress frequencies (121.5 MHz and 123.1 MHz FM) are operational and in good working order, and are available on the navigation bridge.

5) Verify that one of the officers onboard holding valid GOC is especially assigned to perform radio communication duties only during distress incidents.

Appendix B
Guidelines for the technical inspection of automatic identification system onboard ships fitted for compliance with SOLAS V

The guidelines apply to cargo ships above 300 GT engaged on international voyages, cargo ships above 500 GT not engaged on international voyages and all passenger ships irrespective of size, Dynamically Supported Crafts, mobile offshore units and High Speed Light Crafts (HSLC).

Terms and definitions

AIS Automatic identification system
UPS Uninterrupted power supply

B.1 Introduction

The intention of the Guidelines is to enable the AIS inspectors contracted by DNV to carry out the initial, annual and renewal AIS inspections in a unified and correct manner on ships of any flag.

B.1.1 Performance of AIS inspection

The technical AIS inspection must always be performed by a qualified AIS inspector from an approved AIS inspection firm, hereafter referred to as AIS inspector (A list of DNV approved AIS inspection service suppliers can be on the DNV web page: https://exchange.dnv.com), who has adequate knowledge of the current SOLAS conventions and associated performance standard, and the latest Radio Regulations as appropriate.

AIS inspection should be carried out using suitable test equipment capable of performing all the relevant measurements required by these guidelines.

B.2 Documentation

For the AIS installation the examination of plans and designs should consist of:

— Antenna layout, initial configuration report, interconnection diagrams, provision of the pilot plug and power supply arrangements (SOLAS 74 as amended Regulations II-1/4 and V/19; and SN/Circ.227).

B.3 Antennae

B.3.1 General installation requirements in SN/Circ.227

The AIS installation should generally comply with SN/Circ.227. The AIS inspector may occasionally observe that compliance with AIS antennae installation requirements as defined by SN/Circ.227 are difficult to meet (especially for ships in service). Hence:

1) For initial inspections: The AIS inspector shall check that the antennae installation is in accordance with the plans approved by DNV or flag.
2) For periodical and renewal inspections: If the antennae arrangement does not meet the installation requirements in SN/Circ.227 and if no evidence exists that either DNV or the Flag have accepted/approved the installation then the AIS inspector shall evaluate the arrangement in order to conclude whether or not improvement can be achieved by rearranging the antennae installation and if such rearrangement is practical.
3) If, for any technical or practical reasons, it is not possible to comply with all antennae arrangement requirements in SN/Circ.227 then the AIS inspector shall find out which antennae may cause the greatest risk of interference with the AIS operation; and check the AIS performance towards a Vessel Traffic Centre (VTC) or another ship station while those interfering antennae are transmitting. A test towards a VTC would be preferable.

B.3.2 Examining the AIS-VHF and AIS-GPS antennae, including:

— visually checking all antennae, and feeders for satisfactory siting and absence of defects
— checking insulation and safety of all antennae.

B.3.3 Inspection of the source of power

— checking that the AIS is supplied by the mains and emergency source of power
— checking that the AIS is also supplied by an UPS if IMO SN Circ.227 is made mandatory by the flag state.

Note:

AIS shall not be supplied by the radio batteries, unless stated otherwise by the flag.

B.3.4 Functional testing

— checking the proper location of the AIS and provision of Pilot plug near pilots operating position
— checking the correct programming of the ships static information (all Static information);
— checking the ability of the AIS to receive ships dynamic information from the appropriate sensors;
— checking the ability to correctly input the ships voyage related data;
— carrying out a performance test of the equipment including radio frequency measurements, transmitting output, polling information, read data, send data and AIS response to “virtual vessels”; and
— carrying out an on-air test that the unit is working correctly using for example an appropriate Vessel Traffic Service (VTS) station or a suitable test equipment.

CHANGES – HISTORIC

Note that historic changes older than the editions shown below have not been included. Older historic changes (if any) may be retrieved through http://www.dnv.com.

October 2011 edition

Amendment December 2012:

— "End" deleted at the end of the document. In addition, the most recent template has been applied specifying the correct approval programme category on the front page.

Main Changes:

— AIS approval included
— Procedures for initial approval changed (local stations with technical competence can carry out the technical evaluation of applicants)
— Procedures for renewal approval changed: local stations have the responsibility for renewal
— Updating references to the newest IMO survey guide: IMO A.1020(26)
— Editorial changes
— New Appendix B.