

1. General

Maritime Safety Authority Circulars are designed to give you assistance and explanations about the standards and requirements set out in the rules. However, the notes contained in Advisory Circulars should not be treated as a substitute for the rules themselves, which are the law.

Where a number such as 43.4 is referred to, this is a reference to a specific rule within Part 43.

2. Radio Equipment for Specific Ship Type and Service

Part 43 covers the general requirements relating to all radio installations, their inspection, installation and maintenance, the keeping of radio records and the qualifications required of radio personnel. It also provides the performance standards for shipborne radio equipment. Part 43 does not give details of the radio equipment that must be carried by a specific type of ship engaged in a particular service. The radio equipment to be carried by any particular type of ship and service is specified in the Parts of the maritime rules dealing with the design, construction and equipment of ships, namely –

Part 40A	Passenger Ships which are not SOLAS Ships
Part 40B	SOLAS Ships
Part 40C	Non-Passenger Ships which are not SOLAS Ships
Part 40D	Fishing Ships
Part 40E	Sailing Ships
Part 40F	Hovercraft



3. GMDSS System

The following is an overview of the Global Maritime Distress and Safety System (GMDSS) –

GMDSS is a collection of radio technologies that together make up a system that can provide automated distress alerting and location of ships at sea. A central feature of GMDSS is that ship to shore distress alerts can be sent by two separate and independent means, each using a different radio communication service. Also, means are provided to transmit and receive Maritime Safety Information (MSI) and to communicate with a Rescue Co-ordination Centre (RCC) and other ships.

The technical components of GMDSS include –

- The Digital Selective Calling (DSC) system
- Communication links via the International Maritime Satellite (INMARSAT) communications system
- Emergency Position Indicating Radio Beacons (EPIRB's)
- NAVTEX
- Radar Transponders (Search and Rescue Transponders (SART's))

The DSC system is a paging system that provides a means of distress alerting at the push of a button from the ship on HF and VHF radio to ships in the immediate vicinity and to shore stations. The system is 'selective' because calls can be made to an individual ship or to ships in a designated area from a shore based RCC. Data from the ship's navigation equipment and other information may be included in the DSC message. There are no plans to implement VHF DSC (on its dedicated channel, channel 70) in New Zealand. The MF/HF Maritime Radio Service provides HF DSC from its Taupo facility in New Zealand. HF DSC is also operational at two Australian sites, Sydney and Perth.

The INMARSAT communication system has three service standards that provide two way communication complying with GMDSS. INMARSAT A and B offer high grade voice, fax, data and telex facilities, while INMARSAT C is a low bit rate data only communication system. All have distress alerting at the push of a button.

The MSA provides coastal and oceanic warnings and weather bulletins on the INMARSAT-C satellite service. These broadcasts are coded such that all INMARSAT-C equipped ships within a circular area of 900 nautical miles radius centred on Nelson can receive the coastal broadcasts, and the oceanic broadcasts can be received throughout Navarea XIV (Navarea XIV is an area covering much of the Southern Pacific over which New Zealand has responsibilities for providing maritime safety services).

EPIRB's are transmit only beacons that are used for emergency position locating. The GMDSS compliant EPIRBs operate at 406MHz to low earth orbit COSPAS-SARSAT satellites, or at 1.6GHz to the geostationary INMARSAT satellites. With the 406MHz EPIRB system, doppler and data signals are stored on board the satellite so as to give global coverage with maybe an hours delay in reception at an RCC. In the case of 1.6GHz EPIRBs, reception of an alert is immediate provided the EPIRB is within an INMARSAT footprint and the INMARSAT station has an INMARSAT-E capability. Also GMDSS compliant is the VHF EPIRB which may only be used within range of a shore based VHF station or a nearby DSC equipped ship.

Also available are 121.5/243MHz EPIRBs that are not GMDSS compliant. These are located by the low earth orbit COSPAS-SARSAT satellites, but to a lower accuracy than those that work at 406MHz. For satellite location of 121.5/243MHz beacons to occur both the beacon and a COSPAS-SARSAT ground station must be simultaneously seen by the satellite for several minutes as there is no signal processing and storage on the satellite. This means that much of the southern ocean is outside location coverage. The 121.5/243 MHz EPIRB provides a useful signal for short range location from aircraft but under the GMDSS system this function is undertaken by the SART radar transponders. Unlike the 406MHz EPIRB, the 121.5/243MHz EPIRB does not transmit identification data.

NAVTEX is a system for transmitting maritime safety information (MSI) on 518kHz for automatic reception on board ship. NAVTEX is not provided in the New Zealand region.

Enhanced group calling (EGC) receivers are message processors that facilitate recovering MSI broadcasts sent via INMARSAT satellite channels. The EGC system allows MSI messages to be directed to, and received in relevant geographic areas. The INMARSAT EGC service is called SafetyNET.

SART transponders for survival craft are for close range location using standard 9GHz radars.

GMDSS defines 4 types of sea areas –

- A1 – within range of shore based VHF stations
- A2 - within range of shore based MF stations
- A3 – within geostationary satellite range (i.e. INMARSAT)
- A4 – other areas (i.e. beyond INMARSAT range)

These sea area designations determine what type of GMDSS equipment is required on ships in each area. There are no sea areas designated A1 or A2 in the New Zealand region. Ships which go beyond the New Zealand offshore limit and are required to comply with GMDSS will be required to comply with the requirements for sea area A3 provided they stay within regions which lie within the footprint of an INMARSAT satellite. If they go beyond INMARSAT range (e.g. the Ross Sea area) they will be required to comply with the requirements for sea area A4.

4. Serviceability and maintenance requirements

For the purposes of rule 43.9(3), for GMDSS ships –

- (a) where availability is ensured by using a combination of methods which include shore-based maintenance, an arrangement acceptable to the Director should be established to ensure adequate support of the ship for the maintenance and repair of its radio installations. Acceptable arrangements include –
 - (i) a signed declaration from the owner of the ship giving details of the arrangement with an organisation (or organisations) covering the trading area of the ship to provide maintenance and repair facilities on a call-out basis; and
 - (ii) provision of facilities at the main base of ships engaged on a regular trading pattern.
- (b) where availability is ensured by using a combination of methods which includes at-sea electronic maintenance capability, adequate additional technical documentation, tools, test equipment and spare parts should be carried on board in order to enable the maintainer to perform tests and localise and repair faults in the radio equipment. The extent of the additional technical documentation, tools, measuring equipment and

spare parts to be carried on board should be consistent with the equipment installed and should be approved by the radio surveyor. An indication of such approval should be entered in the appropriate Record of Equipment (where the 'Method used to ensure availability of radio facilities' is entered).

- (c) where availability is ensured by using duplication, either singly, or in combination with other approved methods –
 - (i) the additional radio installations should each be connected to a separate antenna and be installed and ready for immediate operation; and
 - (ii) it should be possible to connect the duplicate radio installations to the reserve sources of energy, in addition to the required radio equipment. The capacity of the reserve source or sources of energy should be sufficient to operate the required radio equipment or the duplicate equipment. A single fault in the reserve source or sources of energy should not be able to affect both the required radio equipment and the duplicate radio equipment; and
 - (iii) if the reserve source of energy is a battery, the charging arrangements should be duplicated. Alternatively a suitable alarm system should be installed to indicate a failure in the charging arrangement and provision should be made to connect the equipment direct to a suitable alternative supply.

5. Radio Surveyors and Radio Inspectors

For names and contact details of persons recognised by the Director as either 'radio surveyors' or 'radio inspectors' a ship owner should contact the following –

Manager, Ship Safety Management
Maritime Operations Division
Maritime Safety Authority
P.O. Box 27006
WELLINGTON
Tel. 04-494 1215 Fax. 04- 473 6699

6. Recognition as a Radio Surveyor

Rule 46.29 provides that the Director may recognise any suitably qualified person as a surveyor by issuing a maritime document in accordance with section 41 of the Maritime Transport Act 1994. In the case of a radio surveyor the maritime document will indicate the person is recognised to undertake the radio surveys required by rules 43.6(1) and 43.6(2).

Rule 46.29 further states that recognition as a surveyor is conditional on the Director being satisfied that the person has the appropriate technical qualifications and experience to undertake the surveys prescribed on the maritime document. The following is a guide to the technical qualifications and practical experience that the Director may consider appropriate for recognition of a person as a radio surveyor –

- (1) A person seeking recognition as a radio surveyor would be expected to have obtained one of the following qualifications:
 - (a) Radiotelegraph Operator's Certificate First Class:
 - (b) Radiotelephone Operator's General Certificate:
 - (c) New Zealand Certificate in Engineering (Telecommunications – Radio):
 - (d) Radio Technician's Certificate:
 - (e) Technicians Certificate – Telecommunications:
 - (f) a General Operator's Certificate.

Alternatively the person may have obtained a First or Second Class Electronics Certificate.

- (2) Persons should have at least six months experience at sea as a Radio Officer or 12 months training in an organisation approved by the Director.

In every case, an individual applicant's qualifications and experience will be assessed and equivalents taken into account.

Another requirement of rule 46.29 is that the radio surveyor is employed within a quality assurance system for the survey of shipborne radio installations certified by a recognised accreditation body. Those bodies

recognised by the Director are those certification bodies accredited by the Joint Accreditation Scheme for Australia and New Zealand (JASANZ).

7. **Recognition as a Radio Inspector**

Rule 43.7 provides that the Director may recognise any suitably qualified person as a radio inspector by issuing a maritime document in accordance with section 41 of the Maritime Transport Act 1994. The maritime document issued will prescribe the extent and type of radio inspections that may be undertaken by the radio inspector to whom the maritime document is issued. Such inspections will not extend beyond the scope of the radio inspections required under rule 43.6(3).

Rule 43.7 further states that recognition as a radio inspector is conditional on the Director being satisfied that the person has the appropriate technical qualifications and experience to undertake the radio inspections prescribed on the maritime document. The following is a guide to the technical qualifications and practical experience that the Director may consider appropriate for recognition of a person as a radio inspector –

- (1) A person seeking recognition as a radio inspector would be expected to have obtained one of the following qualifications:
 - (a) New Zealand Certificate in Engineering (Telecommunications – Radio):
 - (b) Radio Technician's Certificate:
 - (c) Technician's Certificate – Telecommunications:
 - (d) A marine radio qualification issued by or on behalf of the Secretary of Commerce.
- (2) Persons should have at least two years relevant experience with HF or VHF radio communication systems. Such experience must be in the installation or maintenance and servicing of such equipment.

In every case an individual applicants qualifications and experience will be assessed and equivalents taken into account.

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