

**NOTE:** This document is an excerpt from **The Report and Order In the Matter of Amendment of the Commission's Rules Concerning the Inspection of Radio Installations on Large Cargo and Small Passenger Ships.** The entire document in HTML and Wordperfect format is available from our [Orders](#) section.

## ATTACHMENT E

### *How to Conduct a GMDSS Inspection.*

The GMDSS replaces the ship-to-ship safety system that used manual Morse code with a ship-to-shore safety system that uses satellite and automated terrestrial communications systems. The GMDSS requires ships to carry various types of communications equipment depending upon the voyages of the ship rather than the gross tonnage. (See § 80.1069.) The GMDSS also requires ships to comply with certain functional requirements. (See § 80.1081.) The GMDSS rules are found in subpart W of Part 80 [Code of Federal Regulations, Title 47, Part 80].

Definitions of Sea Areas. Ships must comply with the requirements for all sea areas in which they operate.

Sea Area A1--Basically VHF

Sea Area A2--Basically MF

Sea Area A3--Ocean areas within INMARSAT coverage. Below 70 degrees N Latitude and above 70 degrees S Latitude. Most ships will operate in Sea Area A3.

Sea Area A4--Out of INMARSAT coverage area. Above 70 degrees N Latitude and below 70 degrees S Latitude. These ships must be equipped with an HF DSC installation.

### **Ship radio equipment.**

**I. All GMDSS ships** must comply with the following. ( § 80.1085)

1. VHF installation. ( § 80.1085(a)(1)&(2))
  - A. Required DSC channel 70. Must be able to initiate transmission of distress alerts from position from which ship is navigated.
  - B. Required channels for radiotelephony (transmit and receive)--6, 13, 16
  - C. Separate, dedicated, non-scanning receiver capable of monitoring DSC on VHF channel 70 (Accept either a separate radio installation or a separate receiver combined with the VHF radio. In either event, the ship must have continuous monitoring capability for DSC on channel 70.)
  - D. Transmitter power output between 6 and 25 watts. ( § 80.1101(c)(2).
  - E. Frequency tolerance 10 Hz/MHz ( § 80.209(a)(5)(ii).
  - F. Type accepted for GMDSS (must have a label so stating). ( § 80.1103(e))
2. SART--Search And Rescue Transponder. ( § 80.1085(a)(3))
  - A. Two required for ships 500 gross ton or greater. One required for ships of between 300 and 500 gross tons. ( § 80.1101).
  - B. Type accepted for GMDSS (must have a label so stating). ( § 80.1103(e))
  - C. Self test capability required.

3. NAVTEX receiver ( § 80.1085(a)(4)).

- A. Dedicated receiver
- B. Type accepted for GMDSS (must have a label so stating). ( § 80.1103(e))
- C. Capable of receiving NAVTEX information in all areas in which ship operates.

4. INMARSAT ship earth station with enhanced group calling, *e.g. SafetyNet* or HF direct printing equipment capable of receiving HF maritime safety information.

NOTE: This requirement only applies to ships operated in areas where NAVTEX is not available. (80.1087(a)(5))

5. A category 1, 406 MHz EPIRB. ( § 80.1085(a)(6) )

- A. Must have an automatic release mechanism that is not likely to be blocked if ship should capsize. Must also be capable of manual release, manual activation, and of automatic activation when placed in water.
- B. Battery date not expired.
- C. Registered with NOAA
- D. Type Accepted for GMDSS (must have a label so stating). ( § 80.1103(e))
- E. Self test capability.

6. MF Radiotelephone installation (See NOTES 1 and 2 below). ( § 80.1085(a)(6))

- A. Distress frequency watch receiver must comply with § 80.807.
- B. Auto alarm generator must comply with § 80.807.
- C. Must operate on 2182 kHz. Other frequencies optional.

7. IMO publication *GMDSS Master Plan of Shore-Based Facilities* available on board.

8. Must be able to initiate distress alert from position from which the vessel is normally navigated.

NOTE 1: Ships operating only in Sea Area A1 do not have to carry the auto alarm signal generator.

NOTE 2: Ships constructed after February 1, 1997, do not have to carry the above MF radiotelephone distress frequency watch receiver nor the autoalarm signal generator.

## II. SEA AREA A1. ( § 80.1087)

Ships that operate only in Sea Area A1 must meet the above requirements for all ships and the following:

- A. Be capable of transmitting a distress message using one of the following: ( § 80.1087(a))
  - 1. A second VHF installation; or,
  - 2. A second MF installation; or,
  - 3. A separate HF installation; or,
  - 4. A separate INMARSAT installation; or,
  - 5. By using the Category I, 406 MHz EPIRB ( this requirement may be met by either mounting the EPIRB required for all ships near the conning position or by having remote activation capability).

B. The VHF installation required for all ships must be capable of operating on all marine VHF channels. ( § 80.1087(b))

Inspection notes: It is unlikely that you will inspect a ship that is certified to operate only in Sea Area A1.

### III. Sea Areas A1 and A2 ( § 80.1089)

1. Ships that operate in Sea Area A1 and A2 must meet the above requirements for all ships and the following:

- A. An MF installation with DSC capability
  - 1. 2187.5 kHz for DSC alerting
  - 2. 2182 kHz for radiotelephony distress and safety communications
- B. An MF radio installation capable of continuously monitoring 2187.5 kHz DSC (This may be combined with the above installation, but must provide a separate DSC receiver).
- C. Means to initiate a distress alert by either:
  - 1. The category I, 406 MHz EPIRB (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
  - 2. A separate HF installation with DSC capability; or,
  - 3. A separate INMARSAT installation.
- D. A radio installation capable of transmitting and receiving general radio communications using radiotelephony or direct-printing telegraphy by either:
  - 1. An MF or HF installation with the capability to operate on working frequencies in the bands 1605-4000 kHz or 4000-27500 kHz (This capability may be added to the MF installation.); or,
  - 2. An INMARSAT ship earth station.

Inspection notes: Conduct a radio check on the MF installation.

### IV. Sea Areas A1, A2 and A3 ( § 80.1091)

1. Ships that operate in Sea Areas A1, A2 and A3 must meet the requirements for all ships and either, paragraph 2 or 3 of the following:

2. Satellite:

- A. An INMARSAT ship earth station capable of
  - 1. Transmitting and receiving distress and safety communications by means of direct printing telegraphy,
  - 2. Transmitting and receiving distress priority calls,
  - 3. Maintaining watches for shore-to-ship distress alerts including those directed to specifically defined geographical areas,
  - 4. Transmitting and receiving general radiocommunications using either radiotelephony or direct-printing telegraphy.
- B. An MF radio installation including
  - 1. 2187.5 kHz transmit and receive using DSC
  - 2. 2182 kHz using radiotelephony and
  - 3. Continuous monitoring capability of 2187.5 kHz DSC (may be combined with MF installation, but must have separate receiver).

C. Means to initiate a distress alert by either:

1. A category I, 406 MHz EPIRB (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
2. A separate HF installation with DSC capability; or,
3. A separate INMARSAT installation

3. Automated terrestrial:

A. An MF/HF radio installation capable of :

1. Transmitting and receiving on all distress frequencies in the band 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct printing telegraphy,.
2. Selecting any of the DSC distress and safety frequencies at any time,
3. Maintaining a DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 Hz. (The watch-maintaining receiver may be separate from or combined with the MF/HF installation.)

B. Means to initiate a distress alert by either:

1. The category I, 406 MHz EPIRB required for all ships. (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability); or,
2. A separate INMARSAT installation.

C. Capability to transmit and receive general radio communications using radiotelephony and direct printing telegraphy in the bands 1605-4000 kHz and 4000-27500 kHz. (This requirement may be fulfilled by adding this capability to the MF/HF installation).

**V. Sea Areas A1, A2, A3 and A4.**

1. Ships that operate in Sea Areas A1, A2, A3 and A4 must meet the requirements for all ships above, and those for Sea Areas A1, A2 and A3 listed above except that the satellite option available in the A3 area is not available in the A4 area and the automated terrestrial option listed above for the A3 area becomes mandatory:

A. An MF/HF radio installation capable of :

1. Transmitting and receiving on all distress frequencies in the band 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct printing telegraphy,
2. Selecting any of the DSC distress and safety frequencies at any time,
3. Maintaining a DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 Hz. (The watch-maintaining receiver may be separate from or combined with the MF/HF installation.)

B. Means for initiating a distress alert by both:

1. The category I, 406 MHz EPIRB required for all ships. (This requirement may be met by installing the 406 MHz EPIRB close to the conning position or by having remote activation capability.) and
2. The MF/HF installation using DSC on any of the above DSC distress alerting frequencies. It must be possible to initiate the distress alert by this means from the position from which the ship is normally navigated.

- C. Capability for transmitting and receiving general radio communications using radiotelephony and direct printing telegraphy in the bands 1605-4000 kHz and 4000-27500 kHz. This requirement may be fulfilled by adding this capability to the MF/HF installation.

## **VI. Survival Craft Equipment.**

1. Cargo ships that are greater than or equal to 300 gross tons but less than or equal to 500 gross tons must carry 2 two-way VHF portable radiotelephones (80.1101(c)(7)). The equipment must be type accepted for GMDSS use and must bear a label so stating. Alternatively, the ship's survival craft may be fitted with a fixed VHF radio installation(s) in which case the portable units are not required. Portable radiotelephones provided on board a vessel prior to February 1, 1992, that do not comply fully with the performance standards of Section 80.1101(c)(7) may continue to be used on that vessel until February 1, 1999, provided they are compatible with approved units.

2. Cargo ships that are 500 gross tons and passenger vessels engaged on an international voyage must carry 3 two-way VHF portable radiotelephones (80.1101(c)(7)). If the ship's survival craft are fitted with fixed VHF radiotelephone installations, the portable units are not required.

Inspection notes. Check frequency tolerance, power output, modulation, battery manufacture date & half-life date (80.1095(c)). Non-complying handhelds provided on board before 2-1-92 can continue to be used until 2-1-99. Except for non-complying units mentioned above, survival craft radiotelephones (whether fixed or portable) must be type accepted for GMDSS use and must bear a label so stating (80.1103(e)).

## **VII. Ship sources of energy.**

1. Reserve power must meet either six hour or 1 hour requirement.

- A. Six hours for ships constructed before February 1, 1995, or ships that do not meet the emergency power requirements of SOLAS, Chapter II-1, Regulation 42 or 43.
- B. One hour for ships constructed after February 1, 1995, or older ships that voluntarily comply with SOLAS, Chapter II-1, Regulation 42 or 43. (80.1099(b)(2))

2. An uninterruptable power supply is needed if an INMARSAT installation is required. (80.1099 (i))

3. When the reserve source of energy consists of batteries, equipment must be provided for automatically recharging them to minimum required capacity in not more than 10 hours. (80.1101 (f)(1))

4. When the reserve source of energy consists of batteries, the battery capacity must be checked at intervals not exceeding 12 months. If not completed within past 12 months, this must be done during inspection. (80.1101(f)(2))

5. Storage batteries provided as a reserve source of energy must be installed in accordance with applicable electrical codes and good engineering practice. They must be protected from adverse weather and physical damage. They must be readily accessible for maintenance and replacement. (80.1101(g))

## **VIII. Separate Lighting.** Permanently installed lighting sufficient to illuminate the operating

controls of the radio installation and powered from a source independent of the ship's main and emergency power sources must be provided. (80.1083(b)(4))

## **IX. Publications and documents.**

1. Valid station license (80.405)
2. Operator license(s) (80.407(b))
3. Two operators (GMDSS Radio Operator (13.2)) are required, one must be designated as the primary operator in times of distress. (80.1073(a))
4. One member of crew with GMDSS Radio Maintainer License if on-board maintenance option is elected. 80.1074
5. Station log (80.409(a), (b) and (e)).
6. Publications:
  - A. FCC Rules & Regulations Part 80 (80.401).
  - B. IMO publication: *Master Plan of Shore Based Facilities* (Most recent edition) (80.1085(d)).
  - C. *Alphabetical List of Maritime Mobile Call Signs* (80.401)
  - D. *List of Ship Stations* (80.401)
  - E. *Manual for Use by Maritime Mobile Service and Satellite Service* (80.401)
  - F. *List of Coast Stations* (80.401)
  - G. *List of Radiodetermination and Special Services Stations* (80.401)

## **X. MAINTENANCE**

1. Ships must select a method of maintenance that depends on the area of operation. § 80.1105
  - A. Ships operated in Sea Area A1 or A2 must select at least one of the methods of maintenance.
  - B. Ships operated in Sea Areas A3 and A4 must select at least two of the methods of maintenance.

### **2. METHODS**

- A. At-sea maintenance -- requires at least one member of the crew holding a GMDSS Maintainer License.
- B. Shore based maintenance -- requires ship to have shore based maintenance available.
- C. Duplication of equipment -- means that the following equipment, in addition to all other requirements must be carried:
  1. Sea Area A1--a complete VHF DSC installation (including antenna).
  2. Sea Area A2--a complete VHF DSC installation and a complete MF DSC installation (including antennas).
  3. Sea Area A3--a complete VHF DSC installation and, either a complete MF/HF DSC installation (including antenna), or a complete INMARSAT ship earth station, but not a separate power source).
  4. Sea Area A4 -- a complete VHF DSC installation and a complete MF/HF installation (including separate antenna but not a separate power source).

NOTES: The duplicated equipment must be immediately available for use--this means that while the equipment does not have to be in standby, it must be installed and ready to be operated without any assembly.

#### D. SPARE PARTS

1. Tools, spares, and test equipment as deemed necessary

Instruction and maintenance manuals, recommended spare parts, tools; and test equipment for all required equipment should be provided. (80.1105(f))