

SOLAS ships in sea areas A1 and A2 are required to use at least one of the three specified maintenance methods, whereas SOLAS ships in sea areas A3 and A4 should use at least a combination of two methods.

(SOLAS regulations IV/4 and 15)

1.6.1 Shore-based maintenance

If availability is ensured by using a combination of methods which includes shore-based maintenance, an arrangement acceptable to the Administration should be established to ensure adequate support of the ship for the maintenance and repair of its radio installations. For example, the following arrangements, among others, may be suitable:

- .1 an agreement with a company known to cover the trading sea area of the ship to provide maintenance and repair facilities on a call-out basis;

Note: Production of a valid SOLAS certificate by an Administration is sufficient proof that the Administration is satisfied that adequate shore-based maintenance arrangements have been made by the shipowner.

- .2 provision of facilities at the main base of ships engaged on a regular trading pattern.

1.6.2 At-sea electronic maintenance

1.6.2.1 If 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 localize and repair faults in the radio equipment. The extent of this 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 Administration. An indication of such approval should be entered in the Records of Equipment (Form P, R or C).

1.6.2.2 The person designated to perform functions for at-sea electronic maintenance should either hold an appropriate certificate as specified by the ITU Radio Regulations, as required, or have equivalent at-sea electronic maintenance qualifications, as may be approved by the Administration, taking into account the recommendations¹ of the Organization on the training of such personnel.

1.6.3 Duplication of equipment

1.6.3.1 If availability is ensured by using duplication of equipment, in addition to the radio installations required by regulations IV/7, IV/8 and IV/9, as appropriate, the following radio installations complying with regulation IV/14 should be available onboard ships engaged on voyages in:

- .1 sea area A1 – a VHF radio installation complying with the requirements of regulation IV/7.1.1; and
- .2 sea area A2 – a VHF radio installation complying with the requirements of regulation IV/7.1.1 and an MF radio installation complying with the requirements of regulation IV/9.1.1.

¹ Reference is made to resolution A.703(17) on *Training of radio personnel in the Global Maritime Distress and Safety System (GMDSS)*.

The duplication of equipment above is deemed as being achieved if an equipment with coverage equal to or broader than the required system is installed for compliance with other sea area requirements, providing the required redundancy.

1.6.3.2 If availability is ensured by using a combination of methods which includes duplication of equipment, in addition to the radio installations required by regulations IV/7, IV/10 and IV/11, as appropriate, the following radio installations complying with regulation IV/14 should be available on board ships engaged on voyages in:

- .1 sea area A3 – a VHF radio installation complying with the requirements of regulation IV/7.1.1, and either an MF/HF radio installation complying with the requirements of regulation IV/11.1.1 and being able to comply fully with the watch requirements of regulation IV/12.1.3 or a recognized mobile satellite service Ship Earth Station (RMSS-SES) complying with the requirements of regulation IV/10.1.1. The MF/HF installation or RMSS-SES installed for duplication should also comply with regulation IV/10.2; and
- .2 sea area A4 – a VHF radio installation complying with the requirements of regulation IV/7.1.1, and an MF/HF radio installation complying with the requirements of regulation IV/11.1.1 and being able to comply fully with the watch requirements of regulation IV/12.1.3.

An RMSS-SES with lesser coverage installed onboard should determine the coverage of sea area A3 as a primary system for a ship.

The MF/HF radio installation or RMSS-SES installed for duplication should also comply with regulation IV/10.2.

1.6.3.3 The additional radio installations specified in 1.6.3.1 and 1.6.3.2 of these Guidelines (hereinafter referred to as "duplicated equipment") should each be connected to a separate antenna and be installed and ready for immediate operation.

1.6.3.4 It should be possible to connect the duplicated equipment to the reserve source or sources of energy required by regulation IV/13.2, in addition to the appropriate radio equipment specified in that regulation (hereinafter referred to as "basic equipment"). The capacity of the reserve source or sources of energy should be sufficient to operate the particular installation (i.e. the "basic equipment" or the "duplicated equipment") with the highest power consumption, for the appropriate period specified in regulations IV/13.2.1 and 13.2.2. However, the arrangement for the reserve source or sources of energy should be such that a single fault in this arrangement should not be able to affect both the basic and the duplicated equipment.

1.7 Ship station radio licence

1.7.1 A ship station radio licence in accordance with the ITU Radio Regulations should be issued to the ship.

1.7.2 The licensee (normally the shipowner) is responsible for applying for a radio licence in due time before the installation take place.

(RR. Article 18)

2.2.2 Sea area A2 means an area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government.

2.2.3 Sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of a recognized mobile satellite service supported by the ship earth station carried on board in which continuous alerting is available.

2.2.4 Sea area A4 means an area outside of sea areas A1, A2 and A3.

2.3 **Equipment requirements (including duplication of equipment) for SOLAS ships**

GMDSS equipment requirements in force for all ships to which SOLAS chapter IV applies:

(SOLAS chapter IV)

Equipment	A1	A2	A3	A4
VHF telephony installation with DSC capable of:	x	x	x	x
DSC watch on channel 70	x	x	x	x
Radiotelephony watch on channel 16	x	x	x	x
Watch on other appropriate frequency or frequencies for urgency and safety communications for the area in which the ship is navigating	x	x	x	x
MF telephony ⁶ installation with MF DSC capable of:		x	x	
DSC watch on 2 187.5 kHz		x	x	
Watch on other appropriate frequency or frequencies for urgency and safety communications for the area in which the ship is navigating		x	x	
SES providing RMSS			x	
MF/HF telephony ⁶ installation with DSC capable of:				x
DSC watch on 2 187.5 kHz and 8 414.5 kHz				x
Depending on time of day and geographical position, DSC watch on at least one of the frequencies 4 207.5 kHz, 6 312 kHz, 12 577 kHz or 16 804.5 kHz				x
Watch on other appropriate frequency or frequencies for urgency and safety communications for the area in which the ship is navigating				x
Duplicated VHF with DSC	x ⁷	x ⁷	x	x
Duplicated MF ⁶ with DSC		x ⁷		
Duplicated SES providing RMSS			x ^{4,5}	
Duplicated MF/HF telephony ⁶ with DSC			x ⁴	x
Receiver(s) for MSI and SAR-related information ³	x	x	x	x
Float-free EPIRB	x	x	x	x
Radar SART or AIS SART	x ¹	x ¹	x ¹	x ¹
Portable GMDSS VHF transceivers	x ²	x ²	x ²	x ²
Automatic updating of position to all relevant radiocommunication equipment	x	x	x	x
The following additional requirements apply to passenger ships				
"Distress panel" and "distress alarm panel" (SOLAS regulations IV/6.4 and 6.6)	x	x	x	x
Two-way-on-scene radiocommunication on 121.5 MHz and 123.1 MHz from the navigating bridge. (SOLAS regulation IV/7.6)	x	x	x	x

- ¹ Cargo ships between 300 and 500 gt.: 1 set. Cargo ships of 500 gt. and upwards and passenger ships: 2 sets.
² Cargo ships between 300 and 500 gt.: 2 sets. Cargo ships of 500 gt. and upwards and passenger ships: 3 sets.
³ This may be either a combined ship earth station and EGC receiver or separate pieces of equipment.
⁴ Ships in sea area A3 may choose between duplication with either complete MF/HF transceiver or SES providing an RMSS with coverage equal to or broader than the primary RMSS (See section 1.6.3).
⁵ See section 1.6.3.2.
⁶ An MF/HF radio installation may substitute an MF radio installation.
⁷ See section **1.6.3.1**.

3 BASIC EQUIPMENT – SUPPLEMENTARY REQUIREMENTS

3.1 General requirements

Every radio installation should be:

- .1 located in such a way that no harmful interference of mechanical, electrical or other origin affects its proper use;
- .2 located in such a way that electromagnetic compatibility (EMC) is ensured and harmful interference is avoided to other equipment and systems;
- .3 so located as to ensure the greatest possible degree of safety and operational availability, with warning notice when appropriate;
- .4 protected against the harmful effects of water, extremes of temperature and other adverse environmental conditions;
- .5 provided with reliable, permanently arranged electrical lighting, independent of the main and emergency sources of electrical power, for the adequate illumination of the radio controls for operating the radio installation; and
- .6 so located that no magnetic compass lies within the stated Compass Safe Distance of the equipment.

(SOLAS regulation IV/6.2)

Note: Ancillary equipment may be connected to the required GMDSS equipment, provided that any such connection is made in such a way that the prescribed GMDSS functions will not be rendered ineffective by use of such ancillary equipment and will be fully restored immediately at the normal or abnormal termination of the connected ancillary equipment. Only an interface allowed within the GMDSS equipment type approval should be used to connect ancillary equipment to a mandatory GMDSS installation.

3.2 Use of VHF for navigational safety

3.2.1 Control of the VHF used for navigational safety should be available at the conning position, and where necessary, from the wings of the bridge.

3.2.2 Portable VHF equipment may be used to provide navigational safety from the wings of the bridge.

(SOLAS regulation IV.6.3)