



Australian Government
Australian Maritime Safety Authority

MARINE ORDERS

Part 27

Radio Equipment

Issue 3

Order No. 4 of 2006

Pursuant to subsection 425(1AA) of the *Navigation Act 1912*, I hereby make this Order repealing Marine Orders, Part 27, Issue 2, and substituting the attached Marine Orders, Part 27, Issue 3, to come into operation on 1 July 2006.

Dianne Rimington
Acting Chief Executive Officer
29 May 2006

Table of Contents

- 1 Purpose & power
 - 2 Definitions of words and phrases used in this Part
 - 3 Interpretation
 - 4 Application
 - 5 Exemptions & equivalents
 - 6 Review of decisions
 - 7 Functional requirements
 - 8 Specific requirements
- Appendix 1 Station frequencies for GMDSS communications
- Appendix 2 Radiotelephone installation
- Appendix 3 Climatic and durability tests
- Appendix 4 Ship Earth Stations
- Appendix 5 Radio Personnel
- Appendix 6 GMDSS equipment for non-SOLAS ships
- Appendix 7 Radio log-book

Previous issues

Issue 1, Order No 6 of 1995

—*Amended by Order No 10 of 1998*

—*Amended by Order No 5 of 1999*

—*Amended by Order No 4 of 2000*

Issue 2, Order No 9 of 2002

1 Purpose & power

1.1 Purpose

This Part of Marine Orders:

- (a) gives effect to Chapter IV of SOLAS,¹ which deals with the provision, maintenance and use of radio equipment on board ships; and
- (b) prescribes matters for the purposes of the following provisions of the Navigation Act:
 - (i) section 231A, which provides that a ship must comply with the regulations and orders with respect to radio installations;
 - (ii) section 231B, which provides that a ship must be provided with such persons qualified to operate the radio installations of a ship as are prescribed;
 - (iii) section 231C, which provides for the regulations to specify the manner in which a radio installation is used and maintained;
 - (iv) section 231E, which provides for the regulations to prescribe matters in relation to radio log-books; and
 - (v) section 231F, which provides for the regulations to make provision for the equipping of ships with radio installations and the operation, maintenance and use on ships of radio installations.

1.2 Power

1.2.1 Section 191 of the Navigation Act provides for the regulations to give effect to SOLAS.

1.2.2 Subsection 425(1) of the Navigation Act provides for regulations to be made prescribing matters required or permitted to be prescribed or which are necessary or convenient to be prescribed for carrying out or giving effect to the Act.

1.2.3 Subsection 425(1AA) of the Navigation Act provides that AMSA may make orders with respect to any matter for or in relation to which provision may be made by regulation.

¹ The current text of Chapter IV is to be found in the SOLAS Consolidated Edition 2004, amended by IMO Resolution MSC.152(78).

2 Definitions of words and phrases used in this Part

AMSA means the Australian Maritime Safety Authority established by the *Australian Maritime Safety Authority Act 1990*;

approved, means approved by the Manager, Ship Inspections, or a survey authority for the purposes of this Part, the approval being subject to such conditions as are considered necessary;

at sea, in relation to radio watch-keeping, means the period occupied in a voyage between the berth at one port of call and the berth at the next port of call;

direct-printing telegraphy means automated telegraphy techniques which comply with the relevant recommendations of the ITU-R;

DSC means digital selective calling, a technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations, and complying with the relevant recommendations of the ITU-R;

DSC Watchkeeping receiver means a radio installation maintaining a continuous watch on one or more specified DSC frequencies;

EPIRB means an approved emergency position-indicating radio beacon;

General Manager means the person occupying the position of General Manager, Maritime Operations, in AMSA;

general radiocommunications means operational and public correspondence traffic, other than distress, urgency and safety messages, conducted by radio;

GMDSS Certificate means a GMDSS Certificate issued under Marine Orders, Part 6;

IMO means the International Maritime Organization;

INMARSAT means the system of geostationary satellites for world-wide mobile communications services, and which supports the Global Maritime Distress and Safety System and other emergency communications systems;

International NAVTEX Service means the co-ordinated broadcast and automatic reception on 518 kHz of maritime safety information by means of narrow-band direct-printing telegraphy using the English language;

ITU-R means the International Telecommunication Union—Radiocommunication Sector;

locating means the finding of ships, aircraft, units or persons in distress;

Manager, Ship Inspections, means the person occupying the position of Manager, Ship Inspections, in AMSA or, in respect of any particular purpose under this Part, a suitably qualified person authorised by the Manager, Ship Inspections, for that purpose;

Manager, Ship Operations and Qualifications, means the person occupying the position of Manager, Ship Operations and Qualifications, in AMSA, or in respect of any particular purpose under this Part, a suitably qualified person authorised by the Manager, Ship Operations and Qualifications, for that purpose;

maritime safety information (MSI) means navigational and meteorological warnings, meteorological forecasts and other urgent safety related messages broadcast to ships;

Navigation Act means the *Navigation Act 1912*;

non-SOLAS ship means a ship that is not a SOLAS ship, but does not include a ship normally engaged on harbour duties;

Radio Regulations means the Radio Regulations annexed to, or regarded as being annexed to, the International Telecommunication Convention as in force on 1 July 2006;

sea area A1 means an area within the VHF radiotelephone coverage area of any coast station providing a continuous DSC alerting service on VHF frequency 156.525 MHz;

sea area A2 means an area, excluding sea area A1, within the MF radiotelephone coverage area of any coast station providing a continuous DSC alerting service on MF frequency 2187.5 KHz;

sea area A3 means an area, excluding sea areas A1 and A2, within the coverage of an INMARSAT geostationary satellite in which continuous alerting is available;

sea area A4 means an area outside sea areas A1, A2 and A3;

SOLAS means the Safety Convention as defined in the Navigation Act;

SOLAS ship means:

- (a) a ship to which Chapter IV of SOLAS apply, or would apply if SOLAS was in force for the country whose flag the ship flies; and
- (b) for the purposes of this Part, any other ship fitted with GMDSS equipment that meets the requirements of Chapter IV of SOLAS;

STCW Code means the Seafarers' Training, Certification and Watchkeeping (STCW) Code, as adopted by the 1995 Conference of Parties to the STCW Convention as Resolution 2;

STCW Convention means the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended.

survey authority means a survey authority approved for the purposes of the Navigation Act.²

All other terms and abbreviations which are used in this Part and which are defined in the Radio Regulations have the meanings as defined in those Regulations.

3 Interpretation

3.1 In this Part, a reference to the date on which the keel of a ship which was laid means the date on which not less than 50 tonnes or one per cent of the proposed total mass of the structural material of the ship, whichever is the less, has been assembled.

3.2 The expression **to the satisfaction of the Manager, Ship Inspections**, or any similar expression appearing in this Part, means that the Manager, Ship Inspections, may require the fitting, material, appliance or apparatus referred to, to be demonstrated to be safe and effective for its intended purpose.

3.3 Where in this Part there is a requirement for an EPIRB to be installed close to, or be remotely activated from, the position from which the ship is normally navigated, the requirement may be met by installing in such a position an EPIRB, which may be:

- (a) the sole EPIRB, in which case it must meet all the requirements of this Part relating to an EPIRB; or
- (b) a supplementary EPIRB, in which case it need not be float-free.

3.4 To the extent that, in relation to an item of equipment, this Part does not specify, or specifies only in part, requirements for inspection, testing, maintenance or replacement, any requirement for inspection, testing, maintenance or replacement specified by the manufacturer must be followed.

3.5 In this Part:

² The following survey authorities are approved: American Bureau of Shipping; Bureau Veritas; Det Norske Veritas; Germanischer Lloyd; Lloyd's Register; and Nippon Kaiji Kyokai. Other survey authorities may be approved by AMSA if they meet relevant criteria.

- (a) headings and subheadings are part of the Part;
- (b) each Appendix is part of the Part;
- (c) a footnote is not part of the Part, but may provide additional information or guidance in applying the Part.

4 Application

4.1 This Part applies to a ship:

- (a) registered in Australia; or
- (b) registered in a country other than Australia, while it is in the territorial sea of Australia or waters on the landward side of the territorial sea.

4.2 This Part does not apply to a SOLAS ship registered in a country other than Australia, except to the extent that the ship fails to comply with SOLAS.

4.3 Nothing in this Part is intended to prevent the use by any ship, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help.

5 Exemptions & equivalents³

5.1 The Manager, Ship Inspections, may grant partial or conditional exemption to individual ships from applicable requirements of this Part, provided:

- (a) such ships comply with the functional requirements specified in 7; and
- (b) that officer has taken into account the effect the exemption may have upon the general efficiency of the service for the safety of all ships.

5.2 An exemption may be granted under 5.1 only:

- (a) if the conditions affecting safety are such as to render full compliance with the applicable requirements of provision 8 unreasonable or unnecessary; or
- (b) in exceptional circumstances, for a single voyage outside the sea area or sea areas for which the ship is equipped.

5.3 If a non-SOLAS ship is required, under exceptional circumstances, to undertake an international voyage to which Chapter IV of SOLAS applies, the Manager, Ship

³ The Manager, Ship Inspections, may seek additional information to assist in reaching a decision.

Inspections, may exempt the ship from any of the requirements of Chapter IV of SOLAS in accordance with Regulation 4(b) of Chapter I of SOLAS.

5.4 Where a provision of this Part requires a particular fitting, material, appliance or apparatus, or type thereof to be fitted or carried in a ship or a particular provision to be made in a ship, the Manager, Ship Inspections, may allow any other fitting, material, appliance or apparatus, or type thereof, to be fitted or carried, or any other provision to be made, if that officer is satisfied that the other fitting, material, appliance or apparatus, or type thereof, or provision, is at least as effective as that required by that provision of this Part.

5.5 Application for an exemption under 5.1 or the allowance of an equivalent under 5.4 must be made in writing to the Manager, Ship Inspections, and must be accompanied by such information as the Manager, Ship Inspections, requires to enable that officer to make a proper decision.

5.6 An exemption granted or recognised under a provision of Marine Orders, Part 27, Issue 2, and in force immediately before this issue came into force, is to continue in force as if granted under this issue.

6 Review of decisions

6.1 Internal review

6.1.1 If the Manager, Ship Inspections, or the Manager, Ship Operations and Qualifications, makes a decision under this Part, a person affected by the decision may, within 3 months of the date of notification of the decision or such longer period as determined by the General Manager, apply to the General Manager for review of that decision.

6.1.2 An application for internal review under 6.1.1 must be made in writing to the General Manager and must be accompanied by such information as the General Manager requires to enable the decision to be properly reviewed.

6.1.3 The General Manager may:

- (a) affirm the original decision made by the Manager, Ship Inspections, or the Manager, Ship Operations and Qualifications; or
- (b) make any decision that could be made by the Manager, Ship Inspections, or the Manager, Ship Operations and Qualifications, in accordance with this Part.

6.1.4 The General Manager must notify his or her decision in writing to the applicant within 28 days of receiving the application for internal review.

6.2 Review by the AAT

6.2.1 Application may be made to the Administrative Appeals Tribunal for review of a decision by the General Manager under 6.1.3.

6.2.2 The notice under 6.1.4 must include:

- (a) a statement to the effect that, if the person is dissatisfied with the decision, application may, subject to the *Administrative Appeals Tribunal Act 1975*, be made to the Administrative Appeals Tribunal for review of the decision; and
- (b) a statement to the effect that the person may request a statement under section 28 of that Act.

6.2.3 Failure to comply with 6.2.2 in relation to a decision does not affect the validity of that decision.

7 Functional requirements

7.1 Every SOLAS ship, while at sea, must be capable of meeting the functional requirements set out in Regulation 4 of Chapter IV of SOLAS.

7.2 Every non-SOLAS ship, while at sea, must be capable of providing for the safety of the ship, particularly the ability to:

- (a) perform ship-to-shore distress alerting by two independent means;
- (b) transmit ship-to-ship distress alerting;
- (c) transmit and receive on-scene communications, including appropriate SAR co-ordinating communications;
- (d) transmit locating signals, unless the Manager, Ship Inspections, determines that the nature of the ship's operations makes this requirement unnecessary; and
- (e) receive maritime safety information.

The installation on the ship must be capable of assisting other ships in distress, particularly the ability to:

- (f) receive shore-to-ship distress alerting; and
- (g) receive ship-to-ship distress alerting.

8 Specific requirements

8.1 The radio installations⁴, equipment, watchkeeping arrangements, sources of energy, performance standards⁵, maintenance requirements,⁶ personnel⁷ and record-keeping⁸ of a SOLAS ship must comply with the relevant provisions of Regulations 6 to 18 (inclusive) of Chapter IV of SOLAS, the Radio Regulations, the STCW Convention and the STCW Code.⁹

8.2 The radio installations,¹⁰ equipment, watchkeeping arrangements, sources of energy,¹¹ performance standards,¹² maintenance requirements,¹³ personnel and record-keeping of a non-SOLAS ship must be such as to adequately enable the functional requirements set out in 7.2 to be met,¹⁴ and comply with the relevant provisions of the Radio Regulations, the STCW Convention and the STCW Code.¹⁵

8.3 For the purposes of section 231E of the Navigation Act, Appendix 7 specifies the prescribed form of a radio log-book.¹⁶

⁴ Station frequencies are listed in Appendix 1.

⁵ A list of IMO performance standards for radio equipment is set out in a footnote to Regulation 14 of Chapter IV of SOLAS. Performance standards for radiotelephone installations, climatic and durability tests and ship earth stations are set out in Appendixes 2, 3 and 4, respectively, of this Part.

⁶ If shore-based maintenance is selected as one of the methods to ensure that the functional requirements are met, then the interval between maintenance inspections should not exceed six months. It should be recognized that, despite the use of other methods, some reliance on shore-based maintenance to enable availability of the functional requirements of the GMDSS would always be necessary.

⁷ The personnel arrangements specified in Appendix 5 are regarded as meeting the requirements of Regulation 16 of Chapter IV of SOLAS.

⁸ The records required by 8.1 are to include: a summary of communications relating to distress, urgency or safety traffic; all test calls; battery specific gravity checks; and a reference to important service incidents. Radio log-books are available from AMSA offices.

⁹ See Marine Orders, Part 28.

¹⁰ Examples of installations that will meet the functional requirements are in Appendix 6.

¹¹ If the source of energy as required by Regulation 13.1 of Chapter IV of SOLAS consists of a rechargeable accumulator battery or batteries then the reserve source(s) of energy as required by Regulation 13.2 of Chapter IV of SOLAS may be exempted provided that such source(s) of energy meets all the relevant requirements of Regulation 13 of Chapter IV of SOLAS.

¹² Radio equipment fitted to a non-SOLAS ship should be GMDSS type-approved and meet the appropriate performance standard referred to in the footnote to Regulation 14 of Chapter IV of SOLAS.

¹³ To ensure that the functional requirements are met in respect of a ship, there must be in place either shore-based maintenance arrangements or at-sea maintenance capability. Although the interval between shore based maintenance inspections is normally not to exceed 6 months, the Manager, Ship Inspections, may extend this period beyond 6 months.

¹⁴ The radio installations, watchkeeping arrangements, sources of energy, maintenance requirements, personnel and record-keeping of a non-SOLAS ship should, as far as possible, meet the relevant standards applicable to SOLAS ships. However, alternative ways of meeting the functional requirements may be acceptable.

¹⁵ See Marine Orders, Part 28.

¹⁶ Radio log-books are available from AMSA offices.

8.4 A ship normally engaged in harbour duties must:¹⁷

- (a) be fitted with a VHF radio installation complying with A1(a) and A1(b) of Appendix 6; and
- (b) be provided with:
 - (i) an approved 406 MHz satellite EPIRB; or
 - (ii) until 30 November 2006—an approved 1.6 GHz satellite EPIRB.

8.5 There must be carried on a ship:

- (a) the Safety Radio, or Radio, Certificate, the Record of Equipment, any applicable Certificate of Exemption, and other relevant statutory certificates;
- (b) a copy of:
 - (i) the current edition of the *Marine Radio Operators Handbook*, published by the Australian Communications Authority; or
 - (ii) the current edition of the handbook for GMDSS ship station operators, published by AMSA;
- (c) a copy of this Part of Marine Orders;
- (d) a copy of the current edition of the *Manual for use by the Maritime Mobile and the Maritime Mobile-Satellite Services*, published by the International Telecommunication Union;¹⁸
- (e) a copy of the current edition of the *Admiralty List of Radio Signals*, published by the Hydrographer of the Navy (UK);¹⁸
- (f) a copy of the current edition of the *List of Ship Stations*, published by the International Telecommunications Union;¹⁸

¹⁷ The operations of these vessels are normally not within the jurisdiction of the Navigation Act. However, under s.187AA of that Act, they may be issued with certificates of equipment and provision 8.4 has been included for that purpose.

¹⁸ Depending on the nature of the voyage and the area of operation, it may be possible to exempt a non-SOLAS ship from compliance with this requirement.

- (g) a copy of the current edition of the *List of Call Signs and Numerical Identities of Stations used by the Maritime Mobile Satellite Services*, published by the International Telecommunication Union;¹⁸ and
- (h) the ship's Radio log-book.

* * * * *

Appendix 1

Station frequencies for GMDSS communications

A — Distress and Safety

	<i>Ship Transmit Frequency</i>	<i>Ship Receive Frequency</i>	<i>Remarks</i>
A.1 Radiotelephone frequencies			
	2182 kHz	2182 kHz	
	4125 kHz	4125 kHz	
	6215 kHz	6215 kHz	
	8291 kHz	8291 kHz	
	12290 kHz	12290 kHz	
	16420 kHz	16420 kHz	
	156.800 MHz	156.800 MHz	VHF Marine channel 16
	156.375 MHz	156.375 MHz	VHF Marine channel 67 — supplementary distress for Australia only
A.2 Digital Selective Calling (DSC) frequencies			
	2187.5 kHz	2187.5 kHz	
	4207.5 kHz	4207.5 kHz	
	6312.0 kHz	6312.0 kHz	
	8414.5 kHz	8414.5 kHz	
	12577.0 kHz	12577.0 kHz	
	16804.5 kHz	16804.5 kHz	
	156.525 MHz	156.525 MHz	VHF marine channel 70
A.3 Narrow Band Direct Printing Telegraphy (NBDP) frequencies			
	2174.5 kHz	2174.5 kHz	
	4177.5 kHz	4177.5 kHz	
	6268.0 kHz	6268.0 kHz	
	8376.5 kHz	8376.5 kHz	

	<i>Ship Transmit Frequency</i>	<i>Ship Receive Frequency</i>	<i>Remarks</i>
	12520.0 kHz 16695.0 kHz	12520.0 kHz 16695.0 kHz	
A.4 Air-sea SAR communications Radiotelephone			
	4125.0 kHz	4125.0 kHz	First preference
	3023.0 kHz	3023.0 kHz	Second preference
	5680.0 kHz	5680.0 kHz	Third preference
	156.300 MHz	156.300 MHz	VHF marine channel 6
A.5 Inter-ship Navigation and Safety Communications			
	156.650 MHz	156.650 MHz	VHF marine channel 13

B - Maritime Safety Information

	<i>Ship Transmit Frequency</i>	<i>Ship Receive Frequency</i>	<i>Remarks</i>
B.1 HF Narrow Band direct Printing Telegraphy (NBDP) frequencies			
		4210.0 kHz 6314.0 kHz 8416.5 kHz 12579.0 kHz 16806.5 kHz	
B.2 NAVTEX (not used in Australia)			
		518.0 kHz 490.0 kHz 4209.5 kHz	

* * * * *

Appendix 2

Radiotelephone installation

1 Technical requirements for MF/HF equipment

MF/HF radiotelephone equipment provided in accordance with this Part must, in addition to meeting the performance standards referred to in Regulation 14 of Chapter IV of SOLAS, be capable of operation on the MF and HF Air-sea Search and Rescue radiotelephone frequencies, as detailed in Appendix 1, section A4.

2 Technical requirements for VHF equipment

2.1 A VHF installation must be capable of transmission and reception of frequency modulated signals on the frequencies of:

- (a) 156.300 MHz (channel 6);
- (b) 156.650 MHz (channel 13);
- (c) 156.800 MHz (channel 16);
- (d) 156.375 MHz (channel 67); and
- (e) other frequencies in the VHF maritime mobile band that are appropriate to the service in which the ship is engaged.

2.2 VHF equipment provided in accordance with this Part must, in addition to meeting the performance standards referred to in Regulation 14 of Chapter IV of SOLAS, be such that priority of use and control of the channels required for navigational safety purposes is immediately available at the place from which the ship is normally navigated.

3 Climatic and durability requirements for MF/HF equipment

3.1 MF/HF radiotelephone equipment must meet the climatic and durability requirements of Appendix 3.

3.2 For the purpose of Appendix 3, radiotelephone equipment is considered to be Class B equipment.

* * * * *

Appendix 3

Climatic and durability tests

1 General

1.1 Category of equipment

In this Appendix, a reference to:

class B equipment means equipment that is normally installed in a protected area; and

class X equipment means equipment that is normally stored or intended to be used in exposed positions.

1.2 Order of tests

Class B and class X equipment must be subjected to the tests indicated in the following table in the order listed:

<i>Class B equipment tests</i>		<i>Class X equipment tests</i>	
1	Vibration test	1	Vibration test
2	Dry heat test	2	Dry heat test
3	Damp heat test	3	Damp heat test
4	Low temperature test	4	Low temperature test
5	Corrosion test (salt water)	5	Rain test
		6	Corrosion test (salt water)
		7	Mould growth test

2 Details of Tests

2.1 Vibration test

2.1.1 The equipment, complete with covers and shock absorbers, if any, must be clamped to a vibration table.

2.1.2 The table must be vibrated at all frequencies between 5 and 12.5 hertz at an amplitude of plus and minus 1.6 millimetres while the equipment is kept operating continuously.

2.1.3 The table must be so vibrated for 3 periods, each of 8 minutes duration.

2.1.4 The direction of the vibration during each one of the periods referred to in 2.1.3 of this Appendix must be perpendicular to the direction of the vibration of the other 2 periods.

2.2 Dry heat test

2.2.1 Class B equipment must be placed in a chamber that is maintained at a constant temperature of $55^{\circ}\text{C}\pm 1^{\circ}\text{C}$ and kept operating at that temperature for a period of 2 hours.

2.2.2 In the case of medium and high frequency radiotelephone transmitting equipment, the transmitter must be adjusted to transmit an output level of 6 decibels below the rated power output of the equipment using class J3E emission, when driven by 2 audio frequency tones of equal levels.

2.2.3 Class X equipment must be placed in a chamber that is maintained at a constant temperature of $70^{\circ}\text{C}\pm 1^{\circ}\text{C}$ for 10 hours and is then cooled to a constant temperature of $55^{\circ}\text{C}\pm 1^{\circ}\text{C}$, the equipment being kept operating at the latter temperature for 2 hours.

2.3 Damp heat test

2.3.1 The equipment must be placed in a chamber that must, within a period not exceeding 2 hours, be heated from room temperature to 40°C and brought to a relative humidity of at least 95 per cent.

2.3.2 The chamber must be kept at a temperature of $40^{\circ}\text{C} \pm 1^{\circ}\text{C}$ and a relative humidity of at least 95 per cent for a period of 12 hours.

2.3.3 At the beginning of the last hour of the period of 12 hours, all accessible surfaces and components must be wiped dry and any fans or drying heaters provided in the equipment must be switched on.

2.3.4 After the fans or drying heaters have been in operation for 30 minutes and while the temperature in the chamber is still 40°C , the equipment must be operated and checked.

2.3.5 The temperature of the chamber must then, in preparation for the low temperature test, be allowed to fall below 25°C , the equipment being retained in the chamber.

2.4 Low temperature test

2.4.1 Class B equipment must be placed in a chamber that must be maintained at a temperature of $-15^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at normal atmospheric pressure for a period of not less than 12 hours.

2.4.2 Class X equipment must be placed in a chamber that must be maintained at a temperature of $-25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ at normal atmospheric pressure for a period of not less than 12 hours.

2.4.3 During the last 30 minutes of low temperature tests the equipment must be operated and checked at the controlled temperature.

2.5 Rain test

2.5.1 Class X equipment must be placed in a chamber fitted with 8 shower heads, the discharge end of which consists of a flat, non-corrodible metal plate 1.6 millimetres thick, having 36 holes each of 1 millimetre diameter evenly spaced in concentric circles as follows:

16 holes on the periphery of a 51 mm diameter circle;

8 holes on the periphery of a 38 mm diameter circle;

8 holes on the periphery of a 25 mm diameter circle; and

4 holes on the periphery of a 13 mm diameter circle.

2.5.2 The shower heads must be arranged at a distance of between 500 mm and 800 mm from the equipment in such a manner that spray from 4 of the shower heads is directed downwards at an angle of 45° at each of the uppermost corners of the equipment and the spray from the other 4 shower heads is directed horizontally at the centre of each area of the 4 sides of the equipment.

2.5.3 Fresh water at room temperature and at a static pressure of between 100 kilopascals and 175 kilopascals must be sprayed on the equipment from the shower heads for a period of one hour.

2.5.4 In this test the equipment must be:

- (a) placed in its normal upright position as though for operation purposes; and
- (b) rotated at a rate of between 12 and 20 revolutions per minute.

2.6 Salt water corrosion test

2.6.1 The equipment must be placed in a chamber fitted with apparatus capable of spraying a fine mist of either natural sea water, or water that contains, within a tolerance of plus or minus 10 per cent, the following percentages of salts in solution:

Sodium Chloride	2.7%;
Magnesium Chloride	0.6%;
Calcium Chloride	0.1%; and
Potassium Chloride	0.07%.

2.6.2 The spraying apparatus must be so arranged that the products of corrosion cannot mix with the sea water or solution contained in the spray reservoir.

2.6.3 The equipment must be sprayed on all its external surfaces with the sea water or solution for a period of one hour and must be kept working continuously for the last 30 minutes of that hour.

2.6.4 The equipment must then be immediately stored for a period of 7 days at a temperature of 40°C and at a relative humidity of between 60% and 80%.

2.6.5 The equipment must be so sprayed and stored on 4 separate occasions.

2.7 Mould growth test

2.7.1 Class X equipment must be inoculated by spraying with an aqueous suspension of mould spores containing all of the following cultures:

- Aspergillus niger;
- Aspergillus terreus;
- Aureobasidium pullulans;
- Paecilomyces varioti;
- Pencillium funiculosum;
- Pencillium ochrochloron;
- Scopulariopsis brevicaulis; and
- Trichoderma viride.

2.7.2 Immediately after spraying, the equipment must be placed in a chamber the temperature of which must be maintained at 29°C ±1°C at a relative humidity of not less than 95%.

2.7.3 The equipment must remain in the chamber for a period of 28 days.

3 Details of Requirements

Equipment subjected to the tests required by this Appendix pass those tests if:

- (a) the equipment operates satisfactorily during the vibration and dry heat tests;
- (b) the equipment operates satisfactorily in the operational checks required in the damp heat and low temperature tests;
- (c) immediately after the conclusion of the salt water corrosion tests, there are no signs of undue corrosion or deterioration and the equipment operates normally; and
- (d) in the case of class X equipment, the equipment:
 - (i) operates satisfactorily immediately after the conclusion of the rain test; and
 - (ii) shows no signs of harmful mould growth and operates satisfactorily immediately after the conclusion of the mould growth test.

* * * * *

Appendix 4

Ship Earth Stations

1 Definitions

In this Appendix, **ship earth station** means any means of transmitting and receiving radio or other signals by way of the INMARSAT system of international communication.

2 Specifications

The installation of a ship earth station must comply with such specifications of the following publications as have application to the installation of that equipment, so far as it is practicable to ensure the greatest possible operational safety:

- (a) IMO Resolution A.694(17): General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System and for electronic navigational aids;
- (b) IMO Resolution A.808(19): Performance standards for ship earth stations;
- (c) IMO Resolution A.807(19): Performance standards for INMARSAT C ship earth stations capable of transmitting and receiving direct-printing communications, as amended by IMO Resolution MSC.68(68);
- (d) International Electrotechnical Commission Publication IEC 60533: Electrical and Electronic Installations in Ships—Electromagnetic Compatibility; and
- (e) Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) Standard RPS 3 - Maximum exposure levels to Radiofrequency Fields — 3 kHz to 300 GHz (2002).¹⁹

* * * * *

¹⁹ ARPANSA standards are obtainable from www.arpansa.gov.au/rps_pubs.htm.

Appendix 5

Radio Personnel

- 1 Each person in charge of a navigational watch and each person in charge of or performing radio duties must hold a valid GMDSS Certificate.
- 2 If a ship uses the option of at-sea electronic maintenance to guarantee the functional requirements, the grade of GMDSS Certificate of at least one person on board must be First Class Radio Electronic or Second Class Radio Electronic.
- 3 Subject to 5, on a passenger ship at least one person other than the Master and Deck Officers must hold a valid GMDSS Certificate.
- 4 One of the persons specified in 1, 2 or 3 must be designated on the Muster List as having primary responsibility for radio communications during distress situations.
- 5 Where on a passenger ship sufficient deck officers are available to cover all other roles normally filled by deck officers during emergencies or distress situations, the Manager, Ship Operations and Qualifications, may accept a deck officer as the person having primary responsibility for radio communications during distress situations.

* * * * *

Appendix 6

GMDSS equipment for non-SOLAS ships

The following are examples of radio installations²⁰ on a non-SOLAS ship that will meet the functional requirements of Provision 7.2:

A. On Australian coastal voyages (sea area A3):

A.1: Option 1

- (a) A VHF radio installation with DSC capability;*
- (b) A DSC watchkeeping receiver for VHF channel 70 which may be separate or combined with the VHF radio installation above;
- (c) A MF radio installation with DSC capability;
- (d) A MF DSC watchkeeping receiver capable of maintaining a continuous DSC watch on 2187.5 kHz which may be separate or combined with the MF radio installation above;
- (e) An INMARSAT ship earth station capable of:
 - (i) transmitting and receiving distress and safety communications using direct-printing telegraphy;
 - (ii) initiating and receiving distress priority calls;
 - (iii) transmitting and receiving general radio communications, using either radiotelephony or direct-printing telegraphy;
 - (iv) receiving Maritime Safety Information (MSI) using enhanced group calling;
- (f) A 406 MHz EPIRB;
- (g) Hand held VHF radiotelephone apparatus fitted with VHF channel 6, 13, 16 and 67;[†] and
- (h) 9 GHz radar transponder(s), unless the Manager, Ship Inspections, determines that the nature of the ship's operations makes this requirement unnecessary.[†]

²⁰ Specifications and performance standards of various radio and communication equipment shall be in accordance with requirements outlined in Chapter IV of SOLAS.

A2: Option 2

- (a) A VHF radio installation with DSC capability;*
- (b) A DSC Watchkeeping receiver for VHF channel 70 which may be separate or combined with the VHF radio installation above;
- (c) A MF/HF radio installation with DSC capability;
- (d) A MF/HF DSC watchkeeping receiver capable of maintaining a continuous DSC watch on 2187.5 kHz, 8414.5 and at least one of the distress and safety frequencies 4207.5, 6312, 12577 or 16804.5 kHz, and allowing, at any time, the selection if any of any of these distress and safety frequencies. This equipment may be combined with or separate from the above MF/HF radio installation;
- (e) An INMARSAT ship earth station capable of receiving Maritime Safety Information (MSI) using enhanced group calling;
- (f) A 406 MHz or, until 30 November 2006, a 1.6 GHz EPIRB;
- (g) Hand held VHF radiotelephone apparatus fitted with VHF channel 6, 13, 16 and 67;[†] and
- (h) 9 GHz radar transponder(s), unless the Manager, Ship Inspections, determines that the nature of the ship's operations makes this requirement unnecessary.[†]

B. On international voyages

Non-SOLAS vessels shall be required to be fitted, in addition to equipment listed at item A above, with NAVTEX receiver when operating in NAVTEX areas.

C. On voyages in sea areas A3 and A4

- (a) A VHF radio installation with DSC capability;*
- (b) A DSC Watchkeeping receiver for VHF channel 70 which may be separate or combined with the VHF radio installation above;
- (c) A MF/HF radio installation with DSC capability;
- (d) A MF/HF DSC watchkeeping receiver capable of maintaining a continuous DSC watch on 2187.5 kHz, 8414.5 and at least one of the distress and safety frequencies 4207.5, 6312, 12577 or 16804.5 kHz, and allowing, at any time, the selection if any of any of these distress and safety frequencies. This equipment may be combined with or separate to the above MF/HF radio installation;
- (e) An INMARSAT ship earth station capable of receiving Maritime Safety Information (MSI) using enhanced group calling;
- (f) A 406 MHz EPIRB;
- (g) HF narrow band direct printing equipment;

-
- (h) Hand held VHF radiotelephone apparatus fitted with VHF channel 6, 13, 16 and 67;[†] and
- (i) 9 GHz radar transponder(s), unless the Manager, Ship Inspections, determines that the nature of the ship's operations makes this requirement unnecessary.[†]
- * All GMDSS ships while at sea, shall continue to maintain, when practicable, continuous listening watch on VHF channel 16. Existing ships fitted with, VHF equipment without DSC capability may apply to the Manager, Ship Inspections, for exemption from fitting a VHF radio with DSC capability.
- † The number of radar transponders and hand held VHF radiotelephone units to be carried by each vessel will be determined by the Manager, Ship Inspections, on a case-by-case basis. The Manager, Ship Inspections, will take into account radar transponders and hand held VHF radiotelephone units carried on the ship in accordance with Marine Orders, Part 25.

* * * * *

Appendix 7

Radio log-book

Part I

<i>Name of ship/vessel</i>		<i>IMO/Official number and international call sign</i>	<i>Home Port</i>	<i>Gross tonnage</i>
<i>Port at which, and date when, voyage commenced</i>	<i>Nature of the voyage or employment</i>		<i>Port at which, and date when, voyage terminated</i>	
Port			Port	
Date			Date	

Serial number _____ from _____ to _____

Delivered/posted to the Manager, Ship Operations and Qualifications, Canberra, on / /
Date

Master

Address

.....

.....

SECTION A — PARTICULARS OF SHIP/VESSEL

Name	IMO No./Official No.	Gross tonnage
Port of Registry	International Call Sign	MMSI
Sea area(s) in which ship/vessel is certified to operate	Date keel was laid	
Expiry date of current Safety Radio Certificate		

Method(s) used to ensure availability of radio facilities

Duplication of equipment	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>
At-sea maintenance capability	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>
Shore based maintenance	No	<input type="checkbox"/>	Yes	<input type="checkbox"/>



Details of service company

Name
Address

Name and address of Owner, Managing Owner or Agent

Name
Address

SECTION B — QUALIFIED PERSONNEL

Details of the qualified personnel on board

<i>Name</i>	<i>Dates on board or dates of attachment</i>		<i>Class and number of certificate(s) and date(s) of issue</i>
	<i>From</i>	<i>To</i>	

Name and rank or muster number of designated person(s) with responsibility for radio communications during emergencies (as required by 3.2.2 of Appendix 2 to Marine Orders, Part 28)

--

Name of person(s) nominated to carry out appropriate tests and checks and Log entries (if different from above)

--

SECTION C — GMDSS RADIO LOG

MV	Callsign	MMSI
----	----------	------

Date and time UTC	Station from	Station to	Operator's actions or remarks	Frequency, channel or satellite

SECTION D — EQUIPMENT TESTS AND RESERVE ENERGY CHECKS

Annex 1 — Particulars of Batteries on Board

Battery number	Number of cells	Manufacturer	Type of battery	Date supplied	Voltage & ampere hour capacity	Purpose for which used

Annex 2 — Monthly Report of Batteries

Date	Battery Number and cell number	Specific gravity as measured		Remarks
		Before charge	After charge	

* * * * *