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AUSTRALIAN NAVAL CLASSIFICATION AUTHORITY MANUAL (VOLUME 2)

DIVISION 3: SHIP RULES

CHAPTER 08: SAFETY COMMUNICATIONS

PART 1: ANC RULES

This document is issued for use by Defence and Defence Industry personnel and is effective forthwith.

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AUSTRALIAN NAVAL CLASSIFICATION RULES

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Australian Naval Classification Rules

Rule 0. Goal

0.1 The safety communications equipment shall be designed, installed, and maintained so that the ship, while at sea, is capable of:

0.1.1 Transmitting ship-to-shore distress alerts by at least two separate and independent means, each using a different radio communication service;

0.1.2 Transmitting ship-to-air distress alerts;

0.1.3 Receiving shore-to-ship distress alerts;

0.1.4 Transmitting and receiving ship-to-ship distress alerts;

0.1.5 Transmitting and receiving search and rescue coordinating communications;

0.1.6 Transmitting and receiving on-scene communications;

0.1.7 Transmitting and receiving signals for locating ships, aircraft, units or persons in distress, including persons lost overboard;

0.1.8 Transmitting and receiving maritime safety information;

0.1.9 Transmitting and receiving general radio communications to and from shore-based radio systems or networks;

0.1.10 Transmitting and receiving bridge-bridge communications from the position where the ship is normally navigated; and

0.1.11 Transmitting and receiving internal communications.

0.2 The safety communications equipment shall:

0.2.1 Provide high reliability and minimise the risk of incorrect operation in all foreseeable operating conditions, accidents and emergencies;

0.2.2 Be subject to the overall platform survivability requirements as stated in the naval vessel's OSI; and

0.2.3 Maintain essential safety functions after a minimum of one single operational error and/or system/equipment fault.

0.3 The internal safety communications, main broadcast and alarms systems shall be designed, installed, and maintained to be operational at sea, in harbour and alongside.

0.4 Where required by the OSI, Ships shall also be designed to use and carry non-RF communications including audio and visual signalling means.

Rule 1. General

Functional Objective

1.1 The purpose of this Rule is to outline the principles and framework of Chapter 08 *Safety Communications* and their applications.

Purpose

1.2 The ability to be deployed to any area of interest defined in the Operating and Support Intent (OSI) shall be maintained and the communications fit, and on-board personnel, and shall provide:

1.2.1 The capability to receive and transmit all information as required by the Global Maritime Distress and Safety System (GMDSS) in all sea states and weather conditions;

1.2.2 On-board safety communications including internal communications, main broadcast, portable and survival craft equipment; and

1.2.3 Qualified personnel certified to operate and, if required, maintain the GMDSS equipment to ITU Radio Regulations.

Scope

1.3 Division 2 Chapter 01 *Core Design Rules* applies to all chapters of the ANC Rules as applicable to the design, and therefore in order to meet the Chapter 08 *Safety Communications* Goal, the requirements of both this chapter and Division 2 *Core Design Rules* shall be met.

1.4 The ANC Rules excludes training requirements. Chapter 08 *Safety Communications* assumes all embarked persons have an appropriate level of competence for the operation of the installed systems. Part 3 Chapter 08 *Safety Communications* contains some guidance on typical training requirements.

General Performance Requirements

1.5 The OSI is the Naval Vessel Operator's (NVO) direction of how the communications systems of the ship are to be operated and maintained throughout the life of the ship and is to be shared by the NVO and, where appointed, it's Competent Organisation.

1.6 The adoption of Chapter 08 *Safety Communications* Rules supports interoperability with the authorities and civil ships to alert, monitor, assist and coordinate in Search and Rescue (SAR) events.

1.7 International Ship and Port Security (ISPS) Code does not apply, and Ship Security Alert Systems (SSAS) shall not be fitted, to Ships.

Rule 2. GMDSS Equipment

Functional Objective

2.1 The ship shall be fitted with GMDSS communications equipment to enable communication with shore-based communication and rescue authorities, and vessels in the immediate vicinity, in the event of a marine distress incident.

Note: GMDSS telecommunications equipment should not be reserved for emergency use only. The IMO encourages mariners to use GMDSS equipment for routine, as well as safety telecommunications, where possible.

Performance Requirements

2.2 The ship shall be fitted with GMDSS equipment to:

2.2.1 Transmit ship-to-shore distress alerts by at least two separate and independent means, each using a different radio communication service; one of these means shall be portable and one of these means shall be automatically activated;

2.2.2 Receive shore-to-ship distress alerts;

2.2.3 Transmit and receive ship-to-ship distress alerts;

2.2.4 Transmit and receive search and rescue coordinating communications;

2.2.5 Transmit and receive on-scene communications;

2.2.6 Transmit and receive signals for locating ships, aircraft, or units in distress;

2.2.7 Transmit and receive maritime safety information;

2.2.8 Transmit and receive general radio communications to and from shore-based radio systems or networks; and

2.2.9 Transmit and receive bridge-bridge communications from the position where the ship is normally navigated.

2.3 The GMDSS equipment to be fitted shall be determined by the ship's sea area of operation with reference to the OSI.

Rule 3. Availability of GMDSS Equipment

Functional Objective

3.1 GMDSS equipment shall be continuously available at sea.

Performance Requirements

3.2 The continuous availability of the GMDSS communications functions defined at Part 1 Chapter 08 *Safety Communications*, Rule 2 *GMDSS Equipment,* Paragraph 2.2 shall be ensured by using such methods as duplication of equipment, or provision of maintenance facilities.

3.3 The number and diversity of methods used to ensure continuous availability of the GMDSS communications functions shall be determined by the ship's sea area of operation with reference to the OSI.

Note: Australia is a GMDSS A3 Sea Area according to AMSA and generally all vessels operated by Defence should be considered to operate in Sea Area 3.

3.3.1 During an emergency, the equipment critical to radio communications shall function correctly.

Note: Duplication of GMDSS equipment is not equivalent to complete redundancy.

Note: GMDSS will be used by Defence for 'mutual assistance at sea' and may not always be used as the primary method for distress communication. Commercial shipping requires duplicated radio systems to ensure availability of service. Duplication of equipment, where alternative robust distress procedures are

available, is not always warranted. As such, equipment duplication is not required in naval ships except where specified in this chapter.

Rule 4. GMDSS Sources of Energy

Functional Objective

4.1 Fixed GMDSS equipment is required to be powered from three sources of supply:

4.1.1 Ship's normal alternators/generators;

4.1.2 Ship's emergency alternator/generator (if fitted); and

4.1.3 A dedicated radio battery supply known as the reserve source.

Performance Requirements

4.2 There shall be available at all times, while the ship is at sea, a supply of electrical energy sufficient to operate the radio installations and to charge any batteries used as part of a reserve source or sources of energy for the radio installations.

4.3 A reserve source or sources of energy shall be provided on every ship, to supply GMDSS radio installations, for the purpose of conducting distress and safety radio communications, in the event of failure of the ship's main and emergency sources of electrical power. The reserve source or sources of energy shall be capable of simultaneously operating the main and duplicated GMDSS equipment for a period of at least:

4.3.1 One hour on ships provided with an emergency source of electrical power, if such source of power complies fully with all relevant provisions of Chapter 04 *Engineering Systems* Rule 9, *Other Essential Safety Functions* including the supply of such power to the radio installations; and

4.3.2 Six hours on ships not provided with an emergency source of electrical power complying fully with all relevant provisions of Chapter 04 *Engineering Systems* Rule 9, *Other Essential Safety Functions*, including the supply of such power to the radio installations.

4.4 The reserve source or sources of energy shall be independent of the propelling power of the ship and the ship's electrical system.

4.5 The reserve source or sources of energy may be used to supply the emergency radio lighting.

4.6 If an uninterrupted input of information from the ship's navigational or other equipment to a radio installation required by this chapter is needed to ensure its proper performance, it shall be powered from the main, emergency and reserve sources of energy.

Rule 5. Position Updates to GMDSS Equipment

Functional Objective

5.1 Electronic position information shall be available to the GMDSS equipment.

Performance Requirements

5.2 Fixed GMDSS equipment carried on board a ship which is capable of automatically including the ship's position in the distress alert shall be capable of being provided with this information from an internal or external navigation receiver, if either is installed.

5.3 Where operational security is required by the OSI, position updates shall not be automatically transmitted from GMDSS equipment. Safety communications automatic position updates shall be in silent mode by default and require operator action to activate on instruction by command.

Rule 6. Internal Communications

Functional Objective

6.1 Internal communications equipment shall be provided to:

6.1.1 Enable safe operation of the ship;

6.1.2 Alert embarked persons of emergency or hazardous situations;

6.1.3 Facilitate appropriate emergency response and recovery; and

6.1.4 Provide a means to communicate internally during ship's power failures.

Performance Requirements

6.2 The main internal communications system shall provide effective two-way verbal communication between crew members between all areas of the vessel.

6.3 A back-up internal communications system shall also be provided in the event that the main system is unavailable. The back-up system shall:

6.3.1 Be effective and continuously available;

6.3.2 Be protected from hazards such as fire, vibration, electrical interference and flooding;

6.3.3 Be independent of the ship's power supply; and

6.3.4 Be operable from positions defined by the NVO.

6.4 ANC Rules for other internal communications systems are outlined in Chapter 13 *Combat Systems*.

Rule 7. Main Broadcast System

Functional Objective

7.1 A main broadcast system shall enable verbal communication to embarked persons of an emergency incident and the actions to be taken.

7.2 The main broadcast system shall broadcast the internal ship alarms, and alerts, to embarked persons.

7.3 The general emergency alarm system shall enable the notification of all embarked persons in a timely manner that an emergency situation exists.

Performance Requirements

7.4 The main broadcast system shall:

7.4.1 Allow one-way verbal communication to embarked persons;

7.4.2 Be clearly noticeable by all embarked persons;

7.4.3 Be easily distinguishable and recognisable;

7.4.4 Be continuously available;

7.4.5 Be protected from hazards such as fire, vibration, electrical interference, and flooding; and

7.4.6 Be operable from strategic escape, evacuation and rescue positions and locations used for command and control.

7.5 In addition to verbal main broadcast capability, the system shall include at least the following alarms, as applicable to the OSI:

7.5.1 Action stations/general;

7.5.2 Collision;

7.5.3 Chemical, Biological, Radiological and Nuclear (CBRN); and

7.5.4 Crash on deck alarm.

7.6 The minimum sound pressure levels shall enable announcements and alarms to be heard above the ambient noise in the space.

7.7 Embarked persons shall not be exposed to noise from the alarm system outside safe limits.

7.8 The general emergency alarm shall:

7.8.1 Be clearly noticeable by all embarked persons;

7.8.2 Be easily distinguishable and recognisable;

7.8.3 Be continuously available;

7.8.4 Be protected from hazards such as fire, vibration, electrical interference, flooding;

7.8.5 Be provided such that any incident which may cause alarm failure shall be guarded against by system or equipment redundancy; and

7.8.6 Be operable from strategic escape, evacuation, and rescue positions.

Rule 8. Portable Communications

Functional Objective

8.1 Portable communications systems shall enable effective one-way or two-way communication between crew members in situations not covered by the main broadcast nor internal communications systems.

Performance Requirements

8.2 Portable communications systems shall:

8.2.1 Allow clear and distinguishable one-way, or two-way communication;

8.2.2 Have sufficient system redundancy; and

8.2.3 Facilitate appropriate emergency response and recovery.

Rule 9. Survival Craft Communication Equipment

Functional Objective

9.1 External communication equipment shall be available to be used in survival craft shall enable communication to other vessels, aircraft or to shore during emergencies.

Note: This rule only applies to dedicated organic survival craft. Other small craft are required to comply with Division 4 *Small Craft Rules*.

Performance Requirements

9.2 External communication equipment to be used in survival craft shall:

9.2.1 Be easy to operate including by those wearing fire-fighting or other individual protective equipment;

9.2.2 Incorporate redundancy;

9.2.3 Be located at strategic escape, evacuation and rescue positions;

9.2.4 Be installed in such a way as to avoid harmful electromagnetic interference arising from, or being given to other equipment on board; and

9.2.5 Not cause injuries to persons using the equipment.

Rule 10. Sea-Air Radio communications

Functional Objective

10.1 A sea-to-air two-way radio communications system shall enable communication with overflying aircraft during emergencies.

Performance Requirements

10.2 Every ship shall be provided with means for two-way on-scene radio communications for search and rescue purposes using civil aeronautical VHF frequencies.

Rule 11. Not Used

Rule 12. Not Used

Rule 13. Not Used

Rule 14. Installation, Maintenance, Testing and Repairs

Functional Objective

14.1 The location and ship installation of safety communications equipment shall enable its operation, maintenance, testing and repair.

Performance Requirements

14.2 Every GMDSS radio installation shall:

14.2.1 Be so located that no harmful interference of mechanical, electrical or other origin affects its proper use, and so as to ensure electromagnetic compatibility and avoidance of harmful interaction with other equipment and systems;

14.2.2 Be so located as to ensure the greatest possible degree of safety and operational availability;

14.2.3 Be protected against harmful effects of water, extremes of temperature and other adverse environmental conditions;

14.2.4 Be 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

14.2.5 Be clearly marked with the call sign, the ship station identity and other codes as applicable for the use of the radio installation.

14.3 Where applicable, all other safety communications systems shall meet the requirements of paragraphs 14.2.1 - 14.2.3.

14.4 Control of the VHF radiotelephone channels, required for navigational safety, shall be immediately available in the wheelhouse convenient to the conning position and, where necessary, facilities should be available to permit radio communications from the Bridge wings. Portable VHF equipment may be used to meet the latter requirement.

14.5 Where applicable, GMDSS and other safety communications equipment shall be so constructed and installed that it is readily accessible for inspection and on-board maintenance purposes.

14.6 Portable GMDSS equipment such as EPIRBs and SARTs, shall be located where they are easily reachable during emergencies, deployment of survival craft, and vessel abandonment.

14.7 GMDSS equipment shall be provided with facilities to inhibit transmission for EMCON/RADHAZ purposes.

Rule 15. Operational Audit and Compliance Validation

Functional Objective

15.1 GMDSS equipment shall be surveyed at regular intervals.

Performance Requirements

15.2 The GMDSS equipment shall be surveyed annually.

Note: Annual survey of GMDSS equipment is required for full SOLAS compliance.

15.3 Competent Organisations may require alternative arrangements for the periodicity of surveys.

Rule 16. Personal Locator Beacons (PLB) and Man Overboard Indicator (MOBI)

Functional Objective

16.1 Ships shall be immediately alerted in case of embarked persons falling overboard, and position locating devices shall ensure rescuers can be quickly directed to their location.

Performance Requirements

16.2 Personal Locator Beacons (PLBs) shall be fitted to lifejackets as required by Chapter 07 *Escape, Evacuation and Rescue* to enable quick locating and rescue of a person overboard.

16.3 PLBs shall be manually activated and designed to be easy to use by persons wearing Personal Protective Equipment (PPE).

16.4 PLBs shall be capable of withstanding the worst case environmental and operational conditions in which they are to be used.

16.5 EPIRBs with direction transmitter capability, in addition to the GMDSS satellite tracking capability, shall be used for man overboard marking and distress situations.

16.6 Vessels shall be provided with a Man Overboard Indicator (MOBI) receiver capable of detecting and alerting of the activation of any the ship's PLBs, and EPIRBs.

16.7 The MOBI receiver shall be installed in a location manned by watch keepers such as the bridge.

16.8 The MOBI receiver shall display the direction and identification of the activated PLBs or EPIRBs.

Rule 17. Self-Locating Data Marker Buoys (SLDMB)

Functional Objective

17.1 Ships shall be provided with a means to measure maritime drift, current, waves, temperature, meteorological information, and transmit the data at specified intervals to aid in search planning of personnel or survival craft.

Performance Requirements

17.2 The vessel shall be provided with Self-Locating Datum Marker Buoys (SLDMBs).

17.3 SLDMBs shall be designed to be deployed from ships or organic aircraft to emulate the drift of a survival craft or a person overboard.

17.4 SLDMBs shall signal their position via satellite transponder at defined intervals to their parent ship or rescue coordinators for a defined period.

17.5 SLDMBs shall be capable of withstanding the worst case environmental and operational conditions in which the vessel operates.

Rule 18. Signalling Devices in Restricted Visibility

Functional Objective

18.1 Ships shall be capable of acoustically signalling other vessels within their vicinity in restricted visibility conditions.

Performance Requirements

18.2 Vessels shall be fitted with acoustic signalling devices for maritime collision avoidance purposes.

18.3 Vessels shall be fitted with directable loud-hailers steerable from the bridge, for directing audio messages to surrounding vessels.

18.4 Vessels shall have the means of enabling bridge personnel to hear acoustic signalling from other vessels in the vicinity.

Rule 19. Visual Signalling

Functional Objective

19.1 Ships shall be capable of visual signalling to shore, aircraft, and other vessels within their vicinity by day and night.

Performance Requirements

19.2 Ships shall be fitted with signalling lamps for visual communications with nearby entities including shore, aircraft, and other vessels.

19.3 Signalling lamps shall be capable of being used either in emergency situations where other communications systems (RF Communications) are unavailable, or in situations where radio silence is required.