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AUSTRALIAN NAVAL CLASSIFICATION AUTHORITY MANUAL (VOLUME 2)

DIVISION 3: SHIP RULES

CHAPTER 05: SEAMANSHIP SYSTEMS

PART 1: ANC RULES

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

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1 https://www.legislation.gov.au/Series/C1968A00063

2 https://www.legislation.gov.au/Series/C2004A04868

3 https://www.legislation.gov.au/Series/C2004A03712

4 http://drnet/AssociateSecretary/security/policy/Pages/dspf.aspx

AUSTRALIAN NAVAL CLASSIFICATION RULES

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Division 3: Ship Rules
Part 1: ANC Rules

Chapter 05: Seamanship Systems

Contents

Australian Naval Classification Rules

Rule 0. Goal

0.1 The Seamanship Systems shall be designed, constructed, operated and maintained to:

0.1.1 Operate in a predictable manner with a level of integrity commensurate with operational requirements;

0.1.2 Ensure the watertight integrity of the hull, and meet the requirements of Chapter 03 *Buoyancy and Stability*; and

0.1.3 Enable the independent operating of Seamanship Systems with an Essential Safety Functions and, where specified, Mission Critical Functions in all Foreseeable Operating Conditions.

Rule 1. General

Functional Objective

1.1 The purpose of this Rule is to outline the principles and framework of Chapter 05 *Seamanship Systems* and its application.

Scope

1.2 Division 2 Chapter 01 *General Requirements* and Division 3 Chapter 01 *Integrated Platform Survivability* apply to all chapters of the ANC Rules and therefore in order to meet the Chapter 05 *Seamanship Systems* goal, the requirements of both this chapter, Chapter 01 and Division 2 Chapter 01 *General Requirements* shall be met.

1.3 The ANC Rules exclude training requirements. Chapter 05 *Seamanship Systems* assumes all embarked persons have an appropriate level of competence for the operation of the installed systems. Part 3 contains some guidance on typical training requirements.

General Performance Requirements

1.4 The availability of Seamanship Systems associated with Essential Safety Functions and, where specified, Mission Critical Functions shall be sustained or restored by means of:

1.4.1 Reliability, especially of any single points of failure; and

1.4.2 Redundancy to minimise single points of failure.

1.5 Means shall be provided to ensure isolation of equipment and systems to allow maintenance to take place safely.

1.6 A robust maintenance and inspection schedule to support equipment used in upper deck operations shall be provided.

1.7 Appliances and equipment for use in the escape and evacuation of a casualty vessel are covered in Chapter 07 *Escape, Evacuation and Rescue*. Where discrepancies exist between this Chapter and Chapter 07 *Escape, Evacuation and Rescue* the requirements of Chapter 07 *Escape, Evacuation and Rescue* take precedence.

Rule 2. Not Used

Rule 3. Provision of Operational Information

Functional Objective

3.1 Operators shall be provided with adequate information and instructions for the safe assembly, operation and maintenance of all Seamanship Systems.

Performance Requirements

3.2 Information and instructions shall be supplied to the Operator to provide for the safe operation, fault finding and maintenance of Seamanship Systems, under all Foreseeable Operating Conditions.

3.3 Information and instructions shall define safe operating limits and personnel requirements.

3.4 Not Used.

Rule 4. Access to the Upper Deck and Working on the Upper Deck

Functional Objective

4.1 The accessibility to the upper deck shall enable the Embarked Persons to safely fulfil their tasks as and when required by the Command.

Note: See Chapter 07 *Escape, Evacuation and Rescue* for the requirements of upper deck access points for minimum number and position.

Performance Requirements

4.2 To enable access to the upper deck, stairs, ladders, doors and hatches shall be provided and safely used or operated within the operation limits defined by the OSI.

4.3 Redundancy of access points shall be provided.

4.4 The access to equipment, systems and upper deck shall be designed, constructed and maintained to minimise risk to embarked persons in all Foreseeable Operating Conditions:

4.4.1 Hatches and doors for access to the upper deck shall be capable of being opened from both sides when the door or hatch is not secured from the inside;

4.4.2 Means shall be provided to ensure that access hatches and doors can be opened and closed manually; and

4.4.3 For hatches used in ship escape and rescue situations, the requirements of Chapter 07 *Escape, Evacuation and Rescue* Rule 17 *Fixtures and Fittings on Escape Routes* shall be met.

4.5 Where required, access to Seamanship Systems and equipment with an Essential Safety Function, and, where specified, a Mission Critical Function shall be continuously available.

4.6 Lighting shall be provided at access points and working areas of the upper deck, allowing for any night vision requirements.

4.7 The requirements for watertight integrity and safety of Embarked Persons as defined by Chapter 03 *Buoyancy and Stability* apply in addition to the requirements of this Chapter.

4.8 Effective means for communicating orders from the normal and emergency conning positions to any position from which access to the upper deck can be controlled shall be provided.

4.9 At least one hatch or door shall be arranged to be opened without any unwanted ingress of water when the ship is in any anticipated list or trim including the damaged condition.

4.10 There shall be sufficient space on the upper deck for the requisite Embarked Persons to undertake functions associated with the ship's primary and secondary roles defined in the OSI.

4.11 There shall be a means of preventing personnel on the upper deck from being lost overboard or falling from height whilst not impeding their ability to carry out functions in paragraph 4.10.

4.12 Ships shall be capable, where required, of safely accommodating leisure activities of Embarked Persons on the upper deck.

Rule 5. Embarkation and Disembarkation

Functional Objective

5.1 The ship shall be capable of safely embarking and disembarking Embarked Persons or stores in all operating conditions covered by the OSI.

Note: Where means of embarkation and disembarkation is provided by a pilot ladder the provisions of Rule 6 Pilot Transfer Arrangements of this chapter shall be complied with.

Performance Requirement

5.2 Means shall be provided for the safe embarkation and disembarkation of Embarked Persons and/or stores for port related operations.

5.3 Means shall be provided for the safe embarkation and disembarkation of Embarked Persons and/or stores from ships whilst not alongside but not underway.

5.4 Means shall be provided for the safe embarkation and disembarkation of Embarked Persons from ships while underway.

5.5 Not Used.

5.6 Embarkation and disembarkation equipment shall be inspected and maintained, taking into account any restrictions related to safe loading.

Rule 6. Pilot Transfer Arrangements

Functional Objective

6.1 The ship shall provide a safe means of embarkation and disembarkation acceptable to civilian pilots.

Performance Requirements

6.2 Effective means of communication shall be provided between normal and emergency conning positions, the pilot transfer boat and the pilot embarkation point.

6.3 The pilot transfer station shall be located such that it provides unobstructed access for embarkation and disembarkation from the ship.

6.4 Arrangements permitting pilot access to, or egress from the ship shall be either available on both sides of the ship or be capable of being transferred for use on either side.

6.5 Arrangements for the embarkation and disembarkation of pilots using a Pilot ladder shall be located in the position which best aids the use of the Pilot ladder against the side of the ship

6.6 Adequate lighting shall be provided to illuminate the transfer arrangements over the side of the ship and the position on deck used for embarkation and disembarkation.

6.7 All equipment used in the transfer operation shall be maintained and tested in accordance with manufacturers' specifications or to a recognised standard.

6.8 A safe route shall be provided for the passage of the pilot with escort from the pilot embarkation point to the navigation bridge.

Rule 7. Not Used

Rule 8. Mooring

Functional Objective

8.1 Ships shall be capable of being secured and maintained in position alongside or, where required by the OSI, to a buoy without the use of their own propulsion machinery.

Performance Requirements

8.2 The mooring arrangement shall:

8.2.1 Secure the ship in the environmental conditions specified in the OSI, including wind and current; and

8.2.2 Minimise the risks imposed on the line-handling crew.

8.3 The securing points on the ship shall be available independent of the ship's own power.

8.4 Where winches are provided to tension the mooring lines, the controls shall be in a position such that the operation of the winch may be directly observed by the operator.

8.5 Where mooring lines are carried by the ship, means shall be provided to securely stow them when not in use.

8.6 Consideration shall be given to Rule 10 *Towing* if the mooring equipment may be used for towing.

8.7 Provision shall be arranged such that where an element of a system fails due to the safe working load being exceeded the mode of failure minimises risk to embarked persons.

8.8 Where canal transits are required by the OSI, mooring arrangements and equipment shall comply with the canal authority's requirements (such as the Panama or Suez canals).

8.9 Effective means of communication shall be provided between a winch control position, the navigation bridge and each of the bridge wings of the ship.

Rule 9. Anchoring

Functional Objective

9.1 Ships shall be capable of being secured in position without the use of propulsion machinery when at sea in limited water depths and environment conditions at sea in limited water depths.

Performance Requirements

9.2 The ship shall be capable of anchoring in the depth of water and environmental conditions defined in the OSI.

9.3 Means shall be provided to allow the controlled deployment of the anchor, independent of the ship's power. This is to include an indication of the length of anchor chain deployed.

9.4 Means shall be provided to lock the anchor in the desired position independent of the ship's power.

9.5 Means shall be provided to abandon the anchor independent of the ship's power.

9.6 Consideration shall be given to Rule 8 *Mooring* and Rule 10 *Towing* if the anchoring equipment may be used for mooring or towing.

9.7 Where canal transits are required by the OSI, anchoring arrangements and equipment shall comply with the canal authority's requirements (such as the Panama or Suez canals).

9.8 Effective means of communication shall be provided between an anchor control position, the navigation bridge and each of the bridge wings of the ship.

Rule 10. Towing

Functional Objective

10.1 Means shall be provided to allow the ship to tow a ship as defined in the OSI, or be towed.

Note: See Chapter 03 *Buoyancy and Stability* Rule 4 *Reserve of Stability* for the requirements of stability for vessels engaged in towing operations.

Performance Requirements

10.2 The ship shall be capable of towing vessels of displacement at speeds and environmental conditions defined in the OSI.

10.3 The Safe Working Load (SWL) of equipment is to meet or exceed the maximum design load which may be imposed in all foreseeable operations, within the operating envelope defined in the OSI.

10.4 Emergency towing equipment shall be available in all Foreseeable Operating Conditions.

10.5 The towing system shall be arranged such that:

10.5.1 At least one method is provided which is independent of the vessels own power supplies to safely release the tow while under strain; and

10.5.2 When the design limit is exceeded the system fails in such a way that the remaining elements of the system do not endanger personnel or damage the structure of the ship.

10.6 Systems or devices for the safe cutting of the towing connection shall be installed.

10.7 Not Used.

10.8 The requirement to take the ship in tow in response to an emergency is an essential safety function and as such all associated equipment necessary to perform that function shall demonstrate an appropriate level of integrity.

10.9 Not Used.

10.10 Towing arrangements shall minimise risk on line-handling crew.

10.11 Towing line(s) shall be provided with the means to securely stow them when not in use and protect from degradation.

10.12 Consideration shall be given to Rule 8 *Mooring* and Rule 9 *Anchoring* if the towing equipment may be used for mooring or anchoring.

Rule 11. Replenishment at Sea

Functional Objective

11.1 Ships shall be capable, where required, of transferring solid stores, munitions, liquids or personnel between ships whilst underway.

Note: See Chapter 11 *Aviation Systems* Rule 15 *Vertical Replenishment* for requirements related to Vertical Replenishment (VERTREP).

Performance Requirements

11.2 The ship shall be capable of conducting various Replenishment at Sea (RAS) operations within the environmental limits defined in the OSI.

11.3 Where interoperability is required by the OSI, a recognised Naval, national or international standard shall be applied.

11.4 Effective means of communications, complying with the requirements of Chapter 08 *Communications* shall be provided between:

11.4.1 Ship to ship conning stations;

11.4.2 Ship to ship RAS stations;

11.4.3 RAS station and conning position; and

11.4.4 RAS station to equipment operating positions.

11.5 Ships shall have sufficient space for the anticipated loads to be handled and transferred.

11.6 Ships shall have sufficient working space for Embarked Persons involved in Replenishment at Sea operations to fulfil their duties.

11.7 Ships engaged in the transfer of pollutants as covered in Chapter 14 *Environmental Protection* shall have means to contain accidental spillage during transfer and prevent any loss into the sea.

11.8 Means to rapidly stop RAS operations and disconnect shall be provided to enable emergency breakaway.

11.9 The requirements of Chapter 02 *Structure* are applicable for local structural loads.

11.10 The requirements of Chapter 03 *Buoyancy and Stability* and Chapter 09 *Navigation* are applicable for seakeeping, stability and manoeuvrability.

Note: The replenishment activity includes break out, load movement (solid and liquid) and pack away as well as replenishment rig operation.

11.11 The requirements of Chapter 04 *Engineering Systems* are applicable for propulsion and machinery redundancy.

11.12 The requirements of Chapter 10 *Dangerous Goods (explosives)* are applicable for the transfer of Dangerous Goods.

11.13 The requirements of Rule 15 *Lifting and Hoisting Appliances* are applicable for the lifting appliances associated with RAS operations.

11.14 Replenishment systems shall minimise the risks imposed on the RAS operators.

Note: See Chapter 06 *Fire Safety* for the requirements of firefighting systems for RAS operations involving the transfer of flammable materials.

11.15 Replenishment systems shall be designed to allow concurrent replenishment and operational activities, including minimal loss of combat system capability, as required by the OSI.

11.16 All winches shall incorporate constant tension control or anti-slack device to minimise slack line.

Rule 12. Boat Operations

Functional Objective

12.1 Where required ships shall be capable of boat operations.

Performance Requirements

12.2 Ships shall be capable, where required by the OSI, of launching and recovering boats while alongside or underway (including while making way).

12.3 The person controlling the launch and recovery of the boat shall be able to visually observe both the boat and any associated appliance operator at all times.

12.4 Ships shall have sufficient working space for Embarked Persons involved in boat operations to fulfil their duties.

12.5 Ships shall have sufficient working space for Embarked Persons involved in the routine maintenance of boats to fulfil their duties.

12.6 Means of communications, complying with the requirements of Chapter 08 *Communications* shall be provided between:

12.6.1 The launch/recovery control position and the conning position;

12.6.2 The launch/recovery control position and the boat; and

12.6.3 The boat and the conning position.

Note: Refer to the requirements of Chapter 08 *Safety Communications* Rule 6 *Internal Communications* and Rule 8 *Portable Communications*.

12.7 Means of transferring personnel and equipment into and out of boats shall be provided.

12.8 The requirements of Chapter 02 *Structure* are applicable for local structural loads.

12.9 The requirements of Chapter 03 *Buoyancy and Stability* and Chapter 09 *Navigation* are applicable for sea keeping, stability and manoeuvrability.

12.10 The requirements of Chapter 06 *Fire Safety*, Rule 14 *Carriage of Low Flash Point Fuels* shall be complied with.

12.11 The requirements of Rule 15 *Lifting and Hoisting Appliances* are applicable for any lifting appliances associated with boat operations.

Rule 13. Not Used

Rule 14. Diving Operations

Functional Objective

14.1 Ships shall be capable of supporting diving operations consistent with the areas of operation and environmental conditions defined in the OSI.

Performance Requirements

14.2 Where required by the OSI the ship shall provide means of ingress, egress and recovery of divers to and from the water.

14.3 Where required by the OSI ships shall carry the means to replenish breathing apparatus. In such instances the following shall be applied:

14.3.1 The ship shall be provided with means to ensure the adequate quality and quantity of breathing gases provided for diving purposes.

14.4 The ship shall be provided with means to inhibit the movement and/or transmission of underwater fittings, sensors and machinery which may present a hazard to diving operations.

14.5 A diver orientation system shall be fitted to the hull if required by the OSI.

14.6 Dedicated First Aid capability shall be provided for diving operations and comply with Chapter 15 *Medical Facilities*, if required by the OSI.

14.7 The diving equipment and support systems shall conform to a recognised Naval, national or international standard.

14.8 Diving equipment and support systems, where required by the OSI, shall be provided with:

14.8.1 Means to securely stow and dry equipment when not in use;

14.8.2 Sufficient space and arrangements on board to inspect, clean and maintain the diving equipment; and

14.8.3 Toilets, showers and decontamination facilities which are accessible from the diver's point of ingress to the ship.

Rule 15. Lifting and Hoisting Appliances

Functional Objective

15.1 The ship shall be provided with means to raise, lower and traverse loads as required by the OSI.

Note: See Division 2 Chapter 01 *General Requirements* Rule 15 *Registered Plant* for the requirements of applicable Lifting Appliances.

Note: See Chapter 10 *Dangerous Goods (Explosives)* for the requirements of lifting appliances for munitions.

Performance Requirements

15.2 Lifting appliances and equipment shall:

15.2.1 Satisfy an applicable Naval, National or International Standard; and

15.2.2 Be subject to a regime of periodic inspection and certification.

15.3 Lifting appliances shall be equipped with requisite safety devices.

Note: For this chapter lifting and hoisting are synonymous

15.4 The operational instructions of each item of lifting equipment shall be defined for its assembly, use and maintenance and be present on board.

15.5 The lifting appliance shall remain under control during all modes of operation.

15.6 Operation of lifting appliances shall minimise the risk to Embarked Persons, the lifting equipment and the platform during lifting operations.

15.7 Identification of the Working Load Limit (WLL) or Safe Working Load (SWL) and the maximum test load shall be displayed on or adjacent to the equipment.

Note: The ANC Authority specifies which Competent Organisations are authorised to carry out testing, along with the periodicity and method of testing and mandates that records of all testing are maintained and readily available.

15.8 As far as reasonably practicable, the location of the lifting appliance shall be such that the load can be viewed directly by the operator. In the event that the load cannot be viewed directly by the operator, an effective means of communication, complying with the requirements of Chapter 08 *Communications*, shall be provided between the load area and the operating position.

15.9 The lifting appliance shall not be able to be controlled from more than one operating position at the same time.

15.10 The ANC Authority may require additional requirements for lifting appliances used for personnel.

15.11 Lifting equipment required for life saving functions shall be in accordance with the requirements of Rule 12 *Boat Operations* and Chapter 07 *Escape, Evacuation and Rescue*.

15.12 Upon motive power failure the load shall remain in position.

15.13 After motive power failure, means shall be provided to safely move the load to a pre-determined location.

15.14 The requirements of Chapter 02 *Structure* are applicable for local structural loads.

15.15 The requirements of Chapter 03 *Buoyancy and Stability* are applicable for stability.