



Maritime &
Coastguard
Agency

The Rescue Boat Code

The Code of Practice
For Open Rescue
Boats of Less Than
15 Metres In Length





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Open Rescue Boats of Less
than 15 Metres in Length**

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An executive agency of the
Department for
Transport

THE RESCUE BOAT CODE

THE CODE OF PRACTICE FOR OPEN RESCUE BOATS OF LESS THAN 15 METRES IN LENGTH

TABLE OF CONTENTS

- 1. Foreword**
- 2. Definitions**
- 3. Application and Interpretation**
 - 3.1 Application
 - 3.2 Applicability of other codes of practice, standards and legislation
 - 3.3 Certification and Audit
 - 3.4 Compliance
 - 3.5 Areas of Operation
 - 3.6 Management
 - 3.7 Training
 - 3.8 Standard Operating Procedures and Incident Action Plans
 - 3.9 Emergency Procedures
 - 3.10 Maintenance Requirements
 - 3.11 Record of Services
- 4. Construction and Structural Strength**
 - 4.1 Introduction
 - 4.2 Operational and Design Limits
 - 4.3 General Requirements
 - 4.4 Boat Construction and Structural Strength
 - 4.5 Construction and Structural Strength: Rigid Hull Boats and boats fitted with a buoyant collar
 - 4.6 Construction and Structural Strength: Inflatable boats and Rigid Inflatable Boats
 - 4.7 Recesses
 - 4.8 Fixings
- 5. Weathertight Integrity**
 - 5.1 Openings
 - 5.2 Skin Fittings
 - 5.3 Ventilation
- 6. Water Freeing Arrangements**

7. Machinery

- 7.1 Propulsion: General Requirements
- 7.2 Engine Stop Cords
- 7.3 Inboard Engines
- 7.4 Outboard Engines
- 7.5 Emergency Propulsion
- 7.6 Engine Cooling Systems
- 7.7 Exhaust Systems
- 7.8 Fuel

8. Electrical Arrangements

- 8.1 General Requirements
- 8.2 Batteries
- 8.3 Cables
- 8.4 Electrical Protection
- 8.5 Switches
- 8.6 Earthing and Lightning Protection
- 8.7 Electrical Spaces
- 8.8 Lighting

9. Steering and Propeller Systems

- 9.1 Propeller Bather Guards
- 9.2 Waterjets
- 9.3 Steering

10. Bilge Pumping

11. Stability

- 11.1 Intact Stability
 - 11.1.1 Intact Stability: All boats
 - 11.1.2 Intact Stability: Rigid Hull boats
 - 11.1.3 Intact Stability: Inflatable Boats, RIBs and Boats with a Buoyant Collar
 - 11.1.4 Intact Stability: Survivor Recovery – All boat types
 - 11.1.5 Maximum Personnel Capacities
 - 11.1.6 Crew and Survivor Weight Definitions
- 11.2 Swamping and Drainage
 - 11.2.1 Swamping
 - 11.2.2 Drainage
- 11.3 Damage Stability
 - 11.3.1 General Requirements
 - 11.3.2 Damage Stability: Rigid Hull Boats
 - 11.3.3 Damage Stability: Inflatable Boats
 - 11.3.4 Damage Stability: RIBs and Boats with a Buoyant Collar
 - 11.3.5 Buoyancy Tube Sub-division for Inflatable Boats, RIBs and Boats with a Hollow Buoyant Collar

- 11.3.6 Sub- division of RIBs and Boats with a Buoyant Collar
- 11.3.7 Damage Stability: Survivor Recovery
- 11.4 Dynamic Stability
- 11.5 Boat Righting Systems
- 11.6 Stability When Using Onboard Lifting Devices.
- 11.7 Stability Trials
- 11.8 Capacity Plate

12. Freeboard

- 12.1 All boats
- 12.2 Rigid Hull boats
- 12.3 Inflatable and Rigid Inflatable Boats (RIBs)

13. Life Saving Appliances including Personal Protective Equipment (PPE)

- 13.1 General Requirements
- 13.2 Lifejackets
- 13.3 Operationally Specific PPE
- 13.4 Use of Retro-Reflective Materials on Life Saving Appliances
- 13.5 Pyrotechnics
- 13.6 Training Manual
- 13.7 Instruction Manual (on board maintenance)
- 13.8 Additional Equipment Requirements

14. Fire Safety

15. Fire Appliances

16. Radio Communications Equipment

17. Launch and Recovery Equipment

18. Navigational Equipment and Navigation Lights

19. Boat Storage

20. Anchors and Towing

21. Equipment Stowage

22. Protection of Personnel by Design

23. Medical Care

24. Owner's Manual

25. Maintenance

26. Manning

27 Procedures, Certification, Examination, Maintenance and Reporting of Accidents

- 27.1 Introduction
- 27.2 Requirements and Procedures for Rescue Boats to be Examined and Certificated
- 27.3 Compliance Examination and Issue of a Certificate under the Code
- 27.4 Renewal Examination
- 27.5 Intermediate Examination
- 27.6 Annual Examination
- 27.7 Additional Requirements for Inflatable and Rigid Inflatable Boats
- 27.8 Appeal Against the Findings of an Examination
- 27.9 Maintaining and Operating the Rescue Boat
- 27.10 Accident Reporting
- 27.11 Other Conditions Applying to Certificates – Validity and Cancellation of Certificates
- 27.12 Rescue Boats other than UK Rescue Boats Operating in UK Waters

28. Safety Procedures

- 28.1 Applicability of other Codes of Practice
- 28.2 General Requirements
- 28.3 Launch of Rescue Boat on Service
 - 28.3.1 Pre-launch Requirements
 - 28.3.2 Transit to Launch Site
 - 28.3.3 Launching
- 28.4 Rescue Boat Under Way
 - 28.4.1 Communications
 - 28.4.2 Boat Handling
 - 28.4.3 Navigation
 - 28.4.4 Search
 - 28.4.5 Rescue
 - 28.4.6 Towing
 - 28.4.7 Operation in surf
 - 28.4.8 Helicopter Operations
 - 28.4.9 Cliff / Cave Rescue
 - 28.4.10 Carriage of Passengers
 - 28.4.11 Fuel Management Afloat
 - 28.4.12 Battery Management Afloat
 - 28.4.13 Maintenance Afloat
 - 28.4.14 Pyrotechnics
 - 28.4.15 Ballasting
 - 28.4.16 Anchoring and Veering
 - 28.4.17 Operation of Equipment
- 28.5 Emergencies onboard the Rescue Boat
 - 28.5.1 Capsize

- 28.5.2 Engine Failure
- 28.5.3 Man Overboard
- 28.5.4 Fire
- 28.5.5 Crew Disablement
- 28.5.6 Collision and Damage
- 28.5.7 Operating in Shallow Water and Grounding
- 28.5.8 Operation During Pollution Incidents
- 28.5.9 Alarms
- 28.6 Boat Recovery
- 28.7 Restoring the Boat to a Ready State

29. Pollution Prevention

30. Testing

- APPENDIX 1: Inflatable Boat Stability Trials**
- APPENDIX 2: Training Requirements**
- APPENDIX 3: Risk Assessment Guidelines**
- APPENDIX 4: Guidance on Safety Management System and Documentation**
- APPENDIX 5: Compliance Check List**
- APPENDIX 6: Bibliography and References**
- APPENDIX 7: Compliance Examination and Declaration Report For a Less Than 15 metres Rescue Boat (RB2 Form)**
- APPENDIX 8: Code of Practice for Open Rescue Boats Less Than 15 metres in Length, Rescue Boat Organisation Declaration**
- APPENDIX 9: Rescue Boat Certificate of Compliance**
- APPENDIX 10: General Exemption**

1 FOREWORD

- 1.1 The Maritime & Coastguard Agency (MCA) and a number of Rescue Boat Organisations providing rescue facilities around the United Kingdom recognised that the role of the Rescue Boat Organisation was not specifically covered by any formally recognised national standard, given that the MCA's existing Codes for safety of small vessels were not applicable as these rescue boats did not operate on a commercial basis, and their exposure to risk was limited by both the short distances over which they operated, and the limited time over which they were in operation.
- 1.2 The original draft of this Code was completed in 2005 under the lead of the RNLi and a working group comprising representatives of:
- British Marine Federation (BMF)
 - Maritime and Coastguard Agency (MCA)
 - Royal Lifesaving Society UK (RLSS UK)
 - Royal National Lifeboat Institution (RNLi)
 - Royal Yachting Association (RYA)
 - Surf Life Saving Great Britain (SLSGB)
 - The boat manufacturing industry
 - Independent Rescue Boat Organisations.
- 1.3 The working group identified the benefits in developing the Code as:
- Improved Rescue Boat safety;
 - Harmonisation of operations and standards across the Rescue Boat field;
 - MCA validation of Rescue Boat operations; and
 - Clarification of legal standing of Rescue Boat operations.
- 1.4 In 2011 the MCA re-drafted the Code, taking into account updates to technical standards, and clarifying the requirements and responsibilities for initial and renewal examinations and MCA audits. There has been minimal change to the technical requirements for rescue boats other than those that are consequential to other regulatory changes. The opportunity has been taken to remove operational guidance which does not relate to the rescue boat itself, as well as restructure the Code so that it follows the chapter headings of other MCA small vessel codes. The principal change has been to implement the government commitment to reduce costs for the voluntary sector; reflecting the philosophy that the "Big Society" should take a more proactive role in managing provision of services to the public; and recognizing that those best able to manage the safety of a boat are those who run it on a regular basis. As a result, the requirement for independent examinations of the rescue boat has been removed, and replaced by self certification by a Responsible Person of the Rescue Boat Organisation, on the advice of a Competent Person.

- 1.5 The safety of Rescue Boat Organisations and those they assist is dependent upon the successful integration of many factors, not simply the design of the equipment. Therefore this Code also includes sections on Equipment, Safety Procedures, Training and Maintenance.
- 1.6 The level of safety that this Code sets out to achieve is considered to be commensurate with the current expectations of Rescue Boat Organisations, those to whom that give assistance, and of the MCA that tasks those Organisations that are Declared Facilities for UK SAR. It is recognised that a Rescue Boat is intended to provide a rapid response platform for persons in distress and to render assistance in the most practical and appropriate fashion. It is also recognised that this may compromise survivor comfort in the need for expeditious action, however the safety and welfare of survivors is to be considered at all times.
- 1.7 The safety assessment employed throughout the development of the Code relates only to the rescue boat and those on board the rescue boat at any time.
- 1.8 The International Maritime Rescue Federation (IMRF) unites the world's maritime search and rescue organisations in one body, accredited at the International Maritime Organization (IMO). It is developing Guidelines for maritime SAR units under 24m in length. These Guidelines are not a technical standard for rescue boats, but rather a risk management tool to enable SAR organisations to develop technical standards for their operations, taking into account local risks and requirements. This Rescue Boat Code is intended to be the MCA response to these Guidelines for open boats up to 15 m in length.
- 1.9 **The development of the Rescue Boat Code** was based on:
- Risk assessment and identification of mitigating actions covering the generic design, construction and operation of Rescue Boats;
 - Identification of relevant and related existing codes and standards;
 - Standards specific to Rescue Boats.
- 1.10 The Risk Assessment Guidelines used in the development of this Code are explained in Appendix 3.
- 1.11 Although the scope of the safety assessment is extensive it should not be assumed that the assessments are exhaustive. Therefore, the Code requires that each Rescue Boat Organisation undertake its own specific risk assessments.
- 1.12 Every Rescue Boat Organisation is to demonstrate compliance with each section of the Code, either by following the requirements indicated or by offering measures that provide an equivalent level of safety. The compliance checklist given in Appendix 5 should be completed by the Rescue Boat Organisation.

- 1.13 Requirements in the Code reflect the collective decisions of the Working Group. These requirements are clearly stated. “Should” is used more generally to reflect a considered best course of action, but it is recognised that an equivalent alternative may be acceptable. The Code permits Rescue Boat Organisations to develop and operate procedures appropriate to their functions, however, the onus is on the Rescue Boat Organisation to ensure that they identify and manage any risks inherent in these procedures.
- 1.14 It is to be noted that to avoid repetition (where requirements affect a number of areas) each requirement is generally only detailed in one place.
- 1.15 The Code is to be read in its entirety: in some cases a part of the Code which does not appear relevant to a particular Organisation may contain certain relevant requirements or advice.
- 1.16 Whilst the Code provides an indication of current perceived best practice, total safety at sea cannot be guaranteed. Therefore, it is most strongly recommended that the Rescue Boat Organisation/owner should take out appropriate insurance.

1.17 Interpretation

- 1.17.1 Where there is a question of application of the Code, or of interpretation of a part of the Code, the Organisation concerned should in the first instance seek clarification from the local HMCG Area Commander, where he is unable to resolve the issue of interpretation he should provide written comment and views to the Head of Coastal Operations Branch and the Head of Vessel Standards Branch, MCA, who may consult with others as deemed appropriate.
- 1.17.2 Compliance with the Code in no way obviates the need for Rescue Boats to comply with the relevant Bye Laws of either the Local Authority, or the port / harbour authority in which the Rescue Boat is certificated to operate. In particular Local Authorities have powers to require boats to have Passenger Liability and Third Party insurance cover, and to set the level of cover. Also, Local Authorities may have power over the use of the foreshore and landing places, and to issue licences for their use. A Police check may also be required of the crew.

1.18 Updating the Code

- 1.18.1 The MCA will be responsible for maintaining, updating and issuing amendments to the Code. Amendments will take into account changes in legislation, reference Codes of Practice and feedback from Code users and the Working Group. The Code will be reviewed at suitable intervals, dependant on necessity.

1.18.2 When new standards are developed and finalised by the British Standards Institution (BSI), European Committee for Standardization (CEN), International Maritime Organization (IMO), International Organization for Standardization (ISO), International Maritime Rescue Federation (IMRF) or any other international body, which impact upon the requirements of the Code, amendment of the Code may be considered. In the interim period, draft standards may be applied where the MCA has accepted them as an equivalent standard.

2. DEFINITIONS

In the Code:

“Approved” means approved by, or acceptable to, the MCA under Merchant Shipping legislation, unless otherwise specified in the Code;

“Annual examination” means a general or partial examination of the Rescue Boat, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it had been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Compliance Matrix (Appendix 5) and RB2 endorsement (Appendix 7). The hull, shell fittings, external steering and propulsion components of the Rescue Boat should be examined out of the water at intervals not exceeding 5 years. The Rescue Boat Organisation should examine the boat out of the water on a lesser interval in consideration of hull construction material or the age or the type and service of the boat;

“Boats fitted with a buoyant collar” means a rigid inflatable boat, or a boat of similar hull form, where, in place of inflatable tubes, solid, or hollow buoyant sections or tubes are fitted;

“Boat documentation” means training documentation and boat operating manual;

“Carriage of additional personnel to facilitate rescue services/training” means a person taken aboard a Rescue Boat in addition to the usual crew, to provide additional services in a rescue scenario or for training purposes;

“Casualty” means person or vessel requiring the services of a rescue boat;

“Code” means this Code unless another Code is specified;

“Commercial”, for the purposes of this Code only, describes the use of a Rescue Boat on a voyage or excursion which is one for which the owner / organisation receives money for or in connection with operating the Rescue Boat or carrying any person, other than as a contribution to the direct expenses of the operation of the Rescue Boat incurred during the voyage or excursion;

“Competent Person” means a person / s who by reason of relevant professional qualifications, practical experience and expertise is recognised by the Responsible Person as competent to carry out any examinations required under the Code. Competent Person also includes a consultancy or survey organization experienced in the survey of small vessels in commercial use;

“Compliance Examination” means an examination of the Rescue Boat, its machinery, fittings and equipment, and the operational effectiveness of the Rescue Boat and crew, by a Competent Person, or persons, to ascertain that the Rescue Boats structure, machinery, equipment and fittings comply with the requirements of the Code and that the Rescue Boat, its crew and shore support arrangements meet the required operational standard. Part of the examination should be conducted when the Rescue Boat is out of the water;

“Co-ordinating Authority” means the Organisation or Body responsible for co-ordinating search and rescue facilities in a specific area: e.g. HM Coastguard, or the Beach Manager or Head Lifeguard for a beach rescue facility;

“Crew (Rescue Boat)” means personnel nominated by the Rescue Boat Organisation to operate in a Rescue Boat;

“Corrective maintenance” means activity to correct a defect, problem or damage, rather than a planned activity;

“Daylight” means from one hour before sunrise until one hour after sunset;

“Declared Facility” means a facility that has been designated as being available for civilian maritime search and rescue (SAR) under the direction of HM Coastguard according to a specific standard or set criteria. Each Rescue Boat Organisation declaring a facility is responsible for:

- Declaring the standard of capability and availability for that facility;
- Maintaining the facility to the declared standard;
- Informing HM Coastguard when there is any change in the declared standard of availability of each facility;
- Informing HM Coastguard of any reason for not making available the facility which has been requested by HM Coastguard;

“Efficient”, in relation to a fitting, piece of equipment or material, means that all reasonable and practicable measures have been taken to ensure that it is suitable for the purpose for which it is intended. The builder, repairer or owner of a boat, as appropriate, should take all reasonable measures to ensure that a material or appliance fitted in accordance with the requirements of this Code is suitable for the purpose intended, having regard to its location in the boat, the area of operation and the weather conditions which may be encountered;

“Existing boat” means a boat already operating as a Rescue Boat prior to the date of publication of the Code;

“External/Outside bodies” means any Organisation with which the Rescue Boat Organisation will interface;

“Favourable weather”, for the purposes of this Code, means wind, sea, and visibility conditions which are deemed by the helmsman to be safe for the rescue boat to operate within the limits applied to it. In any other case means conditions existing throughout a voyage, or excursion, in which the effects either individually or in combination of swell height of waves, strength of wind and visibility are assessed not to cause any unacceptable risks.

In making a judgement on favourable weather the helmsman should have due regard to official weather forecasts for the service area of the boat or to weather information for the area which may be available from the MCA or similar coastal safety organisation;

“Flank stations/assets” means other Declared and available Rescue Boats/Facilities in the same area which may be able to support the Rescue Boat taking into consideration the prevailing conditions;

“Flood Relief Vessel” is a rescue craft used in flooding situations on inland rivers and lakes and otherwise dry areas (roads, fields etc.);

“Freeboard” means for an open boat, the distance measured vertically downwards from the lowest point of the gunwale to the waterline;

“Helmsman” means the crew member in charge of the Rescue Boat, and for the avoidance of doubt carries the same meaning and responsibility as the “Master” in Merchant Shipping Legislation;

“HM Coastguard” means Her Majesty’s Coastguard, the organisation within the MCA that has responsibility for United Kingdom civilian maritime search and rescue (SAR);

“Immersion suit” means a protective suit which reduces the body heat loss of a person wearing it in cold water and complies with the requirements of Schedule 10, Part 1 of MSN 1676 (M) as amended by MSN 1757 (M);

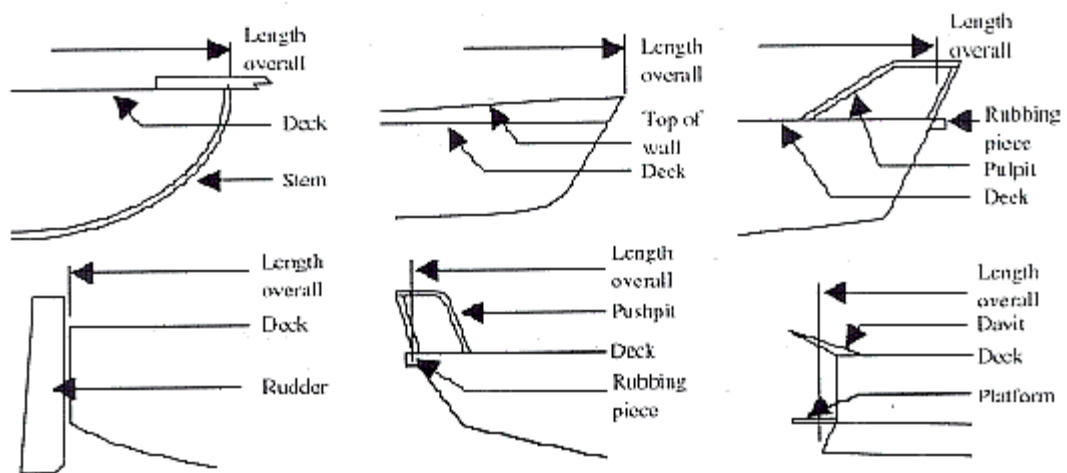
“IP–Ingress Protection (watertight rating)” means watertight rating of electrical equipment, including electrical cable;

“IP”XY” – The degree of protection provided by an enclosure to electrical equipment, as indicated in the International Protection (IP) Code, where “X” and “Y” are characteristic numerals. See the latest version of IEC 60529 – “Degree of Protection provided by enclosure (IP Code);

“Launch and Recovery Equipment” is appropriate equipment that allows safe launch and recovery of the boat and safe access to the boat in all required operational conditions (e.g. a davit);

“Launching/Deployment Authority” means the person nominated as the Launching Authority responsible for authorising the operation of the Rescue Boat. It is the responsibility of this person to ensure that the Rescue Boat is not tasked for services beyond pre-defined limits unless all reasonable measures are taken to minimise the potential risks. Further details are given in the safety procedures section;

“Length” means the overall length from the foreside of the foremost fixed permanent structure to the aftside of the aftermost fixed permanent structure of the boat. With regard to inflatable, rigid inflatable boats, or boats fitted with a buoyant collar, length should be taken from the foremost part of tube or collar, to the aft most part of the tube or collar;



“Marine Guidance Note” (MGN) means a Note described as such and issued by the MCA, and reference to a specific Marine Guidance Note includes reference to any Marine Guidance Note amending or replacing that Note which is considered by the Secretary of State to be relevant from time to time;

“Marine Information Note” (MIN) means a Note described as such and issued by the MCA, and reference to a specific Merchant Shipping Notice includes reference to any Marine Information Note amending or replacing that Note which is considered by the Secretary of State to be relevant from time to time;

“Maritime and Coastguard Agency” means the Maritime and Coastguard Agency (MCA), an executive agency of the Department for Transport;

“MARPOL” means The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, as amended, published by the International Maritime Organization;

“MED” means the Council Directive 96/98/EC of 20 December 1996 on Marine Equipment, amended by 98/85EC of 11 November 1998, 2001/53/EC of 10 July 2001, 2002/75/EC of 2 September 2002, 2002/84/EC of 5 November 2002, 2008/67/EC of 30 June 2008, EC Regulation 596/2009 of 18

June 2009, 2010/68/EU of 22 October 2010 and 2011/75/EU of 2 September 2011, as amended;

“Merchant Shipping Act” and “Merchant Shipping Regulations” referred to in the Code mean the reference specified and includes the document issued under the appropriate statutory power which either amends or replaces the reference specified;

“Merchant Shipping Notice” (MSN) means a Notice described as such and issued by the MCA, and reference to a specific Merchant Shipping Notice includes reference to any Merchant Shipping Notice amending or replacing that Notice which is considered by the Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice;

“MoB” means Man Overboard;

“Open Rescue Boat” means a rescue boat without an enclosed cabin;

“Operation Limit Categories” are as defined in 4.2.1;

“Out of the water” in the context of this Code, means, in or on the boat in the damaged condition, including being able to sit on the deck edge or tube, with the torso out of the water. It is accepted that with the boat in a damaged or swamped condition personnel may get wet;

“Passenger” means any person carried on a Rescue Boat except:

- (a) a person employed or engaged in any capacity on the business of the boat. This includes volunteer crew and other persons carried to assist in the response of an incident (for example firemen),
- (b) a person on board the boat either in pursuance of the obligation laid upon the Helmsmen to carry shipwrecked, distressed or other persons, or by reason of any circumstance that neither the master nor the owner nor the charterer (if any) could have prevented or forestalled. This includes persons on board the boat due to the response of the crew and business of the Rescue Boat who can be considered as survivors;
- (c) a child of under one year of age.

“Positive Stability” means having a righting moment tending to turn the boat to the upright position;

“PPE” means Personal Protective Equipment;

“Protected Waters” means waters not categorised in Merchant Shipping (Categorisation of Waters) Regulations 1992, SI 1992 No. 2356 and Merchant shipping Notice MSN 1827 (M), but the location of which are explicitly defined

and accepted as protected by the Area Operations Manager of the MCA responsible for the specified UK coastal area, having regard for the safety of the small vessels which operated in those waters;

"Recess" means an indentation or depression in a deck and which is surrounded by the deck and has no boundary common with the shell of the Rescue Boat. Where an appropriate ISO standard is used, the definition should be taken from those standards as applicable;

"Renewal examination" means a similar examination to the Compliance examination;

"Rescue Boat Certificate" means the certificate appropriate to a Rescue Boat to which the Code is applied (see Appendix 9);

"Rescue Boat Organisation" (RBO) means the whole Organisation involved in operating and supporting the Rescue Boat. The term applies to all Rescue Boats, including those that operate as a Declared Facility to HM Coastguard;

"Rescue Boat" means a boat designed, constructed, maintained and operated to the Rescue Boat Code and includes rescue boats operated by life-saving/ life guarding clubs. A Rescue Boat can be defined as operating for the 'public good', either on a voluntary or professional basis, but not on a commercial basis. It may be appropriate for some other organisations that operate dedicated Rescue Boats, such as the Fire Brigade, Airport Authorities, Police etc. to come under the terms of this Code;

"Rescue Water Craft" are personal water craft typically used in surf lifesaving operations;

"Responsible Person" is the person appointed by the Rescue Boat Organisation, and a member of its management board, who is responsible for the technical management of the Rescue Boat(s), for completing audits, the validity and content of certificates, checklists and risk assessments, for assigning a suitably experienced person to undertake the annual examinations and for appointing the Competent Person. The Responsible Person is also to ensure that at all times a Rescue Boat is maintained, manned and operated in accordance with the requirements of the Code, the arrangements as documented in the Compliance Examination and Declaration report form RB2 and any conditions stated on the Rescue Boat's certificate. Additionally, it is the responsibility of the Responsible Person to ensure that the Rescue Boat is maintained in accordance with manufacturer's recommendations or best engineering practice;

The Responsible Person is also responsible for ensuring the Rescue Boat Organisation and Rescue Boats comply with national and local anti pollution requirements;

"RIB" means a Rigid Inflatable Boat –a boat with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation;

“Safe Haven” means a harbour or shelter of any kind which affords safe entry and protection from the force of weather;

“Service” means an operation to effect rescue or render assistance;

“Self Certify” is the act of completing the necessary examinations and certification for the rescue boat by the Rescue Boat Organisation;

“Shore crew” mean personnel nominated by the Rescue Boat Organisation to provide assistance in launching, recovering or maintaining the rescue boat;

“Shore interfaces” means facilities, structures or equipment (e.g. pontoons, moorings, slipways, etc) used to support a rescue boat and assist in the launch/recovery of the boat, crew, survivors or shore helpers. It is not necessarily the responsibility of the Rescue Boat Organisation to maintain such interfaces. Shore interface equipment is distinct from launch and recovery equipment;

“Single point failure” means the failure of any one item in a system that can cause total failure of the system to carry out its function;

“Standards” means those such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardization, CEN), IEC (International Electrotechnical Commission) and ISO (International Organization for Standardization). Where these are identified in the Code, they should be taken as referring to any standards which amend or replace them;

“Survivor(s)” means ship wrecked, distressed or other person(s) carried by the Rescue Boat in response to an incident; and not considered as passengers;

“Swift water vessels” are Rescue Boats used in moving inland flood water, in spate situations;

“To Sea” means, for the purposes of this Code, beyond UK Category D waters or Category C waters if there are no Category D waters as defined in Merchant Shipping Notice (M) 1827 (as amended by correction) “Categorisation of Waters”;

“Watertight” means capable of preventing the passage of water in either direction;

3 APPLICATION AND INTERPRETATION

3.1 Application

3.1.1 This Code of Practice applies to open Rescue Boats of less than 15 metres in length, which are one of the following:

- Boats fitted with a buoyant collar;
- Inflatable Boats;
- Rigid Hull Boats;
- Rigid Inflatable Boats;

and which are operating for the 'public good', either on a voluntary or professional basis and which are engaged specifically for a rescue activity; and which carry 12 or fewer passengers.

Where a rescue boat is not an open rescue boat but is <15m and it meets the above criteria, the Code should be followed in full. In addition, areas that are not addressed within this Code, such as an enclosed cabin, should be considered as part of the design, build, and safety procedures: escape from the cabin, including the upturned hull, should be mitigated for and operational procedures developed and followed.

All HMCG Declared Facilities which are less than 15m in length should meet this Code. This includes declared Rescue Water Craft which are expected to meet this Code.

- 3.1.2 It represents best practice and it is recommended that other organizations operating open rescue boats of less than 15 metres in length on a non commercial basis (for example those operated by lifesaving/life guarding clubs) should follow this Code.
- 3.1.3 This Code applies to inshore rescue boats operated from a shore station; it does not apply to rescue boats carried on ships as part of the Life Saving Appliances required by SOLAS or national regulations.
- 3.1.4 This Code does not apply to safety boats which are used to support water-based activities and which are not for the general 'public good'. Nor does this Code apply to rescue boats which are in commercial use.
- 3.1.5 The rationale for not including safety boats is that the Code is written using the whole basis of Management Structure, Training, Equipment, Operational Procedures, etc. available to Rescue Boats, some of which may not be available to safety boats. Additionally, safety boats tend to be 'event based' rather than response orientated and as such may not be suitably equipped, or manned by appropriate personnel, to fulfill the range of activities typically undertaken by Rescue Boat facilities.
- 3.1.6 The following craft are **excluded** from the provisions of the Code:
- Declared all weather life boats
 - Flood water rescue and fast water rescue (swift water) boats and other boats used on non-navigable waters all of which have specific risks associated with submerged hazards and especially swift moving water and that of an urban environment due to pluvial flooding.

- Rescue Boards, canoes or any other non-mechanically powered floating device
- Workboats on a semi permanent patrol deployed in a rescue capacity

It is appreciated that some Rescue Boat Organisations may currently use craft of the above excluded types to facilitate rescues. Organisations are advised to carry out local risk assessments on the use of this equipment. Although this Code is intended for open rescue boats those aspects of the Code not relating to the boat construction, equipment and layout are equally relevant to any rescue boat and it is recommended that, where appropriate, these aspects are followed by the Rescue Boat Organisation of these types of boat.

3.1.7 This Code has been developed largely for sea-going Rescue Boats. Alternative provisions may be accepted for Rescue Boats which operate in restricted environments, where full compliance with the provisions of the Code is unreasonable, based on the local risk assessment.

3.2 Applicability of Other Codes of Practice, Standards and Legislation

3.2.1 Where a Rescue Boat is certificated under another Code of Practice e.g. MCA Small Commercial Vessel and Pilot Boat Code, the requirements of that Code apply when it is used commercially. A Rescue Boat which is operating in a non commercial capacity should be certificated under this Code.

3.2.2 The general mutual recognition clause adopted by the Contracting Parties to the European Economic Area Agreement should be accepted. The clause states: 'Any requirement for goods or materials to comply with a specified standard should be satisfied by compliance with:

- a relevant Standard or Code of Practice of a national standards body or equivalent body of a Member State of the European Economic Area Agreement; or
- any relevant international standard recognised for use in any Member State of the European Economic Area Agreement; or
- a relevant specification acknowledged for use as a standard by a public authority of any Member State of the European Economic Area Agreement; or
- traditional procedures of manufacture of a Member State of the European Economic Area Agreement where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified; or
- a specification sufficiently detailed to permit assessment of goods or materials of an innovative nature (subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which fulfill the purpose provided by the specified standard; provided that the proposed Standard, Code of Practice, specification or technical description provides, in use, equivalent levels of safety, suitability and fitness for purpose.

- 3.2.3 Compliance with this Code in no way obviates the need for Rescue Boat Organisations to comply with local requirements where these are applied under relevant legal authority.
- 3.2.4 The Rescue Boat Organisation is responsible for the health and safety of anyone working on the boat (this includes volunteers). All relevant Health and Safety legislation applies. See Chapter 22 for further details.
- 3.2.5 Adherence to the requirements of the Code does not absolve the Organisation of any liability that may apply to persons rescued. However, for the purposes of this Code, rescued persons are NOT passengers as defined elsewhere in Merchant Shipping legislation. Rescue boats are operated with the specific purpose of rescuing persons who will be on board the rescue boat for a limited period only. The Rescue Boat Organisation is not bound to look after their comfort, however consideration should be given to risk of increased injury when bringing the rescued to safety.
- 3.2.6 Recognising that some boats operate across the margins of the sea into inland waterways, attention is drawn to the common approach to the vessel safety scheme adopted by the major UK inland navigation authorities. The Boat Safety Scheme of the British Waterways Board / Environment Agency (BWB/EA) sets safety standards and certification and inspection requirements. Owners of Rescue Boats complying with this Code and requiring them to operate on inland waterways should obtain formal clearance from the appropriate inland navigation authority.
- 3.2.7 The Rescue Boat Organisation should keep itself informed of and apply relevant standards. When appropriate, MCA will promulgate changes to the Code, in consultation with the Working Group, on the MCA website.

3.3 Certification and Audit

- 3.3.1 A certificate is to be valid for not more than five years.
- 3.3.2 The certification process, for which the Responsible Person is responsible is based on self-regulation. The Responsible Person should complete the compliance matrix (Appendix 5, see also Appendix 4 Para 5.13) which should be kept under constant review. The Responsible Person should nominate a Competent Person to carry out an initial (compliance) examination of the rescue boat which is informed by the compliance matrix. The Competent Person should then complete the RB2 Form (Appendix 7). The Responsible Person should sign the Declaration informed by the examination (Appendix 8) and issue the Rescue Boat Certificate of Compliance (Appendix 9). The Responsible Person should annually nominate an officer of the Rescue Boat Organisation to undertake an annual examination (this can be himself) and complete the annual endorsement in Part 6 of the RB2 Form. At the second or third anniversary the Rescue Boat Organisation's Responsible Person should nominate a Competent Person to undertake an intermediate

examination who should complete a RB2 Part 5 Declaration and the RB2 Part 6 endorsement. At the fifth anniversary the process starts again with a renewal examination which is the same level of examination as the compliance examination. The Compliance, Intermediate and Renewal Examinations and Declarations (Appendix 7, RB2) should be completed by the Competent Person. A Rescue Boat Certificate of Compliance (Appendix 9) should be posted on display in a prominent location relevant to the Rescue Boat. A Competent Person can be engaged to provide all Declarations and Rescue Boat Certificates. Other equivalent maintenance, refit, recording, certification and examination regimes may be considered by the MCA where a well developed and robust system exists. Each Matrix, Declaration (RB2) and Certificate for an HM Coastguard declared rescue boat facility should be kept on file by the Rescue Boat Organisation and once in five years these documents shall be audited by HM Coastguard, including at the compliance stage.

3.3.2.1 Alternative means of documenting certification maintenance refit recording regimes may be acceptable where a well developed and robust system exists and it is clear that the competent person has approved the Rescue Boat and the records are readily accessible by the crew, Responsible Person, Competent Person and for audit.

3.3.3 The MCA will retain the power to inspect and audit HMCG approved Rescue Boat facilities at short notice to ensure compliance with this Code. This may include a full operational training exercise.

3.3.4 The following documentation should be held by a Rescue Boat facility under the terms of this Code and be available for audit if requested by the MCA. (See Appendix 4 for further guidance.) Where some of the listed information is held remotely, on a central data base for example, as may be the case for the larger organisations, the information should be readily accessible at the remote station.

- Operational Procedures
- Minimum Operational Crew
- Survivor capacity
- Survey record and certificates
- Service record/schedule
- Safety Equipment
- Operational restrictions
- Weather restrictions
- Seasonal Restrictions
- Crew Availability
- Station and crew training records
- Training revalidation periods
- Training Plan
- Maintenance Plan
- Standard and Emergency Safety Procedures
- Compliance matrix

- Certificate of Compliance and Rescue Boat Certificate
- Management Structure and plan
- All associated formal safety assessment documentation including Risk Assessments.
- Operation manuals relevant to the boat's machinery and equipment
- Any other supporting calculations or documentation required by this Code.

3.3.5 The above documents are required under the terms of this Code but are not intended as definitive list; other statutory bodies may require further documentation.

3.3.6 Rescue Boat Organisations should certify their Rescue Boat(s) and its operation as compliant with the Rescue Boat Code on an annual basis in accordance with the schedule of compliance, renewal and annual inspections in Section 27 of this Code. The Responsible Person is responsible for this process.

3.3.7 Where a defect has been identified that affects the safe operation of the rescue boat the Rescue Boat Certificate should be suspended by the Responsible Person, and the boat withdrawn from operation, until such time as the defect is rectified and re-inspected, or the Rescue Boats operating limit is restricted.

3.4 Compliance

3.4.1 The design, construction, equipment, operation and maintenance of all open Rescue Boats less than 15 metres that are declared facilities, should meet this Code. Where an existing boat cannot fully comply the Rescue Boat Organisation may accept existing boats on an individual basis if the following can be demonstrated as applicable for the period prior to the publication of the Code:

- The boat has been operating as a Rescue Boat safely and effectively for at least 5 years
- There has been a rolling program for training crew for at least 5 years
- The management structure of the rescue boat has been effective for at least 5 years
- A complete operational, training, maintenance, defect, accident/ incident log for the Rescue Boat can be presented
- The operational requirements for the Rescue Boat remain unchanged
- The operating limits for the Rescue Boat remain unchanged

3.4.2 Where non-compliances (Appendix 5) are identified by a Rescue Boat Organisation, it is to propose a plan to address these. This plan should include a suitable timescale for non compliances. Appendix 5 should also include alternative measures that provide an equivalent level of safety, see 1.12.

3.4.3 Rescue Boat Organisations having had facilities for less than five years before the date of publication of the Code or newly formed after publication should specially consider rescue boats that have been in service previously. Any consideration is also subject to 3.4.2. The Rescue Boat Organisation may wish to employ the services of a Competent Person to assist in assessing compliance. These newly established Rescue Boat Organisations will need to put in place effective procedures, manuals and training regime prior to signing the appropriate declarations for the Rescue Boats operated. MCA may apply additional audits to these organizations to ensure that their management processes and controls are sufficient to ensure the effectiveness of their boats and equipment.

3.4.4 All new and pre-owned boats entering service with a Rescue Boat Organisation, or boats undertaking a change in operational role within an organisation after the publication of the Code are to be fully compliant with the Code.

3.5 Areas of Operation

3.5.1 As part of the establishment of the Rescue Boat facility, the organisation will be required to designate a nominal geographic area of operation that under normal circumstances, and within weather limitations, the co-ordinating authority will be able to request deployment of the Rescue Boat.

3.5.2 Due consideration is to be given to operating the Rescue Boat outside of that area. The Rescue Boat Organisation is therefore to agree a communications protocol with the co-ordinating authority to facilitate the deployment of the Rescue Boat beyond the nominal area of operations, at the discretion of the Helmsman, with due regard to the limitations of the prevailing weather, the boat, its crew, and the capability of the surrounding backup facilities.

3.5.3 The operational limitations for Rescue Boats, which in this Code are weather defined, are stated in 4.2.1 and 4.2.2.

3.5.4 Rescue Boat Organisations should consider the need to provide mutual support to neighbouring flank station rescue boats.

3.6 Management

3.6.1 A suitable and effective Management structure shall be in place in all Rescue Boat facilities and organisations to ensure that the Rescue Boat is run in an appropriate and safe manner.

3.6.2 The Formal Safety Assessment undertaken in the development of this Code has identified a number of management areas as critical to the safety of Rescue Boat facilities. These are identified in Appendix 4 of the Code.

3.7 Training

- 3.7.1 Notwithstanding any specific requirements within this Code, the Rescue Boat Organisation is to ensure that every person employed (including volunteers) should be aware of any risks affecting them and ensure that appropriate measures are taken to minimise them, through training and improving procedures or equipment where necessary.
- 3.7.2 Each Rescue Boat Organisation shall have a nominated Training Manager responsible for ensuring that all relevant personnel undergo appropriate training.
- 3.7.3 Specific training requirements and considerations are identified in the relevant sections of the Code and minimum requirements are detailed in Appendix 4. Section 26 on Manning contains information on training, Appendix 2 details the training requirements and Appendix 4 gives information on a structured training plan.
- 3.7.4 The Training Manager is responsible for ensuring that training within the organisation is kept up to date, recorded, and that all certification is valid.

3.8 Standard Operating Procedures and Incident Action Plans

- 3.8.1 Rescue Boat Organisations are to have a set of Standard Operating Procedures and Emergency Operating Procedures that define the operational tasks and actions required to ensure safe Rescue Boat operations.
- 3.8.2 The Operating Procedures are to identify and state any operational limits to be imposed taking into account, but not limited to, design of equipment, training of the crew and weather.

3.9 Emergency Procedures

- 3.9.1 The Rescue Boat Organisation is to undertake a risk assessment of their activities and to identify foreseeable events that may give rise to an emergency onboard the Rescue Boat e.g. capsize, and have a written set of Emergency Procedures.

3.10 Maintenance Requirements

- 3.10.1 Where essential maintenance tasks have been identified through the Formal Safety Assessment used to develop this Code, they are stated as requirements under the appropriate section.
- 3.10.2 The Rescue Boat Organisation is to identify maintenance needs for all relevant equipment, and to ensure that the maintenance is carried out.

3.11 Record of Services

3.11.1 An accurate and detailed record of services is to be kept to assist in developing the risk management strategy, identify training needs and evaluate effectiveness.

4 CONSTRUCTION AND STRUCTURAL STRENGTH

4.1 Introduction

4.1.1 This Code does not aim to be wholly prescriptive about the choice and specification of Rescue Boats and associated equipment.

4.1.2 The philosophy of this Code is to assist the application of good practice to rescue equipment design and selection. Due to the local nature of equipment acceptability, in most cases good practice can be achieved through the use of accepted risk assessment procedures. Where possible this Code offers advice on how to facilitate this process. Advice is rarely exhaustive.

4.1.3 If the Rescue Boat operates in a different capacity at any time, it should be fully compliant with relevant legislation and Codes of Practice for that operation.

4.1.4 Where certain tests required by this Code are identical to those required by another Code with which the boat is already certificated, those tests do not need to be repeated.

4.2 Operational and Design Limits

4.2.1 The following operational limits have been defined in ISO 12217-1:

Operational Limit Category:	A	B¹	C	D
Description ²	Ocean	Offshore	Inshore	Sheltered Waters
Significant wave height maximum (m), H _{1/3}	7	4	2	0.3
Beaufort wind force maximum	10	8	6	4

4.2.2 The Code is only applicable to boats operating within Operational Limit Categories B, C and D. An open Rescue Boat is not expected to operate in conditions that exceed Category B.

4.2.3 Operational limits for a Rescue Boat should be stated in all relevant documentation associated with the boat. It should always be borne in mind that the capability of a rescue boat is a function of both its design and the capability of its crew.

¹ See 4.6.3

² For further description see ISO 12217-1, 7.2.

- 4.2.4 Achieving Rescue Boat Code requirements for a particular operational limit is not interchangeable with certification for those conditions as a recreational craft.
- 4.2.5 It might be necessary for a Rescue Boat to work beyond its specified operational limit. The following information should be documented by the Rescue Boat Organisation:
- Identification of operational limits;
 - Possible consequences of operating beyond operational limits; and
 - Appropriate action to be taken to reduce the risks to crew and survivors.
- 4.2.6 Operation in surf may require a Rescue Boat to operate in wave heights beyond its stated operational limits. Boats and equipment may only be considered acceptable for this if a positive local risk assessment has been carried out and implemented.
- 4.2.7 Many surf Rescue Boats operate in surf greater than the notional wave height to which they have been designed, and have been proven to be appropriate for this, subject to certain mitigations which may be of the form:
- Crew capability
 - Boat tests in anticipated conditions
 - Training
 - Operational back up
 - Operation in proximity to the beach

4.3 General Requirements

- 4.3.1 The boat and all associated equipment should be designed and constructed to allow for its operation as a Rescue Boat up to the specified operational limit.
- 4.3.2 The design of the Rescue Boat and associated equipment (including launch and recovery equipment and shore interfaces) are to take full account of the operational procedures, and should ensure that the risks posed to crew, shore crew, the general public and survivors are minimised.
- 4.3.3 Applicable legislation and standards (ISO, BS, EN) referring to equipment design, construction and fitting should be adhered to wherever relevant.
- 4.3.4 Standards are referenced in the appropriate places throughout the Code, and have been gathered in the bibliography attached as at Appendix 6. Compliance with these standards is usually required as a minimum. It is accepted that some standards only cover boats up to certain lengths; however in the absence of an acceptable alternative, the philosophy of the proposed tests may be appropriate.

4.3.5 Modifications/additions to craft should be carried out in accordance with best practice, taking account of operational, structural and stability requirements.

4.4 Boat Construction and Structural Strength

4.4.1 The Rescue Boat Organisation shall be able to demonstrate that the structural design, scantlings, choice and combination of materials, construction method and production quality of the Rescue Boat is strong enough in all respects to operate as a Rescue Boat in the agreed operating conditions. See paragraphs 4.5 and 4.6.

4.4.1.1 This applies in particular to the following:

- Hull
- Deck
- Buoyancy chambers and partitioning
- Hull subdivision

The structural design of the above shall take account of the following:

- Operational limits for use as a Rescue Boat
- Maximum recommended load
- Engine Power and machinery
- Boat size
- Environmental degradation
- Structural redundancy by design
- Maintenance
- Operational pressure loading, including slamming
- Point loads (such as equipment and people)

4.4.1.2 The following operational and environmental considerations should also be addressed:

All boats:

- Damage and damage survivability
- Impact, collision (other vessels)
- Grounding
- Structural degradation
- Environmental degradation: UV, cold/ heat, age, chemical, pollution etc.
- Vibration, flexing and fatigue
- Construction technique
- Temperature
- Extreme conditions (wind & wave)
- Abrasion
- Fittings
- Materials
- Overloading of the boat
- Flooding

- Maintenance
- Fire and explosion
- Osmosis, where appropriate
- The influence of ancillary equipment
- Supporting structure to fixings
- Location of fixings
- Engine type
- Wear pads/ sacrificial layers to account for storage, launch and recovery

Inflatable/ rigid inflatable boats:

- Puncture
- Incorrect tube pressure
- Temperature affecting pressure in tubes
- Seam failure
- Stretching
- Valve failure
- Propagation of damage
- Detachment of tube from rigid hull
- Tube attachment method and design

4.4.2 Construction Material

4.4.2.1 Appropriate proven or approved marine grade materials should be used throughout. The manufacturer's recommendations in respect of material compatibility, protection from environmental degradation and replacement are to be followed.

4.4.2.2 To reduce the risk of fire the flammability of materials used in the construction of the boats shall be taken into consideration by the Rescue Boat Organisation in its Risk Assessment.

4.4.3 Quality Assurance

4.4.3.1 When boats are built in batches to a standard design, structural and production tests on one boat may be accepted for a boat of the same design submitted for compliance with the Code.

4.4.3.2 Unless the craft is fitted out by the boat manufacturer then the fit out process should be completed to at least the same approved standard.

4.5 Construction and Structural Strength: Rigid Hull Boats and Boats fitted with a Buoyant Collar

4.5.1 The structure of rigid hull boats should comply with a suitable design standard or with the requirements of a UK Load Line Assigning Authority (American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyds Register of Shipping and Registro Italiano Navale).

4.5.2 The structure of a rigid hull boat not in accordance with 4.5.1 may be accepted by the Rescue Boat Organisation on the advice of a Competent Person who has specially considered the full structural information. This should include relevant calculations, drawings, and details of materials and construction.

4.6 Construction and Structural Strength: Inflatable Boats and Rigid Inflatable Boats

4.6.1 The design and construction of inflatable boats and rigid inflatable boats should comply (as a minimum) with parts 1 – 4 of ISO 6185: inflatable boats, or should be of a design and construction which would meet the requirements of Chapter III of the 1974 SOLAS Convention, as amended, and the parts of the Annex to IMO Resolution MSC.81(70) – Testing of Life – Saving Appliances (as amended) – which are appropriate to the type of boat and subject to the variations which are given in the Code.

4.6.2 The structure of an inflatable or rigid inflatable boat not in accordance with ISO 6185 may be accepted by the Rescue Boat Organisation on the advice of a competent person who has specially considered full structural information. This should include relevant calculations, drawings, and details of materials and construction.

4.6.3 Fully inflatable boats are not appropriate for Operational Limit Category B waters.

4.6.4 Inflatable tubes should be protected wherever possible from on-board equipment, and in areas vulnerable to damage. Consideration should be given to fitting outboard fendering and wear pads.

4.6.5 Valves should be located or protected to avoid damage in all scenarios likely to be encountered by the Rescue Boat.

4.6.6 Rip-stop fabrics, rip-stop strips or reinforcing patches should be used if possible.

4.6.7 In an inflatable boat or RIB it is advisable to fit the upper surface of the buoyancy tube with a non-slip finish. See also 22.2.6. However areas free of a non slip finish may be appropriate to aid survivor recovery.

4.7 Recesses

4.7.1 Any recess not provided with a watertight closure should be self-draining.

4.7.2 Any effect of a flooded recess on stability should be addressed.

4.8 Fixings

4.8.1 The positioning, supporting structure and detailed design of all fixings to the main boat structure should be designed to be strong enough in all respects for boat use in the designated operating conditions.

4.8.2 Particular attention should be paid to the following, which is not an exhaustive list:

- Lifting points
- Hatches and openings
- Collar (RIB)
- Console attachment
- Engine securing
- Equipment securing
- Mooring, anchoring and towing strong points
- Seating
- Hand holds
- Roll bar.

5 WEATHERTIGHT INTEGRITY

5.1 Openings

5.1.1 The location, size, number and specification of all closing devices to openings to spaces (and associated structure) that are considered watertight should be strong enough in all respects for boat use up to the operational limits.

5.1.2 The closing devices and their attachment should be of strength at least equivalent to the surrounding boat structure, and should be provided with sufficient locking devices to enable them to be positively secured in the closed condition. For screw type hatches where separate locking devices are not the primary means of securing, a separate locking device is not needed if they can be screwed tightly and will not open under operational conditions. See also 11.2.1.4.

5.1.3 Deck freeing ports (where applicable) should be of an appropriate size and type, and be considered in association with the freeboard stability sections of the Code.

5.1.4 Any penetrations of watertight structure for pipes, cables etc. should be provided with valves and/ or watertight glands as appropriate.

5.2 Skin Fittings

5.2.1 All openings below the waterline leading to pipes including exhausts should be fitted with a seacock, valve or other efficient means of closure, which is readily accessible in an emergency.

5.2.1.1 Reference can be made to:

- ISO 9093, Small craft – Seacocks and through-hull fittings

5.2.2 All openings below the waterline *not* leading to pipes should be treated as part of the hull envelope, with consistent structural integrity. This applies to logs, transducers etc. and consideration should be given to the use of cofferdams.

5.2.3 Metallic skin fittings should be cathodically protected where appropriate. This requirement is less applicable if the boat is stored out of the water.

5.2.4 All clipped connections leading up to a skin fitting (sea water system, bilge system etc.) should be double clipped.

5.2.5 Every piped overboard discharge should have a non return valve adjacent to the skin fitting.

5.3 Ventilation

5.3.1 Ventilation closures should be designed to withstand capsize. The following should be addressed:

- Structure to withstand flooding of watertight spaces
- Ventilation should not prevent the engine from being re-started following capsize
- Location of ventilation openings
- Roll over envelopes
- Air pipes and ventilators should generally be kept as near the centreline as possible and as high as possible
- Air pipes and ventilators should be fitted with an automatic means of closure when down flooding to the spaces served would endanger the safety of the boat
- Provision of a permanently attached means of weather-tight closure

5.3.2 Any inboard 'dry' engine compartment shall be ventilated. The dangerous ingress of water into the engine compartment through all inlets should be prevented.

5.3.3 Inboard engine compartment ventilation systems should reflect its fire suppression system, where appropriate.

6 WATER FREEING ARRANGMENTS

6.1 Structures and spaces not considered as being weather-tight should be provided with efficient means of drainage.

6.2 The effects of trapped water should be minimised wherever possible by design.

7 MACHINERY

7.1 Propulsion: General Requirements

- 7.1.1 The propulsion system should reflect the specific operation of the boat.
- 7.1.2 The operational limits of the propulsion system cannot be less than those of the boat.
- 7.1.3 A Category B boat should have at least 2 wholly independent propulsion systems, including the starting arrangements, fuel supplies and engines. The boat should be able to be safely operated up to the specified limiting conditions on one of its engines.
- 7.1.4 Single engine boats may be appropriate for use as Rescue Boats operating in Categories C and D.
- 7.1.5 All propulsion systems should have an emergency stop facility.
- 7.1.6 All engines and support systems should be capable of being restarted following capsizing.
- 7.1.7 Start up (routine and post-capsizing) procedures should be clearly marked.
- 7.1.8 Any modification to standard propulsion systems should be supported by a local risk assessment.
- 7.1.9 Boats operating in surf or shallow water have different requirements and may need a propulsion system with specific characteristics such as:
- Disabled engine lock-down
 - Engine strengthening
 - Fitting of a bather guard / propeller guard when operating in waters close to shore, see also 9.1.

Removal of the 'start in gear inhibit' function. Time can be saved re-starting the engine in gear. Incorporating a device to limit the thrust to a maximum of 500N at the time of starting the engine could also mitigate risks. Conversely, if 'in gear inhibit' is fitted ISO 11547 can be referenced.

- 7.1.10 Electric motors and LPG motors are not specifically considered under this Code.

7.2 Engine Stop Cords

- 7.2.1 Although the use of engine stop cords (kill-cord) is generally recommended, due to the nature of Rescue Boat operations, their use shall be optional. A local risk assessment must be carried out to determine the use of engine stop

ords and the following risks must be locally addressed, in terms of probability and consequence:

- Helmsman is lost over the side (no engine stop cord fitted), resulting in the boat being out of control
- Engine stop cord is accidentally pulled, resulting in engine shut down at a critical moment, such as in big surf

7.2.2 If engine stop cords are NOT provided with the engine:

- Throttles should be sprung loaded to return to idle

7.2.3 If engine stop cords ARE provided with the engine:

- A spare engine stop cord should be carried on board
- An over-ride capability should be present
- Associated electrics should be designed to reduce the chance of a short on the system

7.3 Inboard Engines

7.3.1 Inboard petrol engines **SHOULD NOT** be used on Rescue Boats.

7.3.2 Inboard engines should be of a marinised type and operate on fuel with a flashpoint in excess of 55° C.

7.3.3 A capsize switch should return inboard engines to idle (or off - as long as the engine can be re-started) on capsize.

7.3.4 Inboard engines should have at least two means of starting. The following options are acceptable:

- Hand crank can be used as a secondary means
- When the sole means of starting is by battery, the battery should be in duplicate and connected to the starter motor via a “change over switch” so that either battery can be used for starting the engine. Charging facilities for the batteries should be available. Under normal circumstances it is not recommended to discharge both batteries in parallel

7.3.5 All inboard engines should be placed in an enclosure to minimise the risk and spread of fire. Any insulation in this enclosure is to be non-combustible.

7.3.6 The latest versions of the following may be referenced:

- ISO 8846, Small craft - electrical devices, protection against ignition of surrounding flammable gases.
- ISO 9094, Small craft - Fire protection.
- ISO 7840, Small craft - Fire resistant fuel hoses.

- ISO 10088, Small craft - Permanently installed fuel systems
- ISO 21487 - Permanently installed petrol and diesel tanks
- ISO 10133, Small craft - Electrical systems.

7.3.7 Inboard engine installations should have a fire detection and suppression system.

7.4 Outboard Engines

7.4.1 Outboard engines should have two means of starting. The following options are acceptable:

- Pull start, with a spare cord carried as a back-up
- An electric start, with a pull start as back-up
- Where there is only electric start, there should be a dual-redundancy starting system with cross connection. An electric starting system could provide cross-connection to an appropriately specified secondary battery. This battery need not be dedicated, but should remain charged at all times

7.4.2 Where a pull start facility is provided, the engine cover should be quickly detachable, allowing fast access to the recoil start mechanism.

7.4.3 There should be adequate attachment of engines to the transom, designed to withstand capsize, this may entail oversized clamp screws or through-bolting. Where it is not through-bolted, the engine should also be attached to the boat by a suitable wire stop.

7.4.4 The motor type used should be suitable for the transom design. It should be noted that outboard motors powered by different fuels exhibit different power and weight characteristics. The weight differences between two stroke outboards, four strokes and diesels are significant.

7.4.5 The boat (transom in particular) design and engine selection should reduce the chance of engine swamping. For inflatable boats, RIBs and boats with a buoyant collar, this can be assisted through appropriate buoyancy tube volumes aft of the transom.

7.4.6 Where used, the throttle twist grip should be firmly attached to the engine/throttle arm, particularly when a standard production outboard motor is used in surf.

7.5 Emergency Propulsion

7.5.1 All boats should have a secondary form of propulsion capable of propelling the boat at a safe speed for a sufficient amount of time to return to port, and be wholly effective in the operational area conditions.

7.5.2 For multiple engine installations, the secondary form of propulsion can be to use a single engine only, providing each engine is part of a wholly independent propulsion system.

7.5.3 Where supported by a risk assessment, the Rescue Boat Organisation may accept a less effective method of emergency propulsion, such as oars or paddles, taking into account any relevant factors including the following:

- Ground tackle
- Sea anchor
- Limited operating area
- Operational support, tandem operations
- Communications protocol
- Standard of fitness of crew

If oars are provided, particular attention should be paid to the effectiveness of their operation. Reference can be made to ISO 6185-1, -2, -3 and -4.

7.6 Engine Cooling Systems

7.6.1 For Category B multiple inboard engine installations, each engine should have its own cooling system. A crossover facility should be incorporated to allow the engines to be cooled by one cooling system.

7.6.2 For inboard engine installations, a cooling water temperature gauge should be fitted, however a 'low cooling water flow' alarm may be substituted.

7.6.3 For inboard engine installations, an engine overheat alarm should be fitted.

7.6.4 For outboard engine installations, an engine overheat alarm should be considered.

7.7 Exhaust Systems

7.7.1 Exhaust systems should be designed to withstand capsize. The following should be considered within the design:

- Structural arrangement to prevent flooding of watertight spaces through exhausts
- Ability of the engine to be re-started following capsize
- Location of exhaust openings
- Roll-over envelopes
- Positioning the exhausts near the centreline, and as high as possible
- Closure of exhaust openings
- Non-return capability of exhausts

7.7.2 Where exhausts are cooled, there should be a cooling failure alarm.

7.7.3 Crew should be protected from hot exhausts and appropriate visual warnings should be displayed.

7.7.4 Any insulation of hot equipment should be of non-combustible type.

7.8 Fuel

7.8.1 General Requirements

7.8.1.1 Where relevant the following should be adhered to:

- ISO 7840 - Small craft - Fire resistant fuel hoses (to minimise fuel vapour permeating pipes)
- ISO 10088 - Small craft - Permanently installed fuel systems and fuel tanks
- ISO 11105 - Small craft - Ventilation of petrol engines and/or petrol tank compartments
- ISO 9094 - Small craft - Fire protection
- ISO 13591 - Portable fuel systems for outboard motors.

7.8.1.2 The fuel system should be designed to withstand capsize and minimise any resultant leaks. Tank ventilation systems should incorporate a capsize valve or means to restrict/ prevent water entering the fuel supply.

7.8.1.3 The fuel system should be designed to resist damage or restriction of flow and the following factors should be considered:

- Armoured fuel pipe
- Pipe run channels
- Securing fixings
- Flexible mounts
- Fuel lines to have a specific route and be of the correct length to achieve this
- Location of fuel bulbs

7.8.1.4 All elements of the fuel system should be adequately secured.

7.8.1.5 The fuel system should be pressure tested, and the test pressure should reflect the working pressure of the system.

- 7.8.1.6 A means should be provided to ascertain the amount of fuel in any tank.
- 7.8.1.7 Petrol fuel systems shall be equipped with a fuel filter which may be fitted on the engine. Diesel fuel systems shall be equipped with at least one fuel filter and one water separator, but the two functions may be combined in one unit. For safety reasons, consideration should be given to carrying at least one spare filter element for each filter fitted.
- 7.8.1.8 The fuel filter should be easily accessible.
- 7.8.1.9 Fuel type should be clearly marked at the fill point.
- 7.8.1.10 The fuel filling point shall be so located and arranged that no overflowing fuel can enter the craft or environment when it is in its static floating position.

7.8.2 Fire Prevention

- 7.8.2.1 The filling, storage, venting and fuel-supply design, arrangements and installations should minimise the risk of fire and explosion.
- 7.8.2.2 Fuel tanks, lines and hoses shall be either separated or protected from any source of significant heat.
- 7.8.2.3 Any compartment into which flammable gas may leak and accumulate should be provided with a hydrocarbon gas detector and alarm. The detector and alarm should comply with a recognised standard.
- 7.8.2.4 BS EN 60079-29-1 Explosive atmospheres. Gas Detectors. Performance requirements of detectors for flammable gases, can be referenced.
- 7.8.2.5 Hydrocarbon gas detectors should be placed under or adjacent any tank where hydrocarbon gas is likely to accumulate.
- 7.8.2.6 If this is not the case, an adequate ventilation policy should be demonstrated. A ventilation policy may entail a watertight vent to be opened (whilst ashore) on a regular basis.
- 7.8.2.7 Any compartment not permanently ventilated in which petrol vapour can accumulate should not contain an ignition source.
- 7.8.2.8 All fuel vent positions should be readily accessible, and vented into atmosphere. Petrol tank vent pipes to atmosphere should be protected by flameproof gauze.
- 7.8.2.9 Petrol systems should be protected against electrical/static discharge.

7.8.3 Fuel Tanks

- 7.8.3.1 Portable fuel tanks for outboard petrol engines should be 27 litres or less in capacity, in compliance with the requirements of ISO 13591 – Portable fuel systems for outboard motors. It may be a design feature in some Rescue Boats to exceed this capacity; however this should be subject to advice by a competent person.
- 7.8.3.2 Fuel tanks should be sized to reflect the anticipated range of the boat and fuel consumption.
- 7.8.3.3 Fuel tanks should be safely located.
- 7.8.3.4 The tank materials and method of construction shall be according to their capacity and type of fuel to be used.
- 7.8.3.5 Fixed inboard petrol fuel tanks are acceptable in a rigid hull boat, a RIB or a boat with a buoyant collar subject to the following:
- The tank is constructed in accordance with ISO 10088 or other designed standard.
 - Foils should not be used.
 - Any spillage during fuel handling is not allowed to accumulate.
- 7.8.3.6 Petrol shall be kept in tanks that do not form part of the hull and that are insulated from the engine compartment and from all other sources of ignition.
- 7.8.3.7 All fittings and openings shall be on top of petrol tanks, except metallic fill and return pipes, which may be connected to the highest point of the sides or ends of metal petrol tanks, provided that they are welded to the tank and reach above the top of the tank. All fittings and openings, on diesel tanks, not protected by shut-off valves closely coupled to the tank shall be on top of the tank or connected to the highest point of the sides or ends of the tank (BS EN ISO 10088).
- 7.8.3.8 Fixed diesel tanks should have inspection hatches. See ISO 21487.
- 7.8.3.9 Small outboard motors (usually less than 5hp) with integral tanks may be used.
- 7.8.3.10 Foam filled fixed fuel tanks should be considered.
- 7.8.3.11 Provisions shall be made to enable the fuel level or quantity in the tank to be determined.

7.8.4 Fuel Pipes and Connectors

- 7.8.4.1 For boats with outboard engines, fuel line and tank connectors that are likely to be removed frequently are to be quickly detachable, self-sealing, snap-on fittings.
- 7.8.4.2 For boats with inboard engines fuel distribution and return lines shall be properly supported and secured to the craft structure above bilge water level unless specifically designed for immersion or protected from the effects of immersion. Flexible fuel distribution and return hoses shall be used where relative movement of the craft structures supporting the fuel lines would be anticipated during normal operating conditions. Connections between rigid fuel distribution or return lines shall be made with efficient screwed, compression (double clipped), cone, brazed or flanged joints. See BS EN ISO 10088.
- 7.8.4.3 For multiple engine installations, pipes and tanks should be inter-connectable for redundancy between fuel lines and tanks.
- 7.8.4.4 It should be possible to shut off the flow of fuel remotely from the engine, thereby isolating the fuel supply either at the tank or at the engine. Tank isolation should be able to be activated from outside the engine space. The valve or cock should be as close as possible to the fuel tank.
- 7.8.4.5 For portable tanks, disconnection of the fuel line from the tank with self-sealing connectors is acceptable.
- 7.8.4.6 In the case of an integral outboard tank, one fuel line valve is acceptable.

8 ELECTRICAL ARRANGEMENTS

8.1 General Requirements

- 8.1.1 Electrical systems shall be designed and installed to minimise the risk of fire and electric shock.
- 8.1.1.1 Spark sources should be sited as far from fuel pipes and tanks as possible.
- 8.1.2 A risk assessment on the electrical system should be carried out. It should be ensured that there is an appropriate level of redundancy.
- 8.1.3 Electrical installations should conform to the requirements of all applicable ISO standards. The following may be referenced:
- ISO 10133, Small Craft - Electrical systems, Extra low voltage DC installations.
 - ISO 13297, Small Craft - Electrical systems, Alternating current installations.

- ISO 8846, Small craft - Electrical devices - Protection against ignition of surrounding flammable gases.
- BS EN 28846, Small Craft - Electrical devices, Protection against ignition of surrounding flammable gases.
- BS EN 60079-29-1 Explosive atmospheres. Gas Detectors. Performance requirements of detectors for flammable gases
- ISO 9097, Electric fans.
- ISO 8849, Electrically operated bilge pumps.
- BS 8450, Code of Practice for Installation of Electrical and Electronic Equipment in Ships.
- British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.
- IEC 60092-350, General construction and test methods of power control and instrumentation cables for shipboard and offshore applications.
- BS EN 60079-14, Explosive atmospheres. Electrical Installations design, selection and erection.

8.1.4 Appropriate Ingress Protection (IP) standards of water resistance are to be applied throughout the electrical systems.

8.1.5 Systems should be two-wire, except that single wire systems are acceptable for engine circuits comprising engine mounted equipment and which have a return connection made at the engine itself.

8.1.6 A system in which there is no intentional connection of the circuit to earth (an insulated system) should be provided with double pole switches, except that single pole switches may be used in the final sub-circuit.

8.1.7 The insulation resistance, measured using a low voltage instrument, so as not to cause damage, should not be less than 0.3 MΩ.

8.1.8 All circuits except the main supply from the battery to the starter motor should be provided with electrical protection from overload and short circuit. Cross-linking circuits are an exception.

8.2 Batteries

8.2.1 All batteries should be secured firmly to avoid movement when the Rescue Boat is subjected to sudden acceleration or deceleration, a large angle of heel, trim or inversion.

8.2.1.1 Where the maximum charging power output is less than 0.2 kilowatts (kW) the batteries may be located in any suitable space without any special container requirements.

8.2.1.2 Where the maximum charging power output is between 0.2 and 2.0 kW the batteries should be located in the machinery space or other well-ventilated space in a box or locker.

8.2.1.3 Where the maximum charging power output exceeds 2 kW the batteries shall be placed in a suitably ventilated dedicated compartment within the Rescue Boat or a locker on the open deck, in either case stowage space is to be for batteries only.

8.2.2 Ventilation

8.2.2.1 To ensure that any evolved hydrogen is expelled, battery compartments, lockers and containers should be exhausted through a flame proof gauze from the highest point of the space and air supplied at a level below the top of the batteries. For smaller battery installations, say 1 or 2 12 V batteries, where it can be shown by assessment of the risk of a flame ingress into the battery locker, that a flame proof gauze is not necessary then open vents / gore tex vents can be fitted as the volume of hydrogen is likely to be small as the space is vented and the risk of a flame tracing back to the space and causing an explosion is small.

8.2.2.2 If mechanical means are employed to ventilate a battery compartment directly, then the components should not be a potential source of ignition. Reference should be made to the requirements of the ATEX Directive concerned with equipment and protective systems intended for use in potentially explosive atmospheres).

8.2.3 If the system has a charging facility, a battery charging indication should be provided, though this may not be available for outboard motors. A battery capacity monitor should also be considered.

8.2.4 Equipment should be provided to allow the battery to be charged and its charge to be monitored in the boathouse.

8.2.5 Gel type or 'sealed' batteries should be used on Rescue Boats.

8.2.5.1 'Sealed' or 'Maintenance free' batteries still produce small amounts of flammable gases, and are fitted with valves to relieve internal pressure.

Future standards will refer to this type of battery as a 'valve regulated sealed' type.

8.2.6 Battery capacity should reflect the operational requirements of the boat.

8.2.6.1 An anticipated service use and charging capability calculation should be carried out to determine battery requirements to allow for full operational ranges.

8.2.6.2 The calculation should encompass electric start engines: the battery size should have sufficient charge to start the engine(s) an appropriate number of times without recharging.

8.2.7 Engine starting batteries should be matched to the engine.

8.2.8 An engine-starting battery should be used solely for this purpose, and a second battery should be provided for any other uses. The use of a single battery for engine starting and other use is acceptable provided that an effective secondary means of engine starting is in place.

8.2.8.1 System redundancy can be provided through battery cross-connection.

8.2.8.2 Battery terminals should be protected against accidental contact with metallic objects.

8.2.9 When the sole means of starting is by battery, the batteries should be in duplicate and connected to the starter motor via a 'change over switch' so that either battery can be used for starting the engine. Charging facilities for the batteries should be available. Under normal circumstances it is not recommended to discharge both batteries in parallel.

8.2.9.1 A battery cut-out switch should be provided for all systems. It is preferred that this switch act as an isolator i.e. it is double pole. However, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an 'off' position, this may serve as the cut-out switch also.

8.2.10 Each battery and charging circuit should be able to be isolated.

8.2.11 Isolators should be specifically maintained.

8.2.12 Batteries should be firmly secured.

8.2.12.1 Batteries shall be protected from ingress of water.

8.2.12.2 The battery box shall be acid splash proof.

8.2.13 A risk assessment of Rescue Boat batteries should address the following:

- Flat battery
- Battery explosion
- Damage
- Leaks
- Poor connections
- Over voltage
- Over-use
- Under-charged
- Alternator failure
- Corrosion
- Shorting
- Salt up
- Environmental issues
- Ventilation blockage
- Regulator/ alternator failure
- Cable failure
- Isolator switch failure
- Capsize
- Impact
- Fluid level
- Maintenance

8.3 Cables

8.3.1 Cabling should be appropriate for the application and matched to the power source.

8.3.2 All cabling should be to a recognised standard for marine use in small boats.

8.3.3 Cabling should be appropriately protected, physically and electrically.

8.3.3.1 All electronic equipment cabling should be effectively screened. Alternatively trials can be carried out to demonstrate that there are no interference problems.

8.3.3.2 Cables which are not provided with electrical protection should be kept as short as possible and should be 'short-circuit proofed', e.g. single core with additional insulated sleeve over the insulation of each core. Normal marine cable, which is single core, will meet this requirement without an additional sleeve, since it has both conductor insulation and a sheath.

8.3.3.3 Cable runs should be continuous where possible.

8.3.3.4 Bends in cable runs should be provided with suitable radii.

8.3.3.5 Where appropriate, conduits should be used, or cabling recessed in the structure.

8.3.3.6 A risk assessment of Rescue Boat cabling should address the following:

- Physical damage due to fatigue, impact, fire, environment, flexing etc.
- Burn out
- Connection failure
- EMC and cross-talk
- Ageing
- Maintenance

8.4 Electrical Protection

8.4.1 Protection shall be provided to guard against overload and short-circuit of all components in the electrical system except for engine starting circuits.

8.4.2 All fuses and circuit breakers should be clearly labelled and identifiable.

8.4.3 Fuses should be easily accessible for shore-side replacement.

8.4.3.1 It is not anticipated that fuses will be changed at sea. This may however need to occur in an emergency, if the benefits of restoring power to the system outweigh the risk of exposing all remaining fuses to water. The carriage of emergency fuses should be addressed.

8.4.4 A risk assessment of Rescue Boat electrical protection should address the following:

- Overheating
- Fuses don't blow
- Fuses blow too quickly
- Circuit breakers trip due to boat motion.
- Mechanical failure
- Incorrect fuse
- Operational environment – i.e.. slamming
- Surges in power
- Dirty supply (affecting sensitive electronics)
- Corrosion
- Quality issues
- Fire
- Maintenance

8.5 Switches

8.5.1 Wiping contacts or relays should be used where possible.

8.5.2 All switches should be clearly labelled, identifiable and accessible.

8.5.3 Switches should be sited to avoid accidental switching.

8.5.4 A risk assessment of Rescue Boat switches should address the following:

- Switch failure
- Fail-safe circuits
- Circuits are continuously live
- Water
- Impact
- Environment and seawater protection
- Surges in power
- Switch quality
- Contact burning/ arcing (HV)
- Maintenance

8.6 Earthing and Lightning Protection

8.6.1 Equipment should be suitably earthed, where appropriate. 12V and 24V DC systems do not require separate earthing.

8.6.2 Where a considerable risk of lightning strike is identified, it is recommended that attention is paid to lightning strike protection. For information on lightning protection, reference should be made to ISO 10134 'Small Craft - Electrical Devices - Lightning Protection Systems'.

8.6.3 A risk assessment of Rescue Boat earthing should address the following:

- Corrosion
- Interference with navigation
- Interference with communications
- Interference with engine management system
- Corrosion of skin fittings
- Incorrect sizing of anodes
- Bonding
- Impact leading to loss of earthing
- Incorrect location
- Bond broken
- Shore supply
- Incompatibility
- Design, maintenance and training

8.7 Electrical Spaces

8.7.1 Spaces containing electrical equipment should be vented, and accessible to prevent corrosion and allow maintenance.

8.7.2 Electrical equipment or cables should not share enclosed spaces where fuel vapour may be able to accumulate. Where this is not possible, equipment should comply with a recognised standard for prevention of ignition in a flammable atmosphere.

8.7.3 A risk assessment of spaces on Rescue Boats containing electrical equipment should address the following:

- Fuel lines giving off fuel vapour – refer to ISO 7840
- Current leakage
- Arcing
- Damage to cables
- Corrosive environment
- Incorrect fit
- Maintenance and training

8.8 Lighting

8.8.1 If the boat has a night time capability, it should be possible to operate at night following a total failure of the electrical system.

8.8.1.1 The following should be considered:

- Fundamental lights should have back up, in the form of torches, chemical lighting, nightglow strips, route marking etc.
- Spare bulbs should be carried for critical lights
- There should be provision of minimum standalone navigation lighting in event of total electrical failure.

8.8.1.2 When designing any lighting system the following should be considered:

- The use of wandering leads
- The specification of the lights should be appropriate in terms of wattage and colour
- Lights should be positioned to provide light where required, yet avoid loss of night vision

9 STEERING AND PROPELLER SYSTEMS

9.1 Propeller Bather Guards

9.1.1 A guard should be fitted in the following cases:

- If required by any operational risk assessment
- If required by a launch and recovery risk assessment
- If operating in shallow waters when consideration should be given to detaching the lock-down pin and strengthening the engine structure

9.1.2 Some propeller guards have been known to affect the steering of some craft causing unexpected changes of direction due to asymmetric loadings on the guard face. Additionally some loss of speed/power/fuel efficiency will be experienced. Therefore, if it decides to fit them, then Rescue Boat Organisation should assess the possible consequences and impacts of fitting

propeller guards and incorporate these consequences into the crew training and relevant guidance procedures to mitigate any risks.

9.1.3 Any propeller guard (see also 7.1.9) should be made of appropriate marine grade materials and be designed to match the propeller and the characteristics of the craft.

9.1.4 The carriage of a spare propeller, associated tools, shear pins etc. is recommended.

9.2 Water Jets

9.2.1 Waterjet inlets should be physically protected with appropriate grills.

9.2.2 Bars/guards/railings should be fitted to the aft of the boat to deter waterborne casualties from grabbing the moving/steering parts of the waterjet.

9.2.3 If possible a method, such as back-flushing, should be provided to clear debris from intake grills.

9.2.4 It should be possible to access the jets by feel or visual means to check for debris.

9.3 Steering

9.3.1 The boat should be provided with an efficient means of steering.

9.3.2 Steering systems and supporting structure shall be designed, constructed and installed in order to allow the transmission of steering loads under operating conditions, including after capsized.

9.3.3 The steering system should conform to the requirements of the appropriate BS, EN and ISO standards. The following standards can be referenced:

- ISO 8847 - Small craft - Steering gear-cable and pulley systems
- ISO 8848 - Small craft - Remote steering systems
- ISO 10592 - Small craft - Hydraulic steering
- ISO 9775 - Small craft - Remote Systems for single outboard motors 15-40 kW
- ISO 13929 - Small craft - Geared link systems

9.3.4 The steering position should be located so that the Helmsman, under normal operating conditions, has a clear view for the safe operation of the boat. This should include towing operations. The following standard can be referenced:

- ISO 11591 - Engine driven small craft - Field of vision from helm position

9.3.5 Hydraulic remote steering systems should be fitted with a by pass valve to allow for emergency steering.

9.3.5.1 Emergency steering should be based on any of the following:

- A redundant system
- A re-configured system
- A temporary rig
- An emergency tiller to fit to the head of a rudder stock.
- A rod attachment which may be fitted to a Z-drive framework
- Some twin-engine boats may be able to demonstrate adequate emergency steering by engine manoeuvring. If fitted with Z or stern drives, these should be fitted with a locking device in case of steering system failure
- For boats with twin outboards using vectored steering, it should be possible to steer with one engine, having lifted the other, and be able to use full lock in both directions
- If a boat has two rudders, they should be sized to allow effective steering with one rudder only

9.3.6 Emergency steering equipment should be simple to rig and use.

9.3.7 On boats fitted with powered hydraulic steering systems the crew should be able to easily inspect the pump and fluid level, or pressure and fluid alarms shall be provided.

10 BILGE PUMPING

10.1 The boat should be designed to minimise the risk of sinking. Special attention is to be paid to:

- Self draining wells
- Ventilation fittings (Battery housing)
- Removal of water using pumps or other means

10.2 A system should be provided whereby water can be removed from spaces nominated as dry. Watertight lockers that contribute to damaged buoyancy of the boat are to be considered as dry spaces.

10.3 Machinery spaces nominated as dry should have a bilge system to accommodate minor flooding. The bilge pump should meet the following minimum capacity requirements:

- 10 litres per minute for boats 6 metres in length or less
- 15 litres per minute for boats between 6 metres and 12 m in length
- 30 litres per minute for boats 12 metres in length or greater

10.4 The bilge alarm system and bilge system itself should be designed such that it can function if any compartment (containing any component of the system) is flooded.

- 10.5 Any water freeing (bilge) system should incorporate an appropriate level of redundancy, and the following are to be considered:
- Float malfunction should be considered as a possibility
 - Redundancy may extend to providing an alternative means of bailing the boat
 - If the primary means is a hand bilge pump, a second is suggested
- 10.6 Any bilge pump system should be designed to cope with debris in the bilges.
- 10.7 Bilge suction valves should be non-return.
- 10.8 A powered automatic bilge pumping system is recommended, but only in combination with a back up.
- 10.9 An auto-start bilge pump should be fitted with an alarm at the control position such that the reasons for pumping can be investigated.
- 10.10 It is accepted that pollution is a potential problem; however in each case the level of risk should be determined. To prevent pollution, automatic bilge pumps should not be fitted in compartments containing pollutants.
- 10.11 Reference can be made to:
- ISO 8849, Electrically operated direct-current bilge pumps
 - ISO 11582, Small craft - Bilge pumping systems
- 10.12 Where applicable spare bungs should be carried for all dry spaces.

11 STABILITY

11.1 Intact Stability

11.1.1 Intact stability: All boats

11.1.1.1 The boat shall have sufficient stability and buoyancy considering both its design category (see 4.2.1) and the maximum recommended load specified on the capacity plate.

11.1.1.2 A range of realistic and relevant loading scenarios, including 'worst cases' should be considered. Conditions should include the following:

- Maximum load condition specified on the capacity plate i.e. maximum crew and survivors, full fuel, engine, all operational on-board equipment etc.
- Lightest condition as permitted by the operating manual
- Any intermediate case that may be worse for any reason
- Any other operational considerations that might affect stability

- 11.1.1.3 Fuel free surface moments should be minimised as far as possible by design.
- 11.1.1.4 Intact and damaged stability tests can be carried out with the engine and fuel tank either installed or replaced with an equivalent mass. Each crewman may be substituted by a representative mass (see Para 11.1.6) and each survivor by 90kg for the purpose of the tests.
- 11.1.1.5 Intact and damaged stability tests are to be carried out on the boat whilst floating in still water and should be witnessed by the Rescue Boat Organisation and a Competent Person. Stability Calculations are to be verified by a Competent Person.
- 11.1.1.6 If a boat is completely in accordance with a standard production type, certificates of approval may be provided and considered for any tests already completed. However personnel weights appropriate to Rescue Boats as specified in Para 11.1.6, or appropriate corrections, should have been applied.
- 11.1.1.7 All intact stability information should be included in associated documentation.
- 11.1.1.8 If a boat wishes to operate in Operational Limit Category B waters (as defined in 4.2.1, noting 4.6.2), it should also adhere to wind heeling and wave requirements set out in ISO 12217-1 - Sections 6.3 and 7.

11.1.2 Intact Stability: Rigid Hull Boats

- 11.1.2.1 Rigid hull boats of hull length greater than or equal to 6m should comply with the stability requirements of ISO 12217-1.
- 11.1.2.2 Rigid hull boats of hull length less than 6m should comply with the stability requirements of ISO 12217-3.
- 11.1.2.3 For all rigid hull boats, and for each condition specified by Para 11.1.1.2, all personnel up to the maximum number of persons for which the boat is certified (except the Helmsman, who may be assumed to be at the steering position) should be crowded to one side, with half this number seated on the side deck. This procedure should be repeated on the other side and at each end of the boat. In each case, the following should be addressed:
- Positive stability should be maintained
 - The angle of heel and the position of the waterline should be recorded
 - The freeboard to top of the gunwale should never be less than 250mm at any point

11.1.3 Intact Stability: Inflatable Boats, RIBs and Boats with a Buoyant Collar

11.1.3.1 For each condition specified by Para 11.1.1.2, personnel up to the maximum number of persons for which the boat is certified (except the helmsman, who may be assumed to be at the steering position) should be crowded to one side, with half this number seated on the buoyancy tube. This procedure should be repeated on the other side and at each end of the boat. In each case, the following should be addressed:

- Positive stability should be maintained
- The freeboard to the top of the buoyancy tube should be recorded
- The freeboard should be positive around the entire periphery of the boat, including the transom, unless the boat complies with Para 12.3.2
- The boat should not display an inherent tendency to lift the buoyancy tube and loss of stability due to wind pressure under the buoyancy tube should be determined

11.1.3.2 Static stability tests should include a factor of safety to take account of the influence of wind, waves etc.

11.1.3.2.1 An appropriate number of additional people may be added to leeward to simulate an additional worst case wind heeling moment. By calculation a 40 knot wind heeling force generates a 14-degree heel on a 7.5m RIB. This equates to 2 crew, each of 100kg, on the buoyancy tube.

11.1.4 Intact Stability: Survivor Recovery – All Boat Types

11.1.4.1 Referring to the realistic operating scenarios generated in Para 11.1.1.2, positive stability should be maintained throughout the process with an appropriate number of crew (the Helmsman may be assumed to be at the steering position) recovering one, two (or more) persons from the water. The operational validity of the number chosen should be demonstrated. The rescued persons should feign to be unconscious which can be defined as 'not being able to help oneself', with their backs turned to the boat so as not to assist the rescuers. Each person involved should wear an approved lifejacket. If dummies are used, they should be of an appropriate weight.

11.1.4.2 Survivor recovery heel tests should be carried out on the boat whilst floating in still water.

11.1.4.3 Survivor recovery tests in Para 11.1.4.1 should be repeated for the boat in a fully swamped condition – see Section 11.2.

11.1.5 Maximum personnel capacities

11.1.5.1 The following options are available to determine the maximum number of persons allowed on board the Rescue Boat:

11.1.5.1.1 As a guide, ISO 6185 Parts 1 to 4 contains a formula to determine the maximum number of persons allowed on board an inflatable boat. However person weights specified below, in 11.1.6, should be substituted into this formula. ISO 14946 also provides guidance.

11.1.5.1.2 The intact and damaged stability requirements of this Code should be satisfied, which may be used to determine the number of persons allowed. This may result in a reduction in the number of persons allowed by ISO 6185 Parts 1 to 4.

11.1.5.1.3 The maximum number of persons on board will be determined by the lesser of Paragraphs 11.1.5.1.1 or 11.1.5.1.2.

11.1.6 Crew and Survivor Weight Definitions

11.1.6.1 For calculation purposes the weight of a fully equipped and dressed Rescue Boat crew member is assumed to be 100kg.

11.1.6.2 It is recognised that in certain instances e.g. surf rescue crews equipped with minimal PPE, this average weight could be assumed to be less: if so, the Rescue Boat Organisation may agree on an individual basis a lower figure (to a minimum of 85 kg).

11.1.6.3 The weight of an adult survivor and passenger is assumed to be 90kg, the weight of a child survivor is assumed to be 37.5 kg. A reduced weight for passengers may be considered (to a minimum of 75kg).

11.2 Swamping and Drainage

11.2.1 Swamping

11.2.1.1 In the fully loaded swamped condition a Rescue Boat should not be so deformed that the boat is unable to fulfil its operational duties.

11.2.1.2 In the fully loaded swamped condition, a rigid hull boat should have positive freeboard around the boat.

11.2.1.3 In the fully loaded swamped condition, an inflatable boat, RIB or boat with a buoyant collar should have positive freeboard around the periphery of the buoyancy tubes.

11.2.1.4 If a boat does not have positive freeboard at the transom at any point during swamping tests then it should be shown that all openings etc. are watertight and that the structure is able to withstand the head of water. The drainage requirement specified in Para 11.2.2.3 should be satisfied. See also 5.1.2.

11.2.1.5 All swamping tests should be repeated for at least one condition where the boat is partially swamped. This can be interpreted as 50% swamped. This is a free surface test. The stability of the boat should be positive at all times.

It should be demonstrable that capsizing cannot be induced by free flowing water.

11.2.2 Drainage

11.2.2.1 The boat should be equipped with a suitable drainage system.

11.2.2.2 The drainage system should be demonstrated at the conclusion of the swamping test. It should be shown that a swamped boat can be drained or bailed at sea.

11.2.2.3 If a rigid inflatable boat or rigid boat does not have positive freeboard at the transom at any point in the swamp tests the boat should be shown to drain without interference to 'almost dry' in less than 30 seconds.

11.2.2.4 If the boat has a dynamic system of drainage (e.g. transom drain socks) a necessary part of the buoyancy test is to demonstrate that the engine or drainage power system still works when the boat is swamped.

11.2.2.5 A form of secondary bailing should be provided.

11.3 Damage Stability

11.3.1 General Requirements

11.3.1.1 All damage stability information should be included in associated documentation.

11.3.1.2 All damage stability tests should be carried out with the boat loaded with the maximum number of persons (crew and survivors) stated on the capacity plate. The engine and (full) fuel tank should be fitted, or replaced by an equivalent mass, as should all equipment appropriate to the intended use of the boat.

11.3.1.3 A damage survival 'book' should be generated, detailing mitigations and capabilities associated with the various damage states. This information can be based on a risk assessment of each damage state and should form part of the boat manual. It is not intended that this 'book' should include computer calculations.

11.3.1.4 The carriage of a recovery kit comprising of, for instance, a spare inflatable bladder, pump etc is at the discretion of the Rescue Boat Organisation and is likely to be dependent on the area and conditions of operation. A risk assessment of the specific operation of the boat will determine this requirement.

11.3.2 Damage Stability: Rigid Hull Boats

11.3.2.1 The Code approaches rigid hull boats as one-compartment boats and if damage occurs it is assumed that hull form buoyancy is entirely lost.

11.3.2.2 Although from a 'damage' point of view, Rescue Boats are assumed to be one-compartment boats, from a practical point of view sub-division is desirable. However Rescue Boats should not have a configuration that is likely to give rise to stability problems, particularly in the case of asymmetric flooding, that could cause capsize or a severe angle of loll.

11.3.2.3 A rigid hull boat should have sufficient residual buoyancy, with 50% of its reserve floatation/buoyancy lost, to be able to support 100% of the weight of the boat, equipment, crew and survivors detailed as a maximum on the capacity plate. Residual buoyancy may take the form of tanks, bags, solid foam, etc.

11.3.3 Damage Stability: Inflatable Boats

11.3.3.1 In each of the following cases it should be demonstrated that 100% of the weight of the boat, equipment, crew and survivors detailed as a maximum on the capacity plate can be supported 'out of the water' in an upright position by the undamaged remainder of the boat. A five-compartment buoyancy tube has been used in the following illustrations; however the principal should apply to all variants of buoyancy tube design. The shaded spaces represent those buoyancy tube volumes that have been damaged.

11.3.3.1.1 With the forward buoyancy deflated (i.e. both sides, if there is a central baffle).

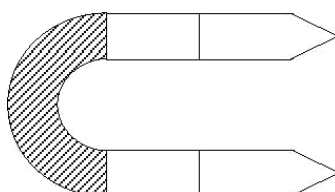


Fig. 11.3.3.1.1

11.3.3.1.2 With the entire buoyancy from the centreline at the stem to the transom on one side of the boat deflated, as shown in Fig.11.3.3.1.2(a).

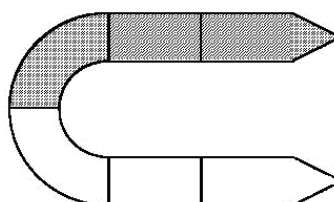


Fig. 11.3.3.1.2(a)

For boats without a central baffle this should be achieved by deflating both the side compartment(s) and the bow compartment as shown in Fig. 11.3.3.1.2(b).

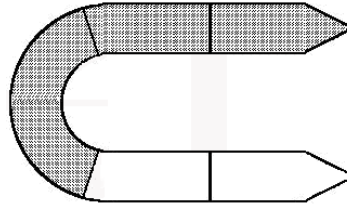


Fig. 11.3.3.1.2(b)

11.3.3.2 The keel chamber on an inflatable boat should be deflated for damaged condition tests.

11.3.3.3 It is to be assumed that if the boat is damaged it will also be swamped. It also is assumed that if a part of the buoyancy tube is lost, the form buoyancy of the buoyancy tube is lost. As such, no benefit can be gained by manually holding up a deflated buoyancy tube.

11.3.4 Damage Stability: RIBS and Boats with a Buoyant Collar

11.3.4.1 In each of the following cases it should be demonstrated that 100% of the weight of the boat, equipment, crew and survivors detailed as a maximum on the capacity plate can be supported 'out of the water' by the undamaged remainder of the boat.

- With the hull damaged and where applicable not providing any form or residual buoyancy.
- With the hull intact but the buoyancy tube damaged as shown in Paragraphs 11.3.3.1.1 and 11.3.3.1.2.

11.3.5 Buoyancy Tube Sub-Division of Inflatable Boats, RIBS and Boats with a Hollow Buoyant Collar

11.3.5.1 The subdivision of inflatable boats should appropriately reflect horsepower, length and breadth. However this is subject to a minimum of 5 subdivision compartments (not including the keel).

11.3.5.2 On an individual basis Rescue Boat Organisations may specially consider boats with 4 subdivision compartments or less. However, all other intact requirements should still be satisfied.

11.3.5.2.1 Although not exhaustive, the following list of measures to provide an equivalent level of safety may be considered:

- Personal Protective Equipment (PPE)
- Operational back up, such as a mother boat, or supervision from the shore able to call up support

- Specific operational conditions, such as limited range of operation
- Specific crew training
- Seasonal Operation
- Group working

11.3.5.3 An inflatable boat or rigid inflatable boat loaded to the maximum load capacity shall be capable, on a sudden deflation of any one of its compartments, of being propelled by its primary means. This should be tested by propelling the boat in a generally straight line for at least 400m in calm water.

11.3.6 Sub-Division of RIBs and Boats with a Buoyant Collar

11.3.6.1 Although no subdivision of the hull of a rigid inflatable boat is specifically required attention should be drawn to the damage stability requirements of Para 11.3.4.

11.3.7 Damage Stability: Survivor Recovery

11.3.7.1 A damaged boat is not expected to continue its rescue mission, and recover survivors. However it should be noted that the maximum number of survivors allowed are assumed to be on board for all damaged stability tests.

11.4 Dynamic Stability

11.4.1 The speed and manoeuvrability barrier avoidance tests detailed in ISO 11592 should be carried out for all conditions specified in Para 11.1.2.

11.4.2 Operational limits have been defined in Para 4.2.1.

11.4.3 Boats in each category should be designed and constructed to withstand these parameters in respect of stability and buoyancy, and have satisfactory handling characteristics', bearing in mind that dynamic stability is directly related to the conditions of operation of the boat.

11.4.4 By meeting the stability requirements of this Code, the boat is deemed suitable from a stability aspect for operation in Operational Limit Category C or D, as defined in 4.2.1.

11.4.5 If dynamic crew positioning is a critical influence on the stability of the boat, the design should reflect this. Other factors, such as ergonomics, footrests handholds etc., should also be addressed.

11.4.6 Where applicable, maximum propulsion power for inflatable boats, RIBs and boats with a buoyant collar should be determined by ISO 6185 Parts 1 to 4 bearing in mind that excessive horsepower can have an adverse effect on dynamic boat stability, especially on smaller boats.

11.4.7 Where applicable maximum propulsion power for rigid hull boats should be determined by ISO 11592, bearing in mind that excessive horsepower can have an adverse effect on dynamic boat stability, especially on smaller boats.

11.5 Boat Righting Systems

11.5.1 A Rescue Boat should be able to return to upright following a capsize, using one of the following approaches:

- Manual righting (using an agreed training manual procedure). The number and capability of crew that are required to right the boat should be determined. To prevent the boat being at sea with less than this capability, the relevant information should be included in documentation and training
- Automatic and semi-automatic righting
- Inherent self-righting by design

It is important to ensure autonomy following capsize. A Rescue Boat Organisation should provide mitigations to use a Rescue Boat that cannot be righted. These may be of the following form:

- Demonstration that the probability of capsize is very low
- Two boat operation
- Operation in close proximity to a beach that affords a safe refuge to boat crews following capsize
- Provision of a life raft – if a life raft is carried it should be accessible when the boat is capsized

11.5.2 Demonstration of righting capability – practically or by calculation.

11.5.3 The ability of the crew to re-enter the boat from the water following capsize should be demonstrated.

11.5.4 Any single crewmember should be able to climb unassisted into the boat at any accessible point around the perimeter, without capsizing the boat.

11.5.5 The effects of trapped water should be considered in terms of stability and righting the boat.

11.6 Stability When Using Onboard Lifting Devices

11.6.1 If the boat is fitted with a lifting device it should be able to operate at maximum safe working load, with a realistic worst case placement of people in the boat. The following should be true throughout the lifting operation:

- The boat should have positive stability;
- Inflatable boats, RIBs and boats with a buoyant collar should have positive freeboard;

- The freeboard to top of the gunwale for a rigid boat should not be less than 250mm at any point, throughout the lifting operation.

11.6.2 Information and instructions to the helmsman on boat safety when using any lifting device should be included in the boat documentation. This information should be replicated and displayed in an appropriate position, on the lifting device or adjacent to the controls.

11.7 Stability Trials

11.7.1 A stability trials proforma has been generated and can be found in Appendix 1.

11.7.2 Achieving Rescue Boat Code stability requirements for a particular operational limit is not interchangeable with certification for those conditions as a recreational craft (RCD) or as a Small Commercial Vessel.

11.8 Capacity Plate

11.8.1 The Rescue Boat should display a clearly and indelibly printed or engraved plate displaying the following:

- Name of boat manufacturer or importer and country of origin
- Date of build
- Design Category
- Maximum all up load capacity in kg
- Maximum recommended number of persons (as defined in Para 11.1.5) that the boat is designed to carry when under way
- Maximum engine power in HP and/or kW
- Recommended working pressure of buoyancy tubes (inflatable and RIBs)
- Maximum engine mass on transom

11.8.2 Maximum number of personnel calculation should take into account the maximum all up load capacity, crew weight and any additional fittings as stores etc.

11.8.3 Crew and survivor weights should reflect those specified by Para 11.1.6, but to allow flexibility the plate may detail various permutations of the form:

- crew and other persons @ 100kg each
- survivors and passengers (adult) @ 90 kg each
- survivors (child) @ 37.5 kg each

11.8.4 Attention should be drawn to the fact that the other standards assume a crew weight of 75kg, and this Code necessitates that a figure of 100kg normally be used. This detail should be reflected clearly on the capacity plate.

11.8.5 If the boat displays an RCD determined capacity plate and/or an ISO 6185 capacity (builders) plate, to avoid ambiguity a separate clearly marked Rescue Boat Code capacity plate is required.

11.8.6 The details on the capacity plate should be replicated in all relevant boat and training documentation.

11.8.7 If exceptional circumstances require any of the capacities specified on the plate to be exceeded, it is at the discretion of the Helmsman. This should be stated explicitly in all documentation. The Rescue Boat Organisation shall prepare guidance for crew training and to inform the Helmsman on the consequences of overloading.

11.8.8 The following can be referenced: ISO 7000, ISO 11192, ISO 6185

12 FREEBOARD

12.1 All boats

12.1.1 The boat shall have sufficient freeboard considering its operational limit and the maximum recommended load specified on the capacity plate.

12.1.2 Freeboard markings are not required for Rescue Boats. The minimum freeboards recorded during the tests and the permissible maximum weight which can be carried should be recorded on the boats certificate.

12.2 Rigid Hull Boats

12.2.1 A rigid hull open boat in sea water, when loaded to the maximum all up weight specified on the capacity plate, should have a minimum freeboard giving a clear height of side (water to the lowest point of the gunwale) of not less than 400mm for boats under 7m LOA and not less than 690mm for boats of 15m LOA.

12.2.2 Intermediate lengths should be interpolated.

12.3 Inflatable Boats, RIBs and Boats with a Buoyant Collar

12.3.1 The freeboard of an inflatable boat or boat fitted with a buoyant collar should be not less than 300mm measured from the upper surface of the buoyancy tubes and not less than 250mm at the lowest part of the transom with all its equipment, fuel, cargo, activity related equipment and the number of persons for which it is to be certificated onboard, with the boat re-trimmed as necessary to represent a normal operating condition, and with the drainage socks (if fitted) tied up.

12.3.2 Boats operating in Operational Limit Category D only, which, at the transom, do not meet the freeboard requirements of 12.3.1, may still be accepted by the Rescue Boat Organisation provided it can be demonstrated that the boat

is self-draining (i.e. it is not possible to accumulate and retain water in the boat) when moving ahead, and has a substantial reserve of buoyancy.

12.3.3 In addition to 12.3.2, boats operating in Operational Limits Category B and C may still be accepted by the Rescue Boat Organisation provided they are specially assessed by the Competent Person taking into account operational experience, a proven risk assessment and a stringent safety management system which follows best practices with regard to training and other aspects. Attention is drawn to 4.2.3 of this Code.

13 LIFE SAVING APPLIANCES INCLUDING PERSONAL PROTECTIVE EQUIPMENT (PPE)

13.1 General Requirements

13.1.1 PPE should be provided to adequately protect the crew at all times, particularly in the water.

13.1.2 If no liferaft is provided with the Rescue Boat, PPE should provide an alternative 'haven'. One of the following should be chosen, appropriate to the tasks being undertaken:

- An approved immersion suit
- A dry suit
- A wet suit
- Any other efficient garment to reduce the likelihood of hypothermia should the wearer enter the water

13.1.3 Liferafts, if carried, should be to a recognised standard, and be serviced at a service station approved by the manufacture at appropriate intervals (including its hydrostatic release unit where fitted). The Small Commercial Vessel and Pilot Boat Code (MGN 280) provides guidance on acceptable types of liferaft, their stowage location, and service intervals.

13.1.4 PPE should not detract from the capability of the crew and should be fit for purpose.

13.1.5 Waders should not be worn.

13.2 Lifejackets

13.2.1 Rescue Boat crew should wear appropriate lifejackets at all times whilst aboard the Rescue Boat or in the water.

13.2.2 The only exception to Para 13.2.1 is where, the Rescue Boat Organisation concludes that the encumbrance of a lifejacket would preclude safe operation in the Rescue Boat environment, in specific cases such as:

- .1 Crews engaged in underwater operations

.2 Surf: The rationale for a surf dispensation is that there is evidence to suggest that a lifejacket may inhibit the ability of such crew to swim through a breaking wave. It is noted that fit, trained crew stand a better chance of survival by swimming through large breaking waves, rather than remaining on the surface.

This dispensation should not be granted lightly and mitigations should include the following as a minimum:

- The crew should be sufficiently physically fit and trained to cope with the environmental conditions of surf
- The crew should be able to handle the boat in surf
- The Rescue Boat should be visually monitored from the shore by appropriately qualified staff
- The shore support should have access to emergency communication facilities
- There should be an emergency procedure in place

13.2.3 Gas inflatable lifejackets should be serviced annually at a service station approved by the manufacturer.

13.2.4 Lifejackets should be MCA or Marine Equipment Directive (MED) approved (“wheelmarked”) or comply with ISO 12402-3 for 150N or ISO 12402-2 for 275N and be fitted with retro-reflective devices. Where the lifejackets are of the inflatable type, they should be fitted with a compressed gas inflation system.

13.2.5 Where boats are operated at night, each crew member should be provided with Day/ Night mini flare(s).

13.2.6 Crew may wear buoyancy aids on inland waters during daylight if a local risk assessment proves this to be appropriate.

13.3 Operationally Specific PPE

13.3.1 The following should be carried if appropriate:

- Gloves
- Helmets
- Personal locator beacons

13.3.2 Rescue Boats should carry appropriate provision of PPE for survivors and should reflect operational survivor handling protocol. As a minimum this should include thermal protective aids and lifejackets.

13.3.3 If it is likely that a crewmember will transfer to a casualty vessel, appropriate PPE should be worn.

13.3.3.1 A harness should be worn so that the crewmember can clip on to the casualty vessel.

13.3.3.2 Bulky kit may need to be avoided to facilitate escape from a casualty.

13.3.4 Appropriate PPE should be provided if it is anticipated that the crew will enter the water in the course of service.

13.3.4.1 It may be that a crewman should operationally enter the water to carry out the following:

- Assist a survivor into the Rescue Boat
- Boarding a casualty
- Going ashore etc.

13.3.4.2 The following may assist this process:

- Swimming lines/rescue tubes.
- Additional communications equipment

13.3.5 A local risk assessment should be carried out to determine appropriate PPE to be worn by shore crew.

13.4 Use of Retro-Reflective Materials on Life Saving Appliances

13.4.1 The reflective tape used should comply with the requirements of the European Directive 96/98/EC, as amended, on Marine Equipment (MED) (although the wheelmark need not appear on the tape itself).

13.4.2 Buoyant Apparatus

13.4.2.1 Buoyant apparatus should be fitted with retro-reflective materials in the same manner as liferafts without canopies, always depending on the size and shape of the object. Such materials should be visible both from the air and from a ship.

13.4.3 Lifejackets

13.4.3.1 Lifejackets should be fitted with patches of retro-reflective materials as per the standard.

13.4.4 Immersion Suits

13.4.4.1 Immersion suits should be fitted with patches of retro-reflective material with a total area of at least 400cm² distributed so as to be useful for search from air and surface craft from all directions. For an immersion suit that does not automatically turn the wearer face up, the back of the suit should be fitted with retro-reflective material of at least 100cm².

13.5 Pyrotechnics

13.5.1 Illumination flares should be carried when operating at night.

13.5.2 Appropriate emergency flares should be carried. It is suggested that Rescue Boats operating at night upto 20 miles from a safe haven should carry: 4 Parachute Flares, 6 Red hand Flares, 2 Smoke Signals (buoyant or hand held). Pyrotechnics should be MED approved ("Wheelmarked"). Rescue Boats in more restricted use could carry less flares.
(Note - Hand held smoke signals need not be approved to the MED or MSN 1676).

13.5.3 The stowage of pyrotechnics should prevent degradation and premature activation of flares.

13.5.4 Flares should have a suitable stowage in the boathouse as well as on the boat.

13.6 Training Manual

13.6.1 A training and instruction manual should contain instructions and information on the life-saving appliances provided in the Rescue Boat, and also contain information on the best methods of survival.

13.6.2 It may take the form of instructions from the manufacturers of the life-saving equipment provided, as a minimum, with the following explained in detail:

- .1 donning of lifejackets;
- .2 boarding, launching, and clearing the survival craft from the boat;
- .3 illumination in launching areas;
- .4 use of all survival equipment;
- .5 use of all aids to location
- .6 use of sea anchors;
- .7 recovery of persons from the water;
- .8 hazards of exposure and the need for warm clothing;
- .9 best use of the survival craft facilities in order to survive;
- .10 methods of retrieval, including the use of helicopter rescue gear (slings, baskets, stretchers) and shore life-saving apparatus;
- .11 instructions for emergency repair of the life-saving appliances; and
- .12 "Personal Survival at Sea" booklet, e.g. MCA Booklet MCA/075.

13.7 Instruction Manual (on board maintenance)

13.7.1 The manual should contain instructions for onboard maintenance of the life-saving appliances and should include, as a minimum, the following where applicable:

- .1 a check list for use when carrying out the required inspections;
- .2 maintenance and repair instructions;

- .3 schedule of periodic maintenance;
- .4 list of replaceable parts;
- .5 list of sources for spare parts; and
- .6 log of records of inspection.

13.7.2 The manual may be kept ashore by the Rescue Boat Organisation.

13.8 Additional Equipment Requirements

13.8.1 A risk assessment should be carried out to identify any additional equipment that should be carried to aid survivor recovery from the water with minimum risk to the crew.

13.8.2 An appropriate knife should be carried. The knife should be secured and covered.

13.8.3 Every Rescue Boat that is provided with lifting devices shall have such gear properly installed having regard to the intended service of the Rescue Boat. All lifting devices and related equipment shall satisfy the requirements of The Merchant Shipping and Fishing Vessels (Provisions and Use of Work Equipment) Regulations 2006 (SI 2006/2183) and the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 (SI 2006/2184) as applicable. All lifting equipment should be used only by a trained person and should be tested and examined at regular intervals. See also 11.6.2.

13.8.4 Appropriate damage control equipment (to stabilise either a casualty boat or the Rescue Boat) should be carried. The following should be considered for carriage:

- A puncture repair kit and pump on board an inflatable boat or RIB
- Spare drainage bung(s)

13.8.5 The boat storage design should reflect the operational list of additional equipment that has been specified.

13.8.6 If additional equipment is to be carried, it should be included in the relevant load calculations of the stability section. The carriage of additional equipment could be as a result of supernumerary crew.

13.8.7 Equipment carried should be as compatible as possible with interacting authorities.

13.8.7.1 This is particularly the case with medical equipment such as stretchers, but may also apply to equipment relating to rescue helicopters, cliff rescue, etc.

13.8.8 A buoyant heaving line should be carried. Its design should minimise potential injury to crew and survivors.

13.8.9 Bolt croppers or wire cutters should be considered for carriage, particularly for rescue from sailing boats.

13.8.10 If night operations are anticipated, it should be ensured that all necessary equipment is visible (lit, glow in the dark etc).

13.8.11 If the boat is to operate at night, it should be provided with an efficient waterproof and robust electric torch.

13.8.12 If the boat is to operate at night, it should be provided with an efficient fixed and/or portable searchlight; this may be an appropriate torch, suitable for use in Man Over Board (MoB) search and recovery operations. This searchlight can be the same piece of equipment as the signalling lamp required in 18.6.2.

13.8.13 Retro-reflective materials should be fitted on top of the gunwale as well as on the outside of the boat as near to the gunwale as possible. The materials should be sufficiently wide and long to give a minimum area of 150 sq cm and should be spaced at suitable intervals (approximately 80cm from centre to centre).

14 FIRE SAFETY

14.1 The type of equipment installed and the layout and design of the boat shall reduce the risk and spread of fire wherever possible.

14.1.1 In doing so the following should be addressed:

- Hot areas, engines and auxiliary machines
- Oil and fuel overflows
- Uncovered oil and fuel pipes
- Positioning of electrical wiring
- Sources of ignition on the boat
- Use of fire retardant materials in high risk areas
- Stowage of combustible materials, including cleaning rags
- Storage of the boat ashore
- Provision of warning systems where appropriate

14.2 Smoking must not be allowed on board a Rescue Boat.

15 FIRE APPLIANCES

15.1 The boat should be provided with efficient fire fighting equipment, appropriate to the fire hazards, both on and off the boat. They should be an MCA, or equivalent, approved type, and be installed and maintained in accordance with the manufacturer's requirements.

15.2 Where there is an enclosed machinery space, unless there is a fixed fire extinguishing system, provision should be made in the boundary of the space

for discharging a fire-extinguishing medium into the space without opening hatches.

15.2.1 Fixed fire extinguishing systems in machinery spaces should be an MCA or equivalent approved type appropriate to the space to be protected. Further guidance may be found in MGN 280.

15.2.2 If any fire detection and suppression system is automatic, the extinguishing system should also be able to be activated manually.

15.2.3 Appropriate manual fire extinguishers for inboard and outboard engines should be provided and stowed appropriately.

16 RADIO COMMUNICATIONS EQUIPMENT

16.1 Radio communication equipment carried by the boat should be capable of fulfilling operational functions.

16.1.1 Where the craft cannot maintain continuous VHF radio telephone contact with a continuous watch shore station then it shall be equipped with GMDSS VHF DSC compatible equipment that meets or exceeds the requirements of a VHF Class D handheld. Fixed VHF radios shall comply with EN301-825-1, -2 and -3. Portable radios shall comply with EN302-885-1, -2 and -3.

16.2 Any secondary communications system should not rely solely on the main battery, thus maintaining communication capability during any single point failure.

16.3 Where the boat has only a single battery or no battery, a hand held torch and portable VHF DSC radio should be carried on board. Battery minimum duration / capacity should be stated and should not be less than 10 hours, based upon Tx / Rx / Standby periods of 10%/10%/80%.

16.4 Aerials and cables should be installed to avoid interference from engines or other electrical / electronic systems.

16.5 For boats with fixed VHF installations, a secondary aerial should be carried. The secondary aerial may be shared with a hand-held radio.

16.6 It should be possible to effect radio communications following immersion as a result of capsizing.

16.6.1 All radios including the microphone and speakers should be water resistant to a minimum of Ingress Protection (IP) Standard IPX-7.

16.7 Hand-held radios should be able to float or be permanently attached to the user.

- 16.7.1 If hand-held VHF is the primary means of communication, a waterproof pack is not considered as adequate waterproofing. However a waterproof pack can be used to provide floatation.
- 16.8 VHF radios should be selected and positioned to minimise the risk of accidental transmission.
- 16.9 Aerials should be mounted as high as is practicable to maximise performance.
- 16.9.1 If relevant, aerials should not interfere with helicopter operation requirements.
- 16.9.2 For fixed aerials, sprung bases should be considered.
- 16.9.3 Fold down aerials should be considered.
- 16.10 Communication, either internal or external, should be effective in relation to noise levels on board.
- 16.10.1 It should be possible for the helmsman to hear VHF communications.
- 16.10.2 Repeaters are acceptable, as are curly cords and headsets.

17 LAUNCH AND RECOVERY EQUIPMENT

- 17.1 Appropriate equipment is to be designed and constructed to allow safe launch and recovery of the boat and safe access to the boat in all conditions required for operation.
- 17.2 The design and operation of the launch and recovery equipment will be affected by the unique local conditions and should therefore be subject to local risk assessment and consultation with the relevant Local Authorities.
- 17.3 Launch and recovery equipment should comply with relevant legislation and BS, EN and ISO standards.
- SOLAS (Safety of Life At Sea Convention)
 - LOLER (Lifting Operations and Lifting Equipment Regulations)
 - Health and Safety at Work Act
- 17.4 It is recommended that launch and recovery equipment should be subject to a local risk assessment if new equipment is being used, or if existing equipment is being used in a new way. Also if the equipment is being used for lifting persons then the Machinery Directive (2006/42/EC) should be followed.
- 17.5 Service connections should be designed with weak links that can easily part.
- 17.6 Davits should be referred to a recognised engineering consultant or davit supplier.

- 17.7 Launch and Recovery equipment should have an acceptable number of handholds.
- 17.8 Rescue Boat Organisations and crew should be made aware of any inherent instability of the boat as a result of the launch and recovery method.

18 NAVIGATIONAL EQUIPMENT AND NAVIGATION LIGHTS

- 18.1 The Rescue Boat is to be equipped with appropriate navigation equipment for the area of operation and anticipated operating conditions.
- 18.2 A Rescue Boat should comply with the requirements of the IMO Convention on The International Regulations for Preventing Collisions at Sea, 1972 (COLREGs), or Local/Navigation Authority requirements, as appropriate. A Rescue Boat which operates only between sunrise and sunset, and in favourable weather, is not required to carry navigation lights.
- 18.2.1 Sound signalling equipment should comply with the COLREGs. A Rescue Boat of less than 12 metres in length is not obliged to carry the sound signalling equipment required by the Regulations, provided that some other means of making an efficient sound signal is provided.
- 18.3 Where practicable, a Rescue Boat shall be fitted with a radar reflector, approved to current IMO performance standards, or other equivalent means to enable detection by ships navigating by radar

18.4 Magnetic Compass

- 18.4.1 A rescue boat, except a Category D boat (see 4.2.1), should be fitted with a standard magnetic compass or other means, independent of the boat's main power supply, to determine the ship's heading and display the reading at the main steering position.
- 18.4.2 Each magnetic compass required to be carried by this Code shall be properly adjusted and its table or curve of residual deviations available at all times.
- 18.4.3 Boats operating in inland lakes or to sea, in Operational Limit Category C and D, in favourable weather and daylight need not comply with the requirements of 18.4.1 and 18.4.2 provided that a suitable marine compass, similar to a fluxgate or a magnetic compass, with consistent deviation is carried on board and installed at the main steering position. For the purposes of this paragraph 'consistent deviation' is considered to be when there has been no appreciable change observed within the two years preceding the date of inspection.

18.5 Fluxgate Compass

- 18.5.1 A fluxgate compass is acceptable under the Code, as an alternative to those required in 18.4, depending on the appropriateness to the nature of operations and operational risk assessment, provided that a suitable back-up power supply is available to power the compass in the event of failure of the main electrical supply.
- 18.5.2 Where a fluxgate compass incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card is not required.
- 18.5.3 The fluxgate compass or a repeater should be positioned so as to be clearly readable by the helmsman at the main steering position.

18.6 Other Equipment

- 18.6.1 Navigational equipment should be provided such that navigation is not solely dependent on an electronic means.
- 18.6.2 A rescue boat, except a Category D boat (see 4.2.1), should be provided with an efficient waterproof electric lamp suitable for signalling, this can be the same instrument as that in 13.8.12.
- 18.6.3 The following should be carried or fitted as a minimum:
- Appropriate charts to reflect the operation of the boat. Charts should be adequately waterproofed. A chart plotter may be carried in addition to these charts;

18.6.3.1 The following should also be considered on a risk based assessment:

- Radar;
- An echo sounder;
- A back up compass;
- A distance-measuring log⁵

18.6.3.2 Surf Rescue Boats may mitigate the need to carry navigational equipment by remaining within defined operating limits.

18.6.4 It should be possible to manually override any Autopilot or computer controls, if fitted.

18.6.5 Seagoing inshore rescue boats which have their own battery power, navigation lights and / or a fixed VHF radio should be fitted with an Automatic Identification System (AIS) Type B transmitter. There is no requirement for a data unit for a chart plotter. The AIS should be configured with the declared facility SAR Code. The AIS could be wired to come on when the engine key is turned on and the unit can be fixed within the console to afford it protection from the elements. The use of AIS informs other mariners at sea of the SAR presence and also informs HMCG when conducting a search pattern.

18.6.6 Means should be provided for taking bearings as nearly as practicable over an arc of horizon of 360 degrees. This requirement may be met by use of a hand bearing compass.

19 BOAT STORAGE

19.1 A dedicated and appropriate boat storage facility should be provided.

19.2 Where boats are moored afloat or when stored on shore, it should be ensured that environmental degradation is minimised.

20 ANCHORS AND TOWING

20.1 Towing

20.1.1 All Rescue Boats should have a towing capability, however, see 28.4.6. A boat may be excluded from this provision where a towing capability does not fit with the boats operational needs, such as a small fully inflatable beach lifeguarding boat, as defined by a risk assessment.

20.1.1.1 Design of the towing system should reflect the Rescue Boat size and horsepower, size and types of craft that may be towed and the conditions in which tows may take place. Bollard pull should be determined and used to

⁵ This need not be provided where a navigational aid provides reliable distance measurements in the area of operation of the vessel.

assist the towing gear specification. The range of towing capabilities should be known by the Rescue Boat Organisations.

20.1.2 Towing limitations should be determined, and guidance should be provided.

20.1.3 In general, Rescue Boats shall be fitted with at least two strong points, one forward and one aft, capable of being used for towing purposes.

20.1.3.1 Strong points designed for towing can also be used for anchoring, mooring etc. Reference can be made to:

- ISO 15084, Small craft - Anchoring mooring and towing, strong points

20.1.4 Towing equipment, should be kept on board at all times, and be kept ready for use.

20.1.5 The design and operation of the towing arrangement and gear should minimise the detrimental effect on stability.

20.1.6 Guidance should be provided on how to fit and rig a tow given the equipment provided.

20.1.7 A quick release option should be demonstrated, this could be a nearby knife or a dedicated towing slip.

20.1.8 The towrope should be of a type appropriate to the operation of the boat.

20.1.9 If the boat has a night-time capability it should be possible to illuminate the tow.

20.1.9.1 Towing shapes and lights are not required for use on board Rescue Boats.

20.1.10 The carriage of a casualty drogue should be considered.

20.1.11 All boats shall also be able to *be* towed, and should have a suitable strong point for securing a towline.

20.2 Anchors

20.2.1 It should be possible to safely stabilise the boat to allow appropriate corrective maintenance, including post capsizes.

20.2.1.1 This could be implemented through provision of an anchor or alternatively a sea anchor.

20.2.2 All boats should carry an appropriate anchor, warp and chain suited to the operating conditions.

20.2.2.1 Category B boats should consider carriage of an appropriate kedge anchor in addition to the main anchor.

20.2.2.2 Guidelines for anchor selection can be found in the Small Commercial Vessel and Pilot Boat Code (MGN 280). If considered excessive, mitigations for their reduction should be determined.

20.2.3 The anchor should be provided with dedicated stowage and be ready for easy access and deployment at all times. It should also be adequately secured in its stowage to ensure that it cannot become a hazard in rough conditions, or after capsizing.

20.2.4 There should be an anchor strong point in an appropriate place, and a practical fairlead.

20.2.5 Reference can be made to:

- ISO 15084, Small craft – Anchoring mooring and towing, strong points

21 EQUIPMENT STOWAGE

21.1 All equipment should be securely stowed to withstand the operating conditions for the boat, including capsizing.

21.2 Equipment selection and stowage should reflect the boat design, its operation and the equipment itself, i.e. no sharp edges on inflatable boats or RIBs.

21.3 Essential equipment stowage positions should be clearly labelled.

21.4 Equipment stowage should be designed for access in all likely situations, including capsizes.

21.5 The inverted waterline should be determined and used to position critical equipment such as righting controls, radios, sea anchors etc.

21.5.1 The position of righting controls should be clearly marked on the outside of the hull to allow rapid access.

21.5.2 It should be ensured that these markers are above the inverted waterline and that the equipment can be accessed with the boat upside down.

21.6 It should be ensured that non-watertight stowages are able to drain, and are ventilated.

21.7 The provision of a grab bag may allow additional equipment to be carried and stowed acceptably.

21.7.1 Any grab bag should be 3-point secured.

21.7.2 Any grab bag should preclude the contents falling out when the bag is upside down.

22 PROTECTION OF PERSONNEL BY DESIGN

22.1 Health and Safety at Work

22.1.1 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (SI 1997 No. 2962), as amended, apply wherever “workers” are employed on ships. Further Guidance can be found in MGN 20 (M+F)⁶ and MGN 175 (M+F)⁷. This Code does not aim to provide definitive guidance on these Regulations, and it is the duty of the owner/manager and skipper to ensure that they are familiar with the requirements which include risk assessments.

22.1.2 Other Merchant Shipping regulations apply similar principles in the context of particular areas of risk to both workers and others onboard. It is the responsibility of the rescue boat organisation and helmsman to ensure that they are familiar with the requirements of those regulations. These regulations are similar to land based legislation but are separately provided for under Merchant Shipping legislation. Such regulations include, but may not be limited to:

- .1 control of noise at work⁸;
- .2 control of vibration at work^{9 10} (particularly with regard seat design);
- .3 provision and use of work equipment¹¹;
- .4 lifting operations and lifting equipment¹²;
- .5 working at height¹³;
- .6 manual handling¹⁴;
- .7 personal protective equipment¹⁵;

⁶ MGN 20 (M+F) – “Implementation of EC Directive 89/391. Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997”.

⁷ MGN 175 (M+F) – “Health and Safety Regulations for Ships: Merchant Shipping and Fishing Vessel (Health and Safety at Work) (Amendment) Regulations”.

⁸ MGN 352 (M+F) – “The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007”.

⁹ MGN 353 (M+F) – “The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007”

¹⁰ MGN 436 (M+F) – ‘WHOLE-BODY VIBRATION: Guidance on mitigating against the effects of shocks and impacts on small vessels’.

¹¹ MGN 331 (M+F) – “The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006”.

¹² MGN 332 (M+F) – “The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006”.

¹³ MGN 410 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Work at Height) Regulations 2010”.

¹⁴ MGN 90 (M+F) – “Implementation of EC Directive 90/269/EC Merchant Shipping and Fishing Vessels (Manual Handling Operations) Regulations 1998”.

- .8 entry into dangerous spaces¹⁶;
- .9 safe movement onboard¹⁷;
- .10 working with carcinogens and mutagens¹⁸;
- .11 working with biological agents¹⁹;
- .12 working with chemical agents²⁰;
- .13 safe means of access²¹;
- .14 employment of young persons²²; and
- .15 new and expectant mothers²³;
- .16 artificial optical radiation²⁴; and
- .17 asbestos²⁵

22.1.3 There should be a provision for a complaints procedure.

22.1.4 Much of the Health and Safety Legislation relates to workers, however it is recommended that, for the purposes of this Code, Rescue Boat Organisations should aim to treat “volunteers“ as “workers”.

22.2 All aspects of the boat should be designed to minimise the risk to all persons on board during operation, including survivors, up to the operational limit of the boat.

22.2.1 The provision, specification, positioning and attachment of the following should reflect this:

- Seating
- Bulwarks

¹⁵ MSN 1731 (M+F) - The Merchant Shipping and Fishing Vessels Personal Protective Equipment Regulations 1999 - SI 1999/2205”.

¹⁶ MGN 423 (M+F) – “Entry into Dangerous Spaces”.

¹⁷ SI 1988 No. 1641 The Merchant Shipping (Safe Movement on Board Ship) Regulations 1998, as amended.

¹⁸ MGN 356 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Carcinogens and Mutagens) Regulations 2007”.

¹⁹ MGN 408 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Biological Agents) Regulations 2010”.

²⁰ MGN 409 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010”.

²¹ MGN 337 (M+F) – “Provision of Safe Means of Access to Fishing and Other Small Vessels”

²² MGN 88 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Employment of Young Persons) Regulations 1998”.

²³ MGN 112 (M+F) – “New and expectant mothers: Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 and Merchant Shipping (Medical Examinations) Regulations 1983”

²⁴ MGN 428 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Artificial Optical Radiation) Regulations 2010”.

²⁵ MGN 429 (M+F) – “The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Asbestos) Regulations 2010”.

- Guard rails (if fitted)
- Hand-holds
- Foot-holds
- Padding
- Hazard signs
- Lighting
- Rounded edges
- Appropriate recovery access for survivors
- Personal protective equipment etc.

22.2.2 Personnel protection measures should have minimal interference with the operation of the boat, both routinely and following capsizing.

22.2.2.1 Guard rails etc. should not present a hazard of the crew becoming entangled following capsizing.

22.2.3 Grab handles or lifelines should be provided to allow the crew to move fully around the perimeter of the boat when capsized.

22.2.4 The provision of restraints and harnesses should be on the basis of a local risk assessment.

22.2.4.1 In a harness risk assessment, the following should be addressed:

- MoB
- Level of PPE worn by the crew
- Crews are to be fully trained in MoB procedure (both as the rescuer and the MoB)
- There is a risk of propeller injury if MoB is wearing a harness
- There is a risk of entanglement if the boat capsizes and crew are attached

22.2.4.2 In certain cases it may be judged more hazardous to suffer MoB with a harness than without.

22.2.5 The boat should be designed to minimise the risk of a MoB.

22.2.6 All surfaces that may be stepped on should be designed to reduce slipping. See also 4.6.7.

22.2.6.1 The following should be addressed:

- Areas where hydraulic fluid or fuel may leak or be spilled
- The surface finish of hatch covers on a working deck
- If the boat is righted through the crew standing on the upturned hull, non-slip patches should be considered
- The provision of non-slip boots
- The upper surface of an inflated buoyancy tube should be provided with a non-slip finish

- Areas where engines may be hand-started

22.2.7 The location of any recesses should minimise the risk of tripping.

22.2.8 The boat should be designed such that the ergonomics of operating the boat minimizes any potential chronic and acute crew injury risks. Seating and posture should be addressed. Issues associated with buoyancy tube riding or riding within the boat should be investigated where relevant.

22.2.9 The boat should be designed to minimise manual handling risks at all time, particularly during survivor recovery.

22.2.9.1 The boat should be designed to avoid injury to survivors and crew whilst recovering people from the water.

22.2.10 The boat is to be designed to minimise danger to persons during normal movement about the boat, with due regard being paid to moving parts, hot surfaces and other hazards. Snags and hooks where PPE webbing can catch are to be avoided.

22.2.11 Machinery should be suitably guarded to prevent injury.

23. MEDICAL CARE

23.1 An appropriate First Aid kit should be carried and be easily accessible in all conditions.

24. OWNER'S MANUAL

24.1 An owner's/operators manual should be provided with the boat.

24.2 Instruction for writing the manual can be found in ISO 10240.

24.3 See 13.6 and 13.7 for guidance on life saving appliances training and instructions manuals.

25. MAINTENANCE

25.1 A Rescue Boat Organisation should be able to provide a maintenance and survey plan.

25.1.1 The plan should cover the following aspects of maintenance:

- Planned
- Preventative
- Unplanned
- Corrective

- 25.2 On this basis the maintenance and survey plan should determine the approach of the Rescue Boat Organisation, taking into account the following:
- Manufacturers maintenance instructions
 - Operation
 - Equipment storage
 - Risks associated with different maintenance approaches for each item
- 25.3 The maintenance plan is likely to involve elements of both planned routine preventative maintenance and unplanned corrective maintenance (at sea or ashore).
- 25.4 A routine maintenance plan can vary from a simple (yet inconvenient) collection of manufacturers maintenance requirements, to a specific maintenance schedule incorporating perhaps daily, weekly, monthly and longer periodic job cards.
- 25.5 The corrective maintenance plan can be used to determine the tools and spares to be carried at sea, and associated training requirements. See Para 3.3.8.
- 25.6 All aspects of the boat, systems and equipment should be designed to allow specified routine maintenance and anticipated corrective maintenance to take place.
- 25.7 Rescue Boats should carry a basic tool kit and an appropriate level of spares to allow for corrective maintenance at sea. Floating tools are beneficial, and lanyards should be used.
- 25.8 As a minimum, the following corrective maintenance action should be considered:
- Post immersion/ capsize engine restart
 - Emergency engine re-start (manual/electric)
 - Spark plug replacement (kit in sealed container)
 - Water repellent spray
 - Propeller clearing and replacement/blade straighten – address engine lock-up pin
 - Emergency buoyancy tube or hull repair
 - Steering repair and emergency steering
 - Fuel line repair
 - Oil filter replacement.
 - Aerial replacement
 - Light bulbs and fuses/circuit breakers
 - Propeller debris clearance – jet propulsion

26 MANNING

- 26.1 The minimum number of crew required will be determined by the requirements of Paragraph 28.2 and 28.5.1.6 but will never be less than two. It is appreciated that there may be occasions during operations where only one crew member is left in the boat. This is sometimes an operational necessity; however, all missions are to begin with the requisite number of crew in the boat.
- 26.2 Single handed operation may be appropriate in cases such as rescue water craft where the boat is operating only during daylight and within close proximity and sight of shore or an appropriate 'mother craft' provided that adequate communications and lost communications procedures are in place. Self recovery/rescue procedures and processes for initiating any SAR support should be in place and documented in a local risk assessments and operating procedures. A location specific risk assessment should be carried out and all identified mitigations implemented. There should be not less than 2 support persons on shore suitably trained and equipped to provide direct support to the single handed operation in the event of an incident where the helmsman is unable to return the craft to shore unaided.
- 26.3 At least one member of the Rescue Boat crew is to be appropriately trained in First Aid.
- 26.4 Appropriate training is to be provided to the Rescue Boat crew and the shore crew so that they may safely launch, recover and operate the boat in all anticipated conditions.
- 26.5 The training provided and the numbers of trained and competent crew should aim to ensure the greatest availability of appropriately skilled crew.
- 26.6 The Rescue Boat Organisation is to have policies and procedures to ensure that boat crew and shore crew meet appropriate medical and physical fitness standards.
- 26.7 No boat crew or shore crew member who is unfit to perform the duties expected of them is permitted to assist in the launch, recovery or operation of the Rescue Boat.
- 26.8 Further specific training requirements are noted in the relevant parts of sections 28.3 to 28.4.8.
- 26.9 Appendix 2 details the training requirements and Appendix 4 gives information on a structured training plan.

27 PROCEDURES, CERTIFICATION, EXAMINATION, MAINTENANCE AND REPORTING OF ACCIDENTS

27.1 Introduction

27.1.1 An example of the format of the Rescue Boat Certificate of Compliance is provided in Appendix 9.

27.1.2 For the purposes of this Section:

RB2 - means the report form for a Compliance Examination and Declaration Report For a Less Than 15 m Open Rescue Boat, see Appendix 7.

27.1.3 Definitions of different types of examination, Competent Person and Responsible Person can be found in Section 2.

27.1.4 The Rescue Boat Organisation should decide the extent of the examination based on the type, age and history of the boat and may give credit for any recent and detailed competent examination of a boat for which a report is available.

27.2 Requirements and Procedures for Rescue Boats to be Examined and Certificated

27.2.1 The Responsible Person of a Rescue Boat Organisation should select a Competent Person to examine a rescue boat that is to be operated and certificated under the Code. The Competent Person is to examine the boat for compliance with the Code and the results of the examination is to be documented on the form for a Compliance Examination and Declaration.

27.2.2 Prior to entering into service, the Responsible Person for the Rescue Boat Organisation should issue a Rescue Boat Certificate for the boat. The Certificate, or a signed authenticated copy, should be displayed in a prominent location relevant to the rescue boat. It should be available for inspection by a relevant authority and by users of the boat. A Rescue Boat Organisation may provide an equivalent certificate and this may be stored electronically provided that the aims of the above storage requirements are achieved.

27.3 Compliance Examination and Issue of a Certificate of Compliance under the Code

27.3.1 Rescue boats should be subject to a compliance examination by the Competent Person, as designated by the Rescue Boat Organisations' Responsible Person, before entry into service. Declared Rescue Boat facilities should be audited by HM Coastguard prior to being accepted as such, for details see the UK SAR Framework Document.

27.3.2 The arrangements, fittings and equipment provided on the boat are to be documented on the Appendix 5 Compliance Checklist and on the Appendix 7 Compliance Examination and Declaration report form RB2 by the Competent Person. Upon satisfactory completion and documentation of the compliance examination, and the required declarations, a copy of the signed report form RB2 should be kept on file by the Rescue Boat Organisation.

27.3.3 The Rescue Boat Organisation should make readily available information necessary to confirm that the stability of the Rescue Boat meets the standard required by the Code for the permitted area of operation and/or intended use of the Rescue Boat.

27.3.4 Upon satisfactory review of the documented arrangements, fittings and equipment provided in compliance with the Code, also the required declarations in the completed report form RB2 and agreement of the required stability information, the Responsible Person will issue the Appendix 9 Rescue Boat Certificate of Compliance.

27.3.5 A Certificate should be valid for not more than five years from the date of last renewal / compliance examination of the boat out of the water by the Competent Person. For a newly constructed boat, built under full construction survey for the purposes of this Code, the Certificate may begin from the final in-water compliance examination. The Certificate may be valid for a lesser period of time as determined by the Rescue Boat Organisation. The Responsible Person is responsible for the validity and content of the certificates.

27.4 Renewal Examinations

27.4.1 The Responsible Person should arrange for a renewal examination to be carried out by a Competent Person. The Renewal interval is five years. At this examination the Rescue Boat should be examined out of the water and in the water. Upon satisfactory completion and verification that the arrangements, fittings and equipment documented in the Compliance Examination and Declaration report form RB2 remain in compliance with the Code and that the Rescue Boat, its machinery and equipment are in a sound and well maintained condition, the Certificate in force may be endorsed to indicate a 3 month extension. A report recommending the renewal of the Certificate should be produced.

27.4.2 The Responsible Person should renew the Rescue Boat's Certificate if it is satisfied that the arrangements, fittings, and equipment documented in the report form RB2 are in compliance with the Code.

27.5 Intermediate Examinations

27.5.1 An examination equivalent to the annual examination, detailed in Section 27.6.1 should be carried out on behalf of the Rescue Boat Organisation by a Competent Person at least once during the life of the 5 year certificate, in order

that the interval between successive examinations by a competent person does not exceed three years. The Responsible Person should arrange for this examination to be carried out.

27.5.2 On satisfactory completion of the examination, the Competent Person should enter a record of the examination on the report form RB2.

27.5.3 More frequent examinations, and examinations both in an out of the water, may be required by the Competent Person if deemed necessary.

27.6 Annual Examinations

27.6.1 Annual Examination by an Officer of the Rescue Boat Organisation

27.6.1.1 The Responsible person will appoint an officer of the Rescue Boat Organisation to carry out an annual examination of a boat within 3 months either side of the anniversary date of the compliance/renewal examination, at intervals not exceeding 15 months, to confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the report form RB2. Also that the boat, its machinery, fittings and equipment are in a sound and well maintained condition, and where necessary serviced at the required period. On satisfactory completion of the annual examination, the officer should enter a record of the examination on the Compliance Examination and Declaration report form RB2. Alternatively this examination can be done by a Competent Person.

27.6.1.2 The officer should not complete details on the report form RB2 if the examination reveals that either the boat, its machinery, fittings or equipment are not sound or they do not comply with those documented in the Compliance Examination and Declaration report form RB2, or have not been serviced at the required period. The defects or deficiencies should be rectified as necessary immediately by the Rescue Boat Organisation. Also, see Section 27.9.2.

27.7 Additional Requirements for Inflatable and Rigid inflatable Boats

27.7.1 Inflatable and rigid inflatable boats should additionally be tested in accordance with the requirements in section 4.6 and 30.

27.8 Appeal Against the Findings of an Examination

27.8.1 If a Rescue Boat Organisation is dissatisfied with the findings of an examination and agreement can not be reached with the Competent Person who carried out the examination, the Rescue Boat Organisation may appeal to the Director of Maritime Safety and Standards of the MCA to review the findings. At this review, the Rescue Boat Organisation may call a

representative or professional adviser to give opinions in support of the argument against the findings of the examination.

27.9 Maintaining and Operating the Rescue Boat

27.9.1 The MCA²⁶ or HMCG may inspect a certificated rescue boat at any time.

27.9.2 It is the responsibility of the Responsible Person to ensure that at all times a boat is maintained and operated in accordance with the requirements of the Code, the arrangements as documented in the Compliance Examination and Declaration report form RB2 and any conditions stated on the boat's certificate. Additionally, it is the responsibility of the Responsible Person to ensure that the boat is maintained in accordance with manufacturer's recommendations or best engineering practice. If for any reason the boat does not continue to comply with any of these requirements, the Rescue Boat Organisation should rectify and document the problem. Also see Section 27.11.3.

27.9.3 In cases where the Rescue Boat suffers major damage, for example as a result of a collision, grounding, fire or other event, the Rescue Boat Organisation should notify the HMCG immediately, explaining the circumstances by which the Rescue Boat became damaged. The nature and extent of major repairs are subject to the approval of the Competent Person.

27.9.4 Minor damage, detrimental to the safety of the Rescue Boat, should also be documented by the Rescue Boat Organisation and measures proposed to effect repairs.

27.9.5 The Rescue Boat Organisation should notify and seek approval from the Competent Person prior to implementing any change or modification to the boat or its equipment which is covered by the requirements of the Code.

27.10 Accident Reporting

27.10.1 In addition, the Rescue Boat Organisation has a statutory requirement to report accidents. The statutory requirements are given in the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 (SI 2005 No.881), as amended. MGN 289 (M+F)²⁷ explains the Regulations and the requirement to report accidents to the Department for Transport's Marine Accident Investigation Branch (MAIB).

27.11 Other Conditions Applying to Certificates - Validity and Cancellation of Certificates

27.11.1 The validity of a certificate is dependent upon the Rescue Boat being maintained, equipped and operated in accordance with the documented arrangements contained in the Compliance Examination and Declaration

²⁶ Merchant Shipping Act 1995 (Ch. 21), section 258.

²⁷ MGN 289 (M+F) – "Accident Reporting and Investigation".

report form RB2. Proposals to change any of the arrangements should therefore be agreed in writing with the Competent Person before a change is implemented. Copies of the written agreement detailing changes(s) should be appended to the report form RB2, which is to be retained.

27.11.2 If a Rescue Boat is not examined within the period in which an examination should take place for an intermediate or annual examination, or if the Rescue Boat Organisation fails to carry out a self-declaration within the required period, the Certificate will become invalid.

27.11.3 When the rescue boat is found not to have been maintained or equipped or operated in accordance with the arrangements documented in Compliance Examination and Declaration report form RB2, the Rescue Boat Organisation's Responsible Person should suspend the Certificate until satisfactory rectification of deficiencies has taken place, or the Rescue Boat Organisation's Responsible Person may cancel the Certificate.

27.11.4 If the MCA has reasonable grounds to believe that a Rescue Boat issued with a Certificate by a Rescue Boat Organisation no longer fulfils the requirements of this Code, they may require the Rescue Boat Organisation to suspend or cancel the Certificate.

27.11.5 When a boat is sold, the certificate issued by the Rescue Boat Organisation on the basis of the compliance examination and Rescue Boat Organisation declarations documented in the Compliance Examinations and Declaration report form RB2 is cancelled automatically and the selling Rescue Boat Organisation should formally cancel the certificate and records. A new certificate may be issued by the new Rescue Boat Organisation subject to compliance with the Code. A Competent Person should decide the extent of any examination, of the Rescue Boat which may be required before a new certificate is issued.

27.11.6 The MCA's Search and Rescue Branch should be informed when a certificate is issued or renewed. When a certificate is cancelled, the circumstances should also be reported, for action to be taken as deemed necessary.

27.11.7 The Rescue Boat Organisation may transfer to another Competent Person at any time.

27.12 Rescue Boats Other than UK²⁸ Rescue Boats Operating in UK Waters.

27.12.1 This Code applies to rescue boats other than UK rescue boats operating from UK ports whilst in UK waters. When Certificates are issued to such

²⁸ UK does not include the UK's Overseas Territories and Crown Dependencies which are: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Montserrat, St. Helena and Turks and Caicos Islands.

boats, it should be clearly stated on the Certificate “this Certificate is applicable within UK territorial waters only”.

28 SAFETY PROCEDURES

28.1 Applicability of Other Codes of Practice

28.1.1 If the rescue boat is operating under another Code of Practice for other reasons (such as the MCA Small Commercial Vessel and Pilot Boat Code (MGN 280), the operational requirements of that Code should be adhered to.

28.2 General Requirements

28.2.1 The safety procedures adopted are to take full account of the design of the Rescue Boat and associated equipment (including launch and recovery equipment and shore interfaces) to ensure that the risks posed to crew, shore crew, the general public and equipment are minimised.

28.2.2 The operation of Rescue Boats and associated equipment will be affected by unique local conditions and should therefore be subject to local risk assessment and consultation with the relevant Local Authorities.

28.2.3 In addition to local risk assessments appropriate to the operation of Rescue Boats the Rescue Boat Organisation is to demonstrate compliance with each section of the Code, either by following the requirements of the text or by offering an acceptable alternative mitigation in each case.

28.2.4 Issues to be considered in local risk assessments are typically: -

For launching: -

- Off a trolley: - Crew safety in water around trolley/boat interface, controlling third parties and shore crew, hazards due to change of balance on trolley as boat floats off
- Alongside mooring:- influence of tides, currents, passing traffic, adequate moorings (including alternative moorings), slips and trips, access times, service connections
- Offshore mooring:- exposed environment for boat transfer, boat accessibility from water, different operational/daylight limitation for boat transfer, fitness levels for water/boat transfers, mooring design
- Davit: - man-riding requirements, design limitations, operational expertise.
- Beach: - propeller/bather guard protection, access to boat, crowd control, damage to boat and injury to personnel on launch
- Transit to launch site – Road Traffic Act regulations
- Compliance with Health and Safety at Work Act

For under way: -

- Effect on operations of local conditions (sea/weather, obstacles, traffic, surf)
- Coping with emergencies (such as loss of power and/or steering, collision, capsize, swamping, man overboard, fire, equipment failure, worsening conditions, grounding)
- Carriage of non-crew members on rescues
- Reliability of navigation, communications (internal/external) and search methods
- Operations with external bodies, including helicopters

For rescue: -

- Crew/survivor injuries during survivor recovery or landing
- Minimum number of crew members to retain effective control of the boat during rescue operations
- PPE, procedural and training requirements if crew leave the boat during a rescue operation (in water, to another boat or ashore)
- Specific landing sites for survivors (i.e. to meet helicopter/ambulance)

For towing: -

- Assessment, implementation and monitoring of tow
- Training and procedures for range of conditions including the potential use of drogues by the towed vessel and stability issues relating to towing for the Rescue Boat

For operation in surf: -

- Operating conditions
- Specialist/local training requirements

For recovery operations: -

- Similar range to launching, taking into account non-crew members on board, crew fatigue, faster moving boat entering shallow water, following seas etc.

28.3 Launch of Rescue Boat on Service**28.3.1 Pre-launch Requirements**

28.3.1.1 A primary and secondary means of communication should be available to assemble crew and helpers for launching the boat on service.

28.3.1.2 A procedure should be in place with the Coordinating Authority to control the request for launch e.g. for crew to either assemble and prepare for launch, or to launch immediately, etc.

28.3.1.3 Each member of the shore and boat crew is to be assigned specific roles prior to a launch.

28.3.1.4 Authorisation to assemble is not to be treated as an order to launch the Rescue Boat. The decision to launch the Rescue Boat lies with the Launching Authority and should be made with due consideration of the following points, for which an operational procedure should be in place:

- The minimum number of adequately trained, fit crew to safely operate the Rescue Boat in the conditions to be encountered has been assembled. Once authorised to launch by the Launching Authority, the Helmsman shall have the final decision whether to launch or not
- The minimum number of adequately trained, fit shore crew to safely launch the Rescue Boat in the conditions to be encountered has been assembled
- The launch site has been selected from the list of nominated sites available. Alternative launch sites are to be drawn up in advance as a result of local knowledge and liaison with Local Authorities, and training at the selected site is to have been undertaken
- The prevailing and forecast weather/sea conditions are within the operational limits of the Rescue Boat, both at the launch site and area of passage to and from the casualty. Operating a boat above its stated operating limit will place crew and boat at increased risk and should only be considered in exceptional circumstances, and should be a joint decision by the Coordinating Authority, the Launching Authority and the Helmsman who should **all** be in agreement. The Helmsman has the final decision. Conditions affecting the operation of the boat may include sea state, air temperature, the likely service duration, distance of casualty from launch site, visibility, and daylight hours remaining

28.3.1.5 The points in Para 28.3.1.4 should always be fully considered and fully adhered to, other than in exceptional circumstances where there is direct knowledge of immediate danger to life and where any delay would substantially increase the risk of life being lost. In some organisations, the Launching Authority may be the duty Helmsman or the Duty Officer.

28.3.1.6 The following should be addressed during training:

- Identification of operational limits
- Possible consequences of operating beyond operational limits
- Appropriate action to be taken to reduce risks to crew and survivors
- All assembled crew and shore crew to wear appropriate, serviceable PPE for launching and operating the Rescue Boat in the conditions to be encountered
- All equipment required for launching, operating and recovering the Rescue Boat in the conditions to be encountered is to be serviceable, properly located and stowed

- The boat is to be fully fuelled, or have sufficient quantity of fuel in the boat fuel tanks to successfully complete the service
- All boat and essential equipment batteries to be fully charged, or sufficiently charged to successfully complete the service
- All applicable service connections to the boat to be disconnected
- Nominated emergency rendezvous points should be clearly identified and if necessary briefed to crews prior to launching for exercises or training.
- An exercise plan should be completed and briefed to relevant personnel prior to launching on exercise or training

28.3.1.7 A procedure is to be in place to ensure that serviceable PPE is always available for crew to operate the Rescue Boat and that unserviceable PPE cannot be picked up in error.

28.3.1.8 The serviceability of PPE is to be checked following each time it is used, or at the start of each shift, and returned to its dedicated stowage.

28.3.1.9 A procedure is to be in place to ensure that all appropriate Rescue Boat equipment is available and properly stowed and secured ready for use.

28.3.1.10 A procedure is to be in place to ensure that only fuel of the correct specification, free from contaminants and correctly mixed, where appropriate, is put into the fuel tanks of the Rescue Boat. All Portable fuel tanks, including flexible tanks (on board and in the boat house) should be appropriately marked to reflect fuel type/mixture held.

28.3.1.11 Fuel procedures are to take account of national legislation, including the Road Traffic Act and the Health and Safety at Work Act.

28.3.1.12 The number of crew onboard the Rescue Boat, when launched, is to be communicated to the Co-ordinating Authority. The Rescue Boat Organisation is to maintain an up-to-date crew list which is to be available to the Launching Authority or Duty Officer at all times when the Rescue Boat is on service or training.

28.3.2 Transit to Launch Site

28.3.2.1 The Rescue Boat Organisation is to develop and adhere to a safe launch procedure.

28.3.2.2 As far as practicable, a nominated person from the shore crew is to ensure that the route from the boat stowage to the launch site is clear and remains clear of obstructions and the general public. Assistance from an outside body (e.g. Police) may also be considered necessary as it is recognised that the Rescue Boat Organisation may not possess the necessary authority to enforce such a requirement.

28.3.2.3 Locations that are likely to be congested and difficult to keep clear will require visual/audible warnings such as signs, signals, sirens, flashing lights between the boat stowage facility, and the launch site. Route and contingency planning, with involvement from Local Authorities, may assist in speeding progress to the launch site.

28.3.2.4 Due consideration should be given to the location of the boat stowage facility to minimise launching delays.

28.3.2.5 The Rescue Boat Organisation is to ensure that all personnel are made aware of their obligations to comply with the relevant Road Traffic Regulations.

28.3.2.6 The boat and shore crew should have a working knowledge of the launch site (in and out of the water) and transit areas to the launch site.

28.3.2.7 A nominated person is to be responsible for the transit of the Rescue Boat and launching equipment from stowage to the launch site. Where this person is not the Helmsman, there should be a specified instant from which the Helmsman shall assume command of the launching operation on completion of transit until the boat is completely clear of the launching equipment. The launching equipment should then pass to the responsibility of one shore crew member for the preparations for recovery of the boat.

28.3.3 Launching

28.3.3.1 The operation of launching equipment is to be subject to local risk assessment.

28.3.3.2 The crew are to be made aware through training of any inherent instability in the boat as a result of the launch and recovery method. Suitable practices to avoid potential difficulties are to be adopted.

28.4 Rescue Boat Under Way

28.4.1 Communications

28.4.1.1 The Rescue Boat Organisation is to develop a communications procedure with the Coordinating Authority and any other relevant bodies. The procedure is to address at least the following:-

28.4.1.2 As soon as possible after launch the Rescue Boat is to inform the Co-ordinating Authority.

28.4.1.3 The Rescue Boat should continue to report its position and intended movements as agreed with the Co-ordinating Authority. Any incident resulting in a reduction in operational effectiveness should be reported as soon as practicable.

28.4.1.4 A secondary means of communications should be available if the primary means fails. Appropriate training and procedures should take account of any changes in operating procedures due to the use of the secondary means of communications.

28.4.1.5 Should Para's 28.4.1.2 to 28.4.1.4 not be appropriate to the operational circumstances, such as surf rescue, of the Rescue Boat Organisation, alternative safety measures should be demonstrated.

28.4.1.6 Radio watch is to be kept throughout the service or training in accordance with the communications procedure.

28.4.1.7 Effective communications within the boat should be maintained.

28.4.1.8 The procedure is to ensure that effective communications can be established and maintained with casualty vessels and other relevant nominated external bodies.

28.4.1.9 Effective portable communications equipment should be available for crew operating off the Rescue Boat ashore or on board a casualty vessel.

28.4.1.10 The Co-ordinating Authority is to have an agreed procedure to follow if communications with a launched Rescue Boat are lost.

28.4.1.11 Additional communications requirements are covered in the following sections.

28.4.2 Boat Handling

28.4.2.1 The Helmsman is in command of the Rescue Boat at all times and has responsibility for the safety of all on board and for the boat.

28.4.2.2 The requirements of the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs) are to be met.

28.4.2.3 Consideration is always to be given to other water users.

28.4.2.4 Handling and manoeuvring of the Rescue Boat should be modified to suit the sea conditions, visibility and local traffic conditions.

28.4.2.5 Appropriate training should be given to and experience should be gained by all crew to enable them to cope with the anticipated operating conditions, manoeuvres, emergencies and rescue scenarios.

28.4.2.6 Boat Handling training should include :-

- Tight turns
- Propeller Cavitation, aeration and ventilation
- Loss of power and/or steering

- Broaching
- Collision
- Capsize
- Swamping
- Man Overboard
- Fire
- Equipment failure
- Worsening conditions
- Grounding
- Anchoring and anchor recovery
- Establishing a tow, shortening and lengthening a tow and towing alongside
- Change of crew roles when underway
- Procedures to maintain the watertight and structural integrity of the boat (particularly when needed for righting the boat following capsize)

28.4.3 Navigation

28.4.3.1 Crew are to be trained in the use of the navigation equipment carried and have experience relative to the area of operations, appropriate to their role.

28.4.3.2 The Rescue Boat's position is to be continuously monitored by the crew.

28.4.3.3 Reliance is not to be placed entirely on electronic aids to navigation (e.g. GPS).

28.4.4 Search

28.4.4.1 Search procedures are to be appropriate to the area and conditions of operation and interfacing external organisations and SAR organisations/operators. Reference should be made to the International Aeronautical and Maritime SAR Manual (IAMSAR).

28.4.4.2 Appropriate training in search procedures is to be given and conducted as part of regular crew training.

28.4.5 Rescue

28.4.5.1 Boat handling for the approach and rescue of survivors in the water is to be the subject of specific training.

28.4.5.2 Training is to be given in recovering survivors from the water safely. This training is also to take account of the requirements of the Stability Section of this Code (including damage scenarios) and the changes in handling characteristics of the Rescue Boat during and after survivor recovery.

28.4.5.3 Specific procedures (and any appropriate physical fitness requirements) are to be developed and training given if crew are expected to enter the water to assist in survivor recovery. Appropriate equipment is to be provided and

properly used. Consideration should be given to procedures for survivor recovery by manual handling.

28.4.5.4 Specific procedures and communications requirements are to be developed and training given if crew are expected to come alongside and board a casualty vessel to assist in survivor recovery or towing. Appropriate PPE and equipment is to be provided and properly used.

28.4.5.5 The Rescue Boat crew is to ensure that survivors wear PPE as appropriate.

28.4.5.6 Survivors are to be briefed on how and where to hold on/brace themselves while the Rescue Boat is under way and prior to the boat being recovered/beached.

28.4.5.7 Handling of the Rescue Boat is to be moderated to reflect the carrying of survivors, particularly if injury has been sustained.

28.4.5.8 The Rescue Boat's capacity as stated on the capacity plate is to be adhered to in normal operation. If exceptional rescue circumstances require that any of the capacity figures specified on the plate are exceeded (and thus placing crew and boat at increased risk), and should be a joint decision by the Coordinating Authority, the Launching Authority and the Helmsman who should **all** be in agreement. The Helmsman has the final decision. This should be stated explicitly in all associated boat documentation.

28.4.5.9 The well-being of survivors should be regularly monitored until they are handed over to the appropriate authorities ashore.

28.4.5.10 The Rescue Boat Organisation should have a survivor-handling plan. Rescue Boat crew and shore crew should train to meet the plan.

28.4.6 Towing

28.4.6.1 With the exception of RIBS and inflatable boats the danger of deck edge immersion generally makes an open boat unsuitable for towing other vessels or objects. However, if there is no other viable option then provisions should be made as follows:-

- The towing capabilities of the Rescue Boat, in terms of vessel size and type are to be documented and the Rescue Boat crew trained in the boat's capabilities
- The effects of towing on the stability of the Rescue Boat are to be documented and communicated to crew
- Towing procedures are to be developed in conjunction with the design of the towing system
- Training in these procedures is to be undertaken in a controlled environment.

28.4.6.2 Contingency planning and training should be carried out to reduce the risk of injury or damage during towing operations and should include as appropriate:

- Recovery from a range of likely towing failures
- Adjusting the length of the tow whilst underway
- Planning for getting casualty into a safe haven and alternative havens, given a change in conditions
- Transferring the tow from astern to alongside and vice-versa

28.4.6.3 Effective communications with the casualty vessel before, while establishing and during the tow should be maintained.

28.4.6.4 The most effective and safe manner to establish and maintain a tow is to be determined prior to a casualty being taken under tow. This should be undertaken in conjunction with the crew of the casualty vessel.

28.4.6.5 Training should ensure that the following are considered prior to commencing the tow (this is not an exhaustive list):-

- Size (length, beam, draft, displacement), type and stability of casualty
- Prevailing weather conditions
- Capability of crew on casualty – need to transfer personnel to and from the casualty
- Manner of tow (alongside tow appropriate?)
- Means of communication throughout tow
- Nominated personnel for particular tasks (look out, communications, etc.)
- Manner of quick releasing tow in emergency (if safest thing to do)

28.4.6.6 The location and safety of personnel aboard the Rescue Boat and towed casualty is to be monitored throughout the towing operation.

28.4.7 Operation in Surf

28.4.7.1 Engine operating techniques for Rescue Boats operating in surf should be designed to minimise the risk of loss of power or engine failure.

28.4.7.2 Taking into account anticipated surf conditions, training is to address the following:

- Assessment of conditions
- The position and movement of crew for safe transit through surf (i.e. dynamic ballasting)
- Manoeuvring and timing in surf including throttle control
- Emergency survival techniques (controlled halt, drainage, capsize and recovery, obstructed propeller, engine failure in the surf and sponson / keelson failure)
- Recovery of Casualties and survivors

- Operating in surf with survivors on board
- Surf-specific features of the engine, such as no engine lock down and the removal of the ingear inhibit mechanism

28.4.7.3 The Helmsman of an outboard engine powered boat should never let go of the throttle/steering arm, when in gear, except to prevent capsize by dynamic ballasting.

28.4.7.4 Observation by and communications with the shore crew / Co-ordinating Authority are to be maintained when operating in surf.

28.4.7.5 Operational limitations for Rescue Boats operating in surf conditions are to be specified separately to those developed for open sea conditions.

28.4.8 Helicopter Operations

28.4.8.1 Standard operational procedures are to be adopted for operating with helicopters in consultation with the relevant helicopter operator(s). Standard Operating Procedures for helicopter operations published in IAMSAR Volume 3 should be followed.

28.4.8.2 Specific training in helicopter operations should be undertaken on at least an annual basis.

28.4.8.3 Rescue Boat Organisations wishing to exercise with helicopters should establish an insurance protocol with the operators.

28.4.9 Cliff/Cave Rescue

28.4.9.1 Procedures and training are to be developed specifically to suit the local conditions if cliff or cave rescue is to be undertaken or supported by the crew of the Rescue Boat. The Rescue Boat Organisation's communications procedure is to reflect the need to liaise with external bodies and the Co-ordinating Authority (see Para. 28.4.1).

28.4.9.2 Entry to caves to rescue casualties should only be undertaken where there is sufficient depth of water and head room, and sea conditions allow the boat to enter. Rescue of casualties from caves or cliffs should only be undertaken by specialist cave or cliff rescue teams e.g. HM Coastguard Coast Rescue Teams.

28.4.10 Carriage of Passengers

28.4.10.1 Passengers may only be carried on a Rescue Boat carrying out a rescue or training if explicitly covered by the operational procedures of the Rescue Boat Organisation. These procedures are to consider the following requirements (subject to local risk assessment):-

- Training with outside organisations

- Requirement for briefing
- Contingency planning
- Need to change handling of boat to take into account non-crew members on board
- Carriage and stowage of equipment brought on by passenger
- Type of PPE to be worn
- Capacity reduction

28.4.10.2 Open Rescue Boats are not considered suitable to undertake commercial activities. Attention is drawn to Para. 3.2.1. Whilst it may be necessary or desirable for Rescue Boats to carry passengers as part of a fact finding experience, or an “open day”, this should only be done with another power boat in company capable of carrying the Rescue Boat passengers and crew in emergency. The number of passengers shall be restricted to 12 and the number of persons on board shall not exceed the capacity plate, while maintaining a minimum functional crew at least. No fare should be charged for either boat activity. The carriage of passengers is not expected to be a regular event and on **every** occasion is to be subject to a specific risk assessment.

28.4.11 Fuel Management Afloat

28.4.11.1 Fuel is to be managed afloat to ensure that the engine is never starved of fuel.

28.4.11.2 The endurance of the Rescue Boat in terms of time and distance at various speeds is to be documented and communicated to all crew.

28.4.11.3 The Rescue Boat should not operate with less than 10% fuel remaining. Where more than one tank is used, it is considered advisable to alternate the supply between the tanks rather than running until each is empty.

28.4.11.4 Measures to prevent and fight fire during all routines involving fuel are to be included in the Rescue Boat Organisation’s procedures.

28.4.11.5 Procedures and training is to be in place to safely shut off fuel supply to the engine and from the tank(s) in an emergency.

28.4.12 Battery Management Afloat

28.4.12.1 During any operation, the battery capability should be managed to ensure that the craft can complete its mission with all essential systems (that require battery support), still functioning.

28.4.13 Maintenance Afloat

28.4.13.1 Procedures are to be developed for equipment that may require emergency maintenance at sea, appropriate to the conditions encountered. Procedures may cover:

- Lost buoyancy – emergency buoyancy tube or hull repair
- Lost steerage – steering repair, emergency steering
- Change of spark plugs
- Propeller change/clearance/blade straighten
- Shear pin replacement
- Fuel line repair
- Post immersion engine restart
- Emergency engine re-start (manual/electric)
- Oil filter replacement
- Spare aerial fit
- Light bulbs and fuses. Circuit breakers are best served with trip switches rather than fuses.
- Propeller debris clearance – jet propulsion

28.4.14 Pyrotechnics

28.4.14.1 There is to be a procedure for the safe stowage, operation, inspection, disposal and replacement of pyrotechnics.

28.4.14.2 Appropriate training is to be provided.

28.4.15 Ballasting

28.4.15.1 Appropriate procedures are to be developed to ensure that ballasting is undertaken in a safe manner.

28.4.15.2 Where crew are the primary means by which the Rescue Boat is ballasted, they are to be trained and briefed to ensure that they are aware of their appropriate position within the boat and the subsequent effect on stability.

28.4.15.3 Where other means of ballasting are used, operational scenarios and limitations for using the system are to be clearly defined and communicated to crew.

28.4.15.4 Appropriate training in the use of the ballast system is to be given.

28.4.16 Anchoring and Veering

28.4.16.1 Maintenance, operating procedures and training is to be provided for anchoring and veering equipment.

28.4.16.2 Equipment dedicated for anchoring and veering should not be used for other purposes. Rescue boats operating in surf may have to dual-role some equipment due to weight and stowage considerations.

28.4.17 Operation of Equipment

28.4.17.1 Training and procedures are to be in place to cover the safe operation of all equipment and systems on the Rescue Boat.

28.5 Emergencies Onboard The Rescue Boat

28.5.1 Capsize

28.5.1.1 Appropriate procedures are to be developed and trained for to recover the crew and boat following capsize.

28.5.1.2 Procedures are to cover:-

- Access to equipment when in the water
- Securing the boat (i.e. sea anchor)
- Righting the boat (operating righting system)
- Recovering crew and survivors
- Crew and survivor separation
- Trapped crew
- Communications (including operation of emergency alerting and locating devices carried by the rescue boat and/or crew members (e.g. EPIRB, PLB, etc).
- Re-starting the engine(s)
- What to do if the system doesn't work

28.5.1.3 Crew should be trained in the Rescue Boat Organisation's policy and procedures on the wearing and use of harnesses and/or safety lanyards.

28.5.1.4 Training in a realistic but controlled environment is to be undertaken to enforce capsize procedures.

28.5.1.5 All crew should be able to:-

- Assist in righting the boat
- Get back in the boat
- Assist in the recovery of other crew
- Re-start the engine
- Use a radio to communicate the capsize to the Co-ordinating Authority, and/or operate any emergency alerting and locating devices (e.g. EPIRB).
- Use pyrotechnics
- Deploy a sea anchor

28.5.1.6 The minimum number of crew required to right the Rescue Boat is to be determined. This number will help determine the minimum number of crew required to operate the Rescue Boat.

28.5.1.7 The boat should be stabilised head to sea during post capsize recovery to reduce the risk of a second capsize, or separation from the boat. In surf conditions wave action can be utilised to help right the boat but crew should be practised in this technique to avoid injury.

28.5.2 Engine Failure

28.5.2.1 Procedures are to be developed to ensure that engines in Rescue Boats are operated to reduce the risk of propulsion failure on service.

28.5.2.2 Procedures are to be developed to ensure that Rescue Boat engines can be correctively maintained on service and training undertaken to achieve this.

28.5.2.3 Where a Rescue Boat is equipped with two engines, it should be capable of safe operation to the limit of its permitted operating conditions on one engine.

28.5.2.4 Procedures to safely stop the engine in an emergency should be developed and the case for “run stop” versus “engine stop” cords should be explored. Refer to the Machinery Section of the Code (7.2) for a fuller explanation.

28.5.2.5 In the event of total engine failure, the boat should be adequately stabilised prior to work commencing on the engine afloat. This could be by the use of an anchor or sea anchor.

28.5.2.6 Any engine failure is to be communicated as soon as practicable to the Co-ordinating Authority.

28.5.3 Man Overboard (MoB)

28.5.3.1 Procedures for recovering MoB (crew or survivors) should be developed and communicated to all crew (see also Para. 28.5.5).

28.5.3.2 Procedures should include:-

- Keeping contact with the MoB (use of equipment)
- Manoeuvring to reduce the risk of losing MoB
- Mitigating for the Helmsman being the MoB (including carriage of a second engine stop cord, as appropriate)
- Bringing the MoB back on to the Rescue Boat
- Making a MoB alert by DSC and Radio and activating emergency locating equipment (e.g. EPIRB).

28.5.3.3 At least two crew embarked on a Rescue Boat are to have been trained in handling that particular craft.

28.5.3.4 Training in MoB procedures should be undertaken in controlled conditions and with the appropriate PPE/safety equipment being used.

28.5.3.5 Training should take place with the full knowledge and participation of all crew on board the Rescue Boat. A trained and experienced crew member should remain on board the Rescue Boat during MoB training if 'live' personnel are to enter the water.

28.5.3.6 Procedures are to be in place to minimise the risk of MoB, these may include:

- Training crew and briefing survivors on the correct way to sit/kneel in/on the boat and where to hold on
- Avoiding sudden or violent motions
- Communicating with all on board prior to an unavoidable sudden/violent motion
- Agreeing and designating positions in the boat for crew and survivors
- Monitoring crew and survivors

28.5.3.7 Crew placed on board casualty vessels are to be suitably equipped, protected and trained to overcome their unfamiliarity with the vessel to reduce the risk of MoB occurring.

28.5.3.8 Communications are to be retained with the Rescue Boat at all times when operating on board a casualty vessel.

28.5.3.9 All MoB incidents are to be communicated as soon as practicable to the Co-ordinating Authority.

28.5.4 Fire

28.5.4.1 Procedures are to be developed and training undertaken to minimise the risk of fire in all operational and maintenance scenarios, whether ashore or afloat.

28.5.4.2 Procedures and training is to be given to safely tackle or react to fire in all operational and maintenance scenarios, including boat houses.

28.5.4.3 Procedures are to include evacuation (i.e. abandoning the boat house or Rescue Boat).

28.5.4.4 If the Rescue Boat is expected to operate in an environment where fires are anticipated or if the crew are expected to tackle fires off the Rescue Boat, appropriate equipment selection, by design and training and procedures will need to be developed. It should be risk assessed and given special consideration and agreed by the Rescue Boat Organisation.

28.5.4.5 Rescue Boat Organisations are to be aware of the performance of their boat when exposed to fire.

28.5.4.6 Crew safety on having to abandon the Rescue Boat as a result of severe damage or fire etc. should be demonstrated.

28.5.5 Crew Disablement

28.5.5.1 Adequate procedures and training are to be in place to ensure that the risk of chronic and acute injury to boat crew and shore crew is addressed. These could include attention to manual handling regulations, appropriate posture, etc. It is good practice to try to comply with the Vibration Regulations as if they do apply (this regulation is non mandatory because the crew are not employed and rescue boats are not subject to these regulations either) as this will provide appropriate protection from spinal injuries.

28.5.5.2 Adequate procedures and training are to be provided to minimise the risks of boat and shore crew suffering medical conditions due to exposure to the environment. These could include use of PPE, medication and First Aid training and how to avoid or combat sunburn, sunstroke, hypothermia, debilitating seasickness and fatigue.

28.5.5.3 The Rescue Boat crew should be able to function satisfactorily with the loss of capability of any one crew member.

28.5.6 Collision and Damage

28.5.6.1 The requirements of the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs) are to be followed to ensure that the risk of collision with other water users is minimised. Additional procedures are to be developed and training given to suit the operational profile of the Rescue Boat. Departures from the regulations to undertake essential rescues are at the Helmsman's discretion, who should be aware of the potential liabilities associated with such actions.

28.5.6.2 Damage procedures and training are to be provided to suit the operating environment, boat design and equipment carried on board.

28.5.6.3 Any collision or damage affecting the performance of the Rescue Boat is to be communicated as soon as practicable to the Co-ordinating Authority.

28.5.7 Operating in Shallow Water and Grounding

28.5.7.1 Adequate procedures and training are to be provided if grounding or beaching is anticipated. These may address the following:

- Grounding/beaching techniques for crew

- Assessment of conditions for manoeuvring
- Changes required to engine configuration
- Re-launching
- Safe disembarkation
- Communications protocol
- Assessment of damage to boat and equipment
- Reduced stability and damage control

28.5.8 Operation During Pollution Incidents.

28.5.8.1 Rescue Boats may be called to incidents involving hazardous substances (Hazchem incidents). In such cases the Rescue Boat should stand off up-wind and seek urgent advice from the Co-ordinating Authority.

28.5.8.2 Procedures and training are to be in place to cover the safe operation of a Rescue Boat in a polluted environment. This should include:-

- Communications with the Co-ordinating Authority
- Go/no go to entering polluted area
- Identifying hazards associated with pollution types
- Use of adequate PPE
- Need for inoculations before and after operating in the polluted area
- Administering First Aid to those exposed to hazardous pollution covering the range of likely pollutants
- The need to modify operation in polluted areas

28.5.9 Alarms

28.5.9.1 Procedures and training is to be in place to ensure that the meaning of alarms and the subsequent action to take is known by all crew and shore crew.

28.6 Boat Recovery

28.6.1 The operation of recovery equipment is to be subject to local risk assessment.

28.6.2 Procedures to cover all nominated means of recovering the boat are to be developed and training provided to all personnel involved.

28.6.3 Contingency plans are to be in place to cover alternative recovery sites. Training to meet the contingency plans is to be undertaken.

28.7 Restoring the Boat to a Ready Status

28.7.1 Maintenance and operational procedures and training are to be in place to ensure that the Rescue Boat is made ready for service, following an operation or shift.

28.7.2 These procedures should include:-

- Cleaning and protection of boat and equipment from environmental degradation (UV, temperature extremes, salt water, pollution etc)
- Checking buoyancy tube pressures (in changing weather conditions)
- Equipment checks
- Watertight/structural integrity checks
- Refuelling
- Re-charging batteries

28.7.3 Defects and missing equipment and any necessary reduction in the operational capability of the Rescue Boat are to be logged and effectively communicated to the Launching Authority.

28.7.4 The Co-ordinating Authority is to be informed of the operational state of the Rescue Boat, crew and shore crew.

28.7.5 Records of Service/Patrol are to be completed at the earliest opportunity.

28.7.6 An inventory of standard parts and items and the quantities for which spares are to be held at the Rescue Boat facility is to be prepared and procedures put in place to ensure that the inventory is maintained.

29. POLLUTION PREVENTION

29.1 General

29.1.1 A boat complying with the Code should meet international, national, regional and local requirements for the prevention of marine pollution which are applicable to the area in which the boat is operating.

29.1.2 The following issues are to be given special consideration:

- Fuel Storage, containment and dealing with leakage
- Containment and disposal of spillage during charging and emptying of fuel containers
- Disposal of used cleaning agents
- Garbage

29.1.3 Responsibility for the Rescue Boat to be properly equipped and maintained to meet the prevailing requirements rests with the Rescue Boat Organisation.

29.1.4 It should be noted that emissions necessary for securing the safety of the vessel during an incident or for the saving of life at sea are covered by a statutory defence in UK law. See 29.3.3.

29.2 Requirements for Preventing Pollution of the Sea

29.2.1 Garbage

29.2.1.1 If garbage or waste is generated on board it should be retained and dealt with at appropriate facilities ashore²⁹. No garbage or waste should be discharged overboard and every boat greater than 12m in length overall shall have a sign permanently displayed aboard to this effect.

29.2.2 Oil

29.2.2.1 No oil should be discharged overboard. Guidance and additional information is provided in 29.3.

29.2.2.2 Means to prevent pollution by oil should be acceptable to Administrations / authorities in the area in which a boat operates.

29.2.3 Use of Antifouling Paints

29.2.3.1 It is prohibited for all ships in the EEA to apply or re-apply organotin compounds (for example, Tributyl Tin) which act as biocides in anti-fouling systems. The IMO convention³⁰ covering this prevents the possible use in the future of other harmful substances in anti-fouling systems. For boats less than 24 metres in length it is not necessary to provide for a specific survey or declaration.

29.2.4 Air Emissions

29.2.4.1 All engines with a power output of greater than 130kW, installed on a boat which is a Rescue Boat of any size, constructed after 1st January 2000 should be issued with an Engine International Air Pollution Prevention (EIAPP) Certificate and a Technical File³¹.

29.3 MARPOL Oil Pollution Prevention Information

29.3.1 Discharge Limits and Equipment

29.3.1.1 Rescue Boats should, as far as practicable, retain on board oil or oily mixtures for appropriate discharge ashore.

29.3.2 Chemicals

²⁹ Guidance on storage and disposal of garbage can be found in Part 2 of MGN 385.

³⁰ International Maritime Organization adopted the International Convention on the Control of Harmful Anti-Fouling Systems on Ships, see also The Merchant Shipping (Anti-fouling Systems) Regulations 2009 (SI 2009 No. 2796) and MGN 398 (M+F) The Merchant Shipping (Anti-fouling Systems) Regulations 2009 provides further guidance.

³¹ Further guidance on air emissions regulations can be found in MSN 1819 (M+F) "The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008" and the Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008 (SI 2008 No. 2924), as amended

29.3.2.1 No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of the allowed discharge³².

29.3.3 Exceptions

29.3.3.1 The above shall not apply to:

29.3.3.2 The discharge into the sea of oil or oily mixture necessary for the purpose of securing the safety of a ship or saving life at sea; or

29.3.3.3 The discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:

29.3.3.3.1 Provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and

29.3.3.3.2 Except if the Rescue Boat Organization or the Helmsman acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or

29.3.3.3.3 The discharge into the sea of substances containing oil, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of the Administration. (Reference: Annex I of MARPOL, Reg 4)

30 TESTING

30.1 In addition to the survey regime, (Ch. 27 and ISO 6185), the following should be applied annually during the life of the certificate for inflatable / inflatable collar craft:-

An airtightness test as follows by the Rescue Boat Organisation:

- Inflation of the boat to 120% of working pressure
- Check of the integrity of tubes and seams with soapy water and, in the case of RIBs, the integrity of the joints between the tubes and hull
- Allow a four hour stretch period and then re-set the working pressure
- Check that after 30 minutes the pressure is still 120%
- After 24 hours, check that the pressure is not less than 100% of working pressure
- A declaration to be kept in the Rescue Boat's maintenance record for inspection

³² Annex I of MARPOL, Reg 15.8

30.2 The test should be performed at $20^{\circ}\text{C} \pm 3^{\circ}\text{C}$. Where the temperature and atmospheric pressure difference between the start of the test and the test readings should not exceed $\pm 3^{\circ}\text{C}$ for the temperature or $\pm 1\%$ for the pressure. For each rise and fall of 1°C in ambient temperature an allowance of 0.004 bar may be respectively subtracted from or added to the recorded boat pressure. (ISO 6185).

APPENDIX 1 – INFLATABLE BOAT STABILITY TRIALS

Trial Ref. Trial details

These details in this Appendix are intended for inflatable and rigid inflatable boats however a similar protocol should be developed locally for other types of boat.

1 PREPARATION

The following preparations should be carried out prior to commencing trials:

1.1 General

- 1.1.1 The trial should follow an agreed plan.
- 1.1.2 Appropriate trials flags should be flown.
- 1.1.3 A hose and water should be provided on the pontoon.
- 1.1.4 In the case of boats with dynamic drainage systems, a pump or other means of draining the boat should be available.

1.2 Site

- 1.2.1 The trials site should have adequate depth of water to allow for both capsize of the boat and personnel in the water.
- 1.2.2 Conditions are to be calm, with no significant wind, tide or current.
- 1.2.3 There should be easy egress for personnel from the water at the trials site.
- 1.2.4 The boat should be able to float with adequate clearance from obstacles in all direction.
- 1.2.5 The boat should be able to come alongside.
- 1.2.6 There should be convenient places for rope handlers (positioning the boat) to stand.

1.3 Boat

- 1.3.1 All equipment and ballast on board the boat at any point in the trials should be secured appropriately, in particular to withstand capsize. The equipment will be that most likely to be carried on a service operation.
- 1.3.2 Equipment required for righting the boat should be operational and accessible to crew in the water following capsize.

- 1.3.3 Masses equivalent to equipment and engine may be substituted if necessary providing they are adequately secured for the capsize condition. Each crewman may be substituted by a mass of 100kg and each survivor by a mass of 90kg if required.
- 1.3.4 If an engine is not substituted by an equivalent mass, it should be able to be immersed without damage. If appropriate the engine should be locked down prior to the trials commencing.
- 1.3.5 If fuel is used, precautions should be taken to avoid spillage.
- 1.3.6 If water is used instead of fuel, measures should be taken to avoid subsequent contamination.
- 1.3.7 Dynamic drainage systems, such as drainage socks, should be closed. Bungs should be in place.
- 1.3.8 Correct buoyancy tube and keel pressure should be ensured at the start and where applicable, throughout the trial.
- 1.3.9 The boat should be dry prior to the trial commencing.
- 1.3.10 Throughout the trials the boat is to be kept in place (allowing adequate clearance and depth of water) using ropes attached to the bow and stern of the boat. The shore ends of the ropes are to be held by trials personnel, not tethered, but cleats should be available to ensure that the ropes can be secured quickly if necessary.
- 1.3.11 The boat is to be secured alongside during any change to its condition.

1.4 Personnel

- 1.4.1 The minimum number of personnel which can carry out the trials is as follows:
- Trials Manager/Safety Officer.
 - One Diver.
 - One Diver's assistant.
 - Two line handlers.
 - One Recorder and 1 assistant.
 - Boat personnel to make up the crew and survivors required for full load condition.
 - If not present at the trial, a person qualified in First Aid should be readily available.
- 1.4.2 All boat personnel should be fully trained for capsize drill, prior to commencing the trials.

- 1.4.3 If 'live' personnel are being used they should wear appropriate PPE. For those entering the water this should be a minimum of a life jacket and helmet.
- 1.4.4 Each crewmember is to be weighed prior to commencing trials. An average of as near 100kg as possible per crewmember should be achieved.
- 1.4.5 All trials personnel are to be briefed prior to commencing the trial, including procedure to be followed in case of an accident.
- 1.4.6 Trials personnel should be made aware of the position of the nearest telephone.
- 1.4.7 Ambulance access to the trials area should be considered.

1.5 Determination of Load Condition

- 1.5.1 The maximum number of crew and survivors to make up the fully loaded condition should be determined, using guidance from ISO 6185. A figure of 100kg should be used for crew weight.

2 STABILITY TRIALS

2.1 Checking the Freeboard for the following conditions

- 2.1.1 Ballast the boat to the conditions listed below and carry out these checks for each condition:-

- Ensure that there is positive freeboard right around the boat
- Check that there is no tendency to instability
- Measure the freeboard around the buoyancy tube or the gunwale. The minimum value should be greater than 300mm for inflatable boats; other figures apply for solid boats
- Measure the freeboard at the transom, which should be greater than 250mm.

Note: All measurement of the freeboard should be done from outside the boat.

2.1.2 Bare Boat Condition

- No fuel
- Minimum operating crew
- All fixed structure in place
- Engine mass in place
- All portable kit off the boat

2.1.3 Lightest Operating Condition

- 10% fuel

- Minimum operating crew
- Full kit on board

2.1.4 Fully Loaded Condition

- Full fuel
- Full crew
- Maximum allowed number of survivors
- Full kit on board

2.1.4.1 In the fully loaded condition if the requirements of positive freeboard and resistance to instability cannot be achieved the number of survivors allowed on board should be reduced until the conditions are met.

2.1.5 Any other condition that may be worse in terms of stability or freeboard.

3 CHECKING THE INTACT STABILITY

3.1 Bring the boat to the fully loaded condition, but **without** the personnel on board.

3.1.1 Ensure that any single crewmember can enter the boat unassisted from the water at any accessible point around the perimeter.

3.1.2 Ensure the following throughout:

- Check that the freeboard is positive around the entire periphery of the boat.
- Check and record that the boat has positive longitudinal and transverse stability, i.e. the boat does not have a tendency to 'pitch pole' or capsize, and that one side does not tend to 'lift' unexpectedly from the water.

3.2 Bring the boat to the fully loaded condition **with all** personnel on board.

3.2.1 Position all personnel (except the helmsman, who should remain at the steering position) to the same side, and seat half the number on the buoyancy tube. Add compensating wind heeling weight/personnel to the same side. This should be achieved by adding two additional persons to those seated on the buoyancy tube in each case. Alternatively, 200kg in weight could be securely tethered.

3.2.2 Ensure the following throughout:

- Check that the freeboard is positive around the entire periphery of the boat.
- Check and record that the boat has positive longitudinal and transverse stability, i.e. the boat does not tend to 'pitchpole' or capsize, and that one side does not tend to 'lift' unexpectedly from the water.

- 3.2.3 If paragraph 3.2.2 is not satisfied, reduce the number of persons on board until successful, and update the maximum number of persons allowed on board.
- 3.2.4 Record the freeboard to the top of the buoyancy tube around the periphery of the boat.
- 3.2.5 Repeat paragraphs 3.2.2 to 3.2.4 in the following conditions:-
- Position all personnel except the Helmsman to the opposite side, and seat half the number on the buoyancy tube
 - Position all personnel except the Helmsman to the front of the boat, and seat half the number on the buoyancy tubes
 - Position all personnel except the Helmsman to the back of the boat, and seat half the number on the buoyancy tubes.
- 3.3 Repeat the above tests for the **Bare Boat** and **Lightest Operating** conditions.

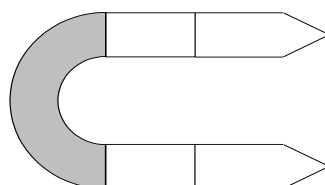
4 Checking the Stability During Survivor Recovery

- 4.1 Return the boat to its fully loaded condition, but with no survivors on board.
- 4.2 Use an appropriate number of crew (the Helmsman may be assumed to be at the steering position) to recover an appropriate number of persons from the water on the same side of the boat as the helm. The operational validity of the number chosen should be demonstrated prior to the trials. Compensate as before for the effect of the wind. In the case of small inflatable Rescue Boats, the worst case is expected to be that of the simultaneous recovery of two persons over the same side as the Helmsman is seated.
- 4.2.1 The rescued persons should feign not being able to help themselves. Their backs should be turned to the boat so as not to assist the rescuers.
- 4.2.2 Each person involved should wear an approved lifejacket (inflated if not permanent buoyancy type).
- 4.3 Check and record that positive stability is maintained throughout the recovery.
- 4.4 Repeat paragraphs 4.2 to 4.3 for an appropriate variety of survivor recovery scenarios.

5 Checking the Damage Stability

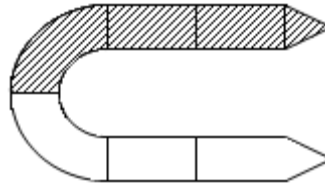
- 5.1 Ensure that the boat is in its fully loaded condition, including the maximum number of survivors.
- 5.2 The boat should be brought alongside and moored securely.

- 5.3 Air should be released from buoyancy chambers to meet the conditions specified by the following sections in a controllable and orderly manner. A pump or other suitable means e.g. wet and dry vacuum cleaner, should be used to 'fully' deflate buoyancy chambers. Evacuation of air should not be sufficient to cause damage to the boat.
- 5.4 In all cases, deflation of the specified chambers, and preparation of the boat in a damaged state should be completed prior to any embarkation of crew and survivors.
- 5.5 The valve of each chamber should be closed when it has been deflated.
- 5.6 Deflate the keel compartment.
- 5.7 Deflate the forward buoyancy chamber. Deflate both sides if there is a central bow baffle. The shaded area illustrates this:

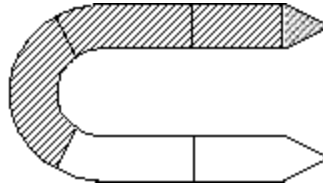


- 5.7.1 If a pontoon is to be used, the deflated side of the boat should be positioned away from it to prevent the boat from passing under the edge. The boat should still be held on ropes by hand.
- 5.7.2 Demonstrate and record that the crew and survivors are supported 'not in the water' by the undamaged remainder of the boat up to the fully loaded condition. Personnel should embark one at a time over the 'damaged' side.
- 5.7.3 Water should not be prevented from entering the boat over the deflated buoyancy tube.
- 5.7.4 If paragraph 5.7.2 is not satisfied, reduce the number of persons on board until successful, and update the maximum number of persons allowed on board.
- 5.7.5 Disembark all personnel and bring boat alongside ready for next test.
- 5.8 Deflate the entire buoyancy from the centreline at the stem to the transom on one side of the boat, as shown by the shaded area of 5.8(a). For boats without a central baffle this should be achieved by deflating both the side compartments and the bow compartment as shown by the shaded area of 5.8(b). Although a five-compartment buoyancy tube has been used in the illustrations, the principal should apply to all variants of buoyancy tube design.

(a)



(b)



5.8.1 Repeat paragraphs. 5.7.1 to 5.7.5.

5.9 Paragraphs. 5.7 and 5.8 should be repeated for the opposite side of the boat if the chambers are arranged asymmetrically.

5.10 In a controlled manner and alongside, with no persons on board, re-inflate all the buoyancy tube chambers in the boat.

6 Checking the Dynamic Stability

6.1 Carry out the speed and manoeuvrability barrier avoidance tests detailed in ISO 11592 for the initial fully loaded condition (including survivors), the light condition, and any other condition previously highlighted.

6.2 Trials are to be conducted with all due regard for other water users and in the presence of a safety boat.

6.3 Deflate one of the compartments following the procedure in Section 5.

6.4 Attempt to propel the boat using its primary means in a generally straight line for 400m.

6.5 Assess and record the success of this manoeuvre.

6.6 Re-inflate the deflated compartment.

6.7 Repeat paragraphs 6.3 – 6.6 for all compartments in the boat in turn.

7 Swamping Tests

7.1 Return the boat to its fully loaded condition, including survivors.

7.2 Swamp the boat 50% up the height of the transom using an external source. Equipment that may be damaged in a swamping test may be replaced by suitable weights if this is felt appropriate.

- 7.3 Add an additional 10% of the total weight of crew, survivors and boat (in the fully loaded condition).
- 7.3.1 Assess and record whether the boat provides a stable platform in this condition.
- 7.3.2 Assess and record whether the boat is seriously deformed.
- 7.3.3 Record freeboard around the boat. Freeboard should be positive around the perimeter.
- 7.4 Swamp the boat fully and repeat Para's. 7.3.1 to 7.3.3.

8 Testing the Boat's Drainage

- 8.1 Demonstrate that the boat can be drained or bailed at sea.
- 8.1.1 If the boat has a dynamic system of drainage (e.g. transom drain socks), demonstrate that the engine or drainage power system still works when the boat is swamped.
- 8.1.2 If the boat has a dynamic system of drainage, some form of secondary bailing should be demonstrated.

9 Testing a Boat's Lifting Equipment

- 9.1 If the boat is fitted with a lifting device, demonstrate that it is able to lift any likely operational load with a realistic worst-case placement of people in the boat.
- 9.1.1 The following should be demonstrated and documented throughout the lifting operation:
- The boat remains stable
 - The boat should have positive freeboard.

10 Testing the Launch and Recovery Methods

- 10.1 Demonstrate proposed launch and recovery methods.
- 10.2 Document any boat instabilities during these processes.

11 Testing Boat Righting Method

- 11.1 Capsize the boat.
- 11.2 Demonstrate the proposed righting method.
- 11.3 Document the number of crew required to right the boat, and their capabilities.

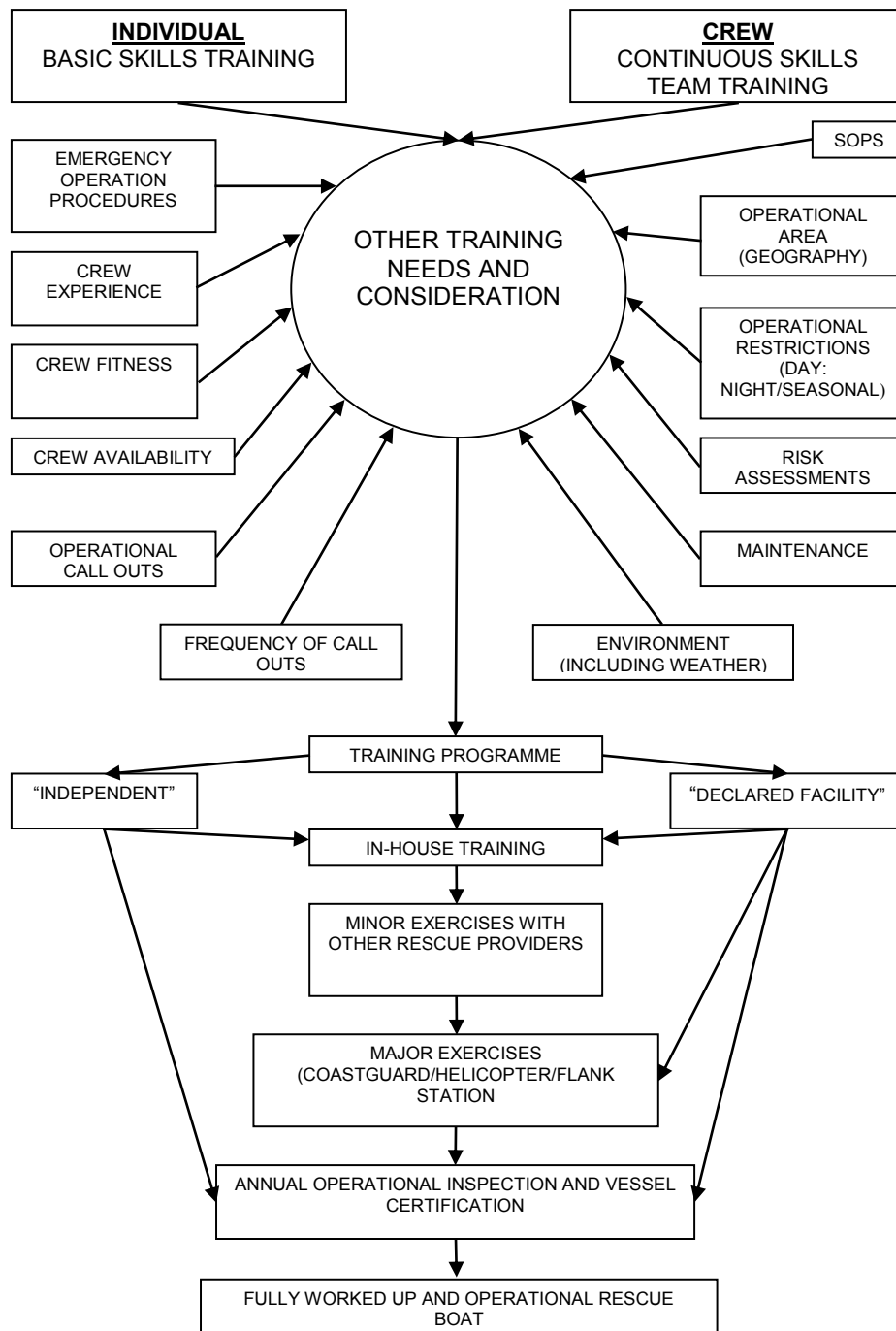
- 11.4 Demonstrate the access to critical equipment in a capsized condition.
- 11.5 Demonstrate that the crew can re-enter the boat from the water once the boat has been righted.

APPENDIX 2 – TRAINING REQUIRMENTS

1. General

- 1.1 Training is a continuous process. Even those boats' crews that receive regular call out should still be kept familiar with unfamiliar operations, such as onboard Rescue Boat emergencies, coxswain falling overboard, boarding a stranded vessel etc. Training Officer will need to continually assess the training needs for their own organisation and plan accordingly. For information on a structured training plan see Appendix 4.
- 1.2 The Rescue Boat Organisation's Responsible Person is to ensure that every person employed (including volunteers) should be aware of any risks affecting him or her and ensure that appropriate training is undertaken to minimize them.
- 1.3 Each Rescue Boat Organisation's Responsible Person is to ensure that the Training Manager provides a fully auditable training regime that addresses the risks identified in the Rescue Boat Code as being mitigated by training.
- 1.4 The Responsible person should be satisfied that their helmsmen and crew are suitably experienced and qualified to undertake their duties.
- 1.5 The Training regime of each Rescue Boat Organisation is to be established using a formula typical of that shown in the schematic below at paragraph 1.5.
- 1.6 In the case of a Rescue Boat only, 12 months relevant experience equates to approximately 30 days per year.

1.7 EXAMPLE TRAINING PROCESS



2. All crew should be trained in local Health and Safety procedures, including:
 - Familiarisation with local Risk Assessments
 - Actions to be taken in the event of fire in the boathouse
 - Actions to be taken in the event of fire in the Rescue Boat either on the slipway or on the water
 - Shore Crew should be trained in the launch and recovery procedures required at the launch site

3. All Rescue Boat Helmsmen should be trained as follows (Table 1 for formal qualifications):
 - The relevant competencies listed in the RYA's national syllabus for Power Boat Level 2 (with 12 months relevant experience) or any other standard approved by the MCA³³. In addition they should have certificates covering Medical Fitness³⁴, a Basic Sea Survival qualification and an RYA Professional Practices and Responsibilities qualification
 - In addition to the above, all Rescue Boat Helmsmen operating during the hours of darkness, should be trained to the competencies listed in the RYA's National Syllabus of the Advanced Power Boat Certificate with 12 months relevant experience
 - Helmsmen who may be reasonably expected to operate at an appreciable distance offshore (>3 nautical miles) should also have the RYA Day Skipper (Theory and Practical Certificate) standards with 12 months relevant experience
 - The Helmsman or a member of the crew should hold an approved MCA Elementary First Aid Certificate, or equivalent, such as the RYA Elementary First Aid Certificate. Refresher training should be undertaken at least every five years
 - Operation of the Rescue Boat to its stated operational limits and consequences of operating outside these said limits
 - The safe operation of all equipment fitted or carried on the Rescue Boat
 - The importance of safety management and defect reporting
 - Standard Operating Procedures developed for the operating area, also emergency action procedures

³³ For inland waters (see Table 1 Note 2) rescue boats, except those operating during the hours of darkness, the RYA Power Boat Level 2 Certificate can be substituted for an RYA Safety Boat Certificate with 12 months relevant experience.

³⁴ This can be the (a) UK Seafarers Medical Certificate (ENG1), (b) a small commercial vessel certificate of medical fitness (ML5), for both see MGN 264; or alternative medicals for <60 miles from a safehaven (c) a CAA commercial pilots licence, (d) HSE diving medical certificate, or (e) DVLA Group 2 Drivers Licence, subject to the following conditions: (1) the validity of the evidence of medical fitness would be that of the validity of the parent licence (e.g. one year in the case of the CAA commercial pilots licence), (2) in the case of (d) and (e), evidence of satisfactory colour vision will be required, (3) in the case of (c), (d), or (e) a declaration will be required, signed by the applicant confirming the following: (i) the contact details of the examining doctor, their consent for the MCA to obtain further medical details if required and the date of the examination, (ii) that they have not had any medical conditions requiring medical admission, regular prescribed medication, or continuing medical surveillance, since the alternative medical was carried out, (iii) that there are no conditions limiting strength, stamina or flexibility, such that they could not cope in emergencies on board, such as recovering someone who has fallen overboard or fighting a fire, and (iv) they will seek revised medical fitness certification and submit this to their Rescue Boat Organisation if the licence accepted as evidence of medical fitness is revoked for any reason, or if they suffer any illness or accident affecting their fitness to operate the Rescue Boat, during the period of the licence / certificate.

- Use and procedures for the VHF radio (one crew member should hold a Short Range Radio Certificate or a licence compatible with the radio equipment carried by the craft)
- Local knowledge and known hazards
- Undertake exercises with local rescue services as appropriate

Table 1 – Rescue Boat Helmsman Qualifications

		OPERATION TYPE				
		Daylight operations	Night time operations	Inland Waters / Daylight operations	>3 n.miles from shore	
HELMSMAN QUALIFICATION ACCEPTABLE FOR A GIVEN OPERATION	RYA/Dft Powerboat Level 2 Certificate		√	√		√
	RYA/Dft Advanced Powerboat Certificate		√	√		√
	RYA/Dft Day Skipper Theory & Practical Certificate					√
	RYA Safety Boat	Note 1, 2			√	
	12 months relevant experience	Note 3	√	√	√	√
	Medical Fitness	Footnote 32	√	√	√	√
	Basic Sea Survival qualification		√	√	√	√
	RYA Professional Practices and Responsibilities qualification		√	√	√	√
	MCA Elementary First Aid Certificate	Note 4, 5, 6	√	√	√	√

Note 1: This is an alternative qualification to the RYA Powerboat Level 2

Note 2: Inland waters are those categorized waters listed in MSN1827, as amended.

Note 3: See Para 1.6 of this Appendix

Note 4: An equivalent certificate such as the RYA Elementary First Aid Certificate can be held.

Note 5: This can be held by a member of the crew instead.

Note 6: Refresher training should be undertaken at least every 5 years

4. Competent crew should be trained in the following:

- Start and stop the engine. Manoeuvre the boat to a place of safety
- A basic level of First Aid
- Operation of all equipment
- Standard Operating Procedures developed for the operating area, also Emergency Operating Procedures
- The use of communication equipment carried
- Local knowledge and known hazards

Trainees should undertake a period of basic skills training onshore including the use of PPE prior to being taken afloat

5. A Training Plan should be developed by the Training Officer to take account of the specific training³⁵ needs of the particular Rescue Boat and shore crew and may include:

- Anchors and anchoring (including veering)
- Approaching capsized craft
- Blind navigation
- Boat preparation – fuel level and pumps / fast idle / choke / oil / buoyancy tubes / set radio /GPS etc
- Boat handling – coming alongside
- Boat handling – slow speed manoeuvres
- Boat handling – high speed manoeuvres
- Boat handling – holding off
- Boat handling – securing to a buoy
- Boat handling – turning in own length
- Boat handling – warping
- Bylaws and Regulations
- Canoe rescue
- IALA Buoyage System “A”
- Charts
- Communications (VHF DSC)
- Emergency Procedures
- Equipment fitted on board and its use
- Fire Fighting
- First Aid – CPR / collars / splints / suction pump / defibrillator / Oxygen / Entonox / etc
- Global Positioning System – waypoints / track back / MoB / OS or Lat-Long grid ref.
- Helicopter Working – formatting, winching
- Launch / Recovery
- Lee shore rescue
- Major Incident procedures
- Man Overboard (uninjured or casualty) recovery
- Navigation
- Onboard equipment
- Operational area familiarisation
- Ordnance Survey maps (used by Inland Waterways)
- Personal Water Craft (Jet ski) - rescue of the craft
- Personal Protection Equipment (PPE)
- Personnel fitness
- Pyrotechnics
- Rescue using tube and fins
- Ropes and knots
- Safety equipment including First Aid kit
- Sail boat rescue
- Search zones and techniques (Search and Rescue)

³⁵ Where listed equipment is carried on board the rescue boat, training should be provided e.g. defibrillator training is above the level of medical training required in Appendix 2.3 and Appendix 2.4.

- Standing off another craft / coming alongside under way
- Surf rescue
- Throwing lines
- Tides and tidal streams
- Towing
- VHF radio procedures / phonetics / Mayday and Pan Pan / International and local channels
- Wind-surfer rescue

APPENDIX 3 - RISK ASSESSMENT GUIDELINES

1. Introduction

- 1.1 This report details one example of how formal safety assessment methods can be applied to Rescue Boat, equipment and procedures. The methods described adhere to the International Code of Safety for High Speed Craft - HSC Code (International Maritime Organization, London 1995) and the 2000 HSC Code (International Maritime Organization, London 2001). Other recognised systems for conducting risk assessments may be used, as appropriate.

2. Functional assessment

- 2.1 Carry out a functional assessment of the system in question. This process can be assisted by first generating a diagrammatic functional breakdown. Define 'systems', 'sub-systems' and 'components' and determine identification numbers: these items can represent not only physical equipment, but also the associated procedures and the surrounding environment. Functional flow diagrams can be created if considered useful for understanding the relationships between items in a system. Each specified 'system', 'sub-system' or 'component' should be explored and its significant features and functions documented. By carrying out both procedural and equipment assessments, a certain amount of overlap occurs between systems, helping to reduce the chance that any item will be overlooked.
- 2.2 The breakdown of a system defines to a large extent the level of ensuing safety assessment. However there is no 'correct' level: engineering judgement should be used to balance the time taken to carry out the safety assessment with the results achieved. In many cases an appropriate level will automatically be reached.

3. Failure mode, effect and criticality analysis

- 3.1 'Failure mode, effect and criticality analysis' (FMECA) is used to systematically determine and record the safety information. The standard FMECA as defined by the HSC Code has been expanded and manipulated to fit Rescue Boat requirements more accurately.
- 3.2 The functional analysis provides a systematic structure for investigating possible failures. A methodical brainstorm involving relevant design and operational personnel can then be used to generate the information required by the FMECA.
- 3.3 Each item specified in the functional analysis should be studied in turn, with the initial aim of identifying all possible failure modes that could occur. A failure mode is a way in which an item can fail, and each failure mode should be given a separate row in the FMECA table. For each failure mode, immediate causes should be generated. The effects of each failure mode

should also be determined. The aim is to determine the overall effect of the failure at the highest level: these final effects are named 'end events' and should be determined at the outset of the FMECA. A qualitative measure of the severity of each event should also be determined at the outset. As such 'local' effects can be described as all the effects that occur as a result of the failure that are prior to the end event. The appropriate end events can then be simply chosen from the list.

- 3.4 By looking at causes and effects associated with each identified failure mode, possible failure paths ('a combination of basic events which occur together to produce an end event') are being determined. The failure path leading to a specified end event is also known as a 'hazard'. In order to facilitate the identification of hazards, key words can be used during the brainstorm to 'trigger' thought processes. A list of key words that normally form the basis of a standard HAZOP (HAZard and OPerability) assessment can be used.
- 3.5 The probability of each identified failure path occurring can be judged using accepted qualitative criteria. The probability is the likelihood that the failure mode will occur and lead to the end event i.e. the probability of the path, and not just the failure mode in isolation. Risk is a combination of the likelihood of a failure path occurring and the severity of consequence of the associated end event. Using a risk matrix, a measure of risk (or criticality) can be associated to each identified failure path.
- 3.6 A failure mitigation process should be carried out whereby risks considered unacceptable by the FMECA can be mitigated to a level of at least 'as low as reasonably practicable'.
- 3.7 This guide details definitions for HAZOP identifiers, failure probabilities, consequence severities and risks. A spreadsheet should be created to store the FMECA information, see Para 8 of this Appendix.

4. HAZOP keywords

<u>Key Word</u>	<u>Parameter</u>
Operation - No action	Intended action did not occur; action not possible
Operation - More action	More than intended occurs; Other actions affecting this action occur – Rescue Boat Organisation assumes that he is intended to conduct additional actions
Operation - Less action	Action does less than intended – equipment does not perform as required – insufficient time to complete action.
Operation - Extra action	Extra actions carried out other than what was intended – Rescue Boat Organisation assumes that he is intended to conduct several actions.
Operation - Incorrect action	Operator conducts wrong action – misses out a step in action process etc.
Environment – Wind	What is the effect of wind – what is the limiting speed?
Environment – Waves	What is the effect of waves – what is the limiting size?
Environment – Surf	What is the effect of surf – what are the limiting factors?
Environment – Night	What effect does night time have?
Environment – Day	Are we limited to day time only?
Environment – Visibility	Is visibility a limiting factor?
Environment – Temperature	Does heat/cold have an effect – what are the limits?
Effect – Stability	Will anything have an effect on boat stability?
Effect – Structure	Will anything have an effect on boat structure / fittings?
Effect – Fire	Will anything induce a fire?
Effect – Safety	Will anything require personal protective eqp't, etc.
Effect – Training	Requirements for specific training?

5. Probability definitions

<u>FMECA</u>	<u>PROBABILITY</u>	<u>Definition</u>
Code		
F	Frequent	Likely to occur often during the operational life of a particular craft.
RP	<i>Reasonably probable</i>	Unlikely to occur often but may occur several times during the total operational life of a particular craft.
R	<i>Remote</i>	Unlikely to occur to every craft but may occur to a few craft of a type over the total operational life of a number of craft of the same type.
ER	<i>Extremely remote</i>	Unlikely to occur when considering the total operational life of a number of craft of the type, but nevertheless should be considered as being possible.
EI	<i>Extremely improbable</i>	An event that is so extremely remote that it should not be considered as possible to occur.

6. Severity definitions

<u>FMECA</u> Code	<u>SEVERITY</u>	<u>Definition</u>
I	<i>Insignificant</i>	An impact that is so extremely small that it should not be considered as relevant.
MI	<i>Minor</i>	An event or failure which can be readily compensated for by the crew A small increase in operational duties or in the difficulty of performing duties. A moderate degradation in operational performance. A slight modification of the permissible operating conditions.
MA	<i>Major</i>	A significant increase in operational duties or in the difficulty of performing those duties: but not beyond their capability provided another major effect doesn't occur simultaneously. A significant degradation in operational performance. A significant modification of the permissible operating conditions but will not preclude a safe mission.
H	<i>Hazardous</i>	A dangerous increase in operational duties or in the difficulty of performing those duties: crew cannot be expected to cope. A dangerous degradation in operational performance and strength of the rig. Marginal conditions for crew. Injury to crew or public. An essential need for outside assistance.
C	<i>Catastrophic</i>	Crew fatality Public fatality Loss of the boat

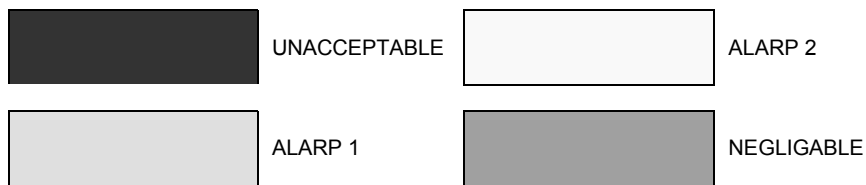
7. End events

7.1 The following list demonstrates how end events are created prior to beginning the FMECA. Each end event is coded and a severity associated. Appropriate end events of this form should be created for each FMECA.

FMECA Code	End effect	Details	Severity	
E1	Boat off service, i.e. cannot embark on service, taken off station	Boat cannot be sent to sea Boat cannot be recovered Boat off service due to trailer fault Boat off service due to crew fault Boat off service due to tractor fault Boat off service due to boat fault	Major	MA
E2	Greatly reduced operational effectiveness	Mission threatening damage or equipment failure on boat, i.e. loss of all propulsive or electrical power, total loss of comms., man overboard, reduced stability or buoyancy, capsize	Hazardous	H
E3	Loss of boat	Uncontrollable fire, boat sinks, boat won't right after capsize, separation from boat	Hazardous	H
E4	Reduced operational effectiveness	Equipment failure on boat but not mission threatening	Minor	MI
E5	Death or disability	Permanent or life-threatening injury of boat crew, shore crew, public or survivors Loss of limbs Death	Catastrophic	C
E6	Hospitalisation	Broken limbs, major cuts	Hazardous	H
E7	Major personnel injury	Requires First Aid and possible trip to casualty Time off work required	Major	MA
E8	Minor personnel injury	Small cuts and bruises Anything that can be treated by minor First Aid	Minor	MI

8. Risk Matrix

		SEVERITY				
		INSIGNIFICANT	MINOR	MAJOR	HAZARDOUS	CATASTROPHIC
PROBABILITY	FREQUENT					
	REASONABLY PROBABLE					
	REMOTE					
	EXTREMELY REMOTE					
	EXTREMELY IMPROBABLE					



9. Risk Definitions

<u>Code</u>		<u>Definition</u>
U	Unacceptable	Risk cannot be justified on any grounds
A1	ALARP 1	Tolerable only if risk reduction is impractical or if penalties are disproportionate to the improvement gained
A2	ALARP 2	Tolerable if penalties of reduction would exceed the improvement gained
N	Negligible	No need for detailed working to demonstrate ALARP

10. FMECA Spreadsheet

- 10.1 The codes shown in this document should be used to fill in 'probability' and 'severity' slots. 'End' under the 'Failure effects' column represents the end event and can be entered as the appropriate code. The risk / criticality ('C' column) should then be created.

FREQUENT
REASONABLY PROBABLE
REMOTE
EXTREMELY REMOTE
EXTREMELY
IMPROBABLE
MINOR MAJOR HAZARDOUS CATASTROPHIC
SEVERITY
PROBABILITY
ALARP 2
ALARP 1
NEGLIGIBLE
UNACCEPTABLE

APPENDIX 4 - GUIDANCE ON SAFETY MANAGEMENT SYSTEM AND DOCUMENTATION

INTRODUCTION

1. The purpose of this Section is to provide basic guidance on how to develop an effective Safety Management System (SMS) coupled with appropriate documentation. Since the aim of the Rescue Boat Code has been to move away from a prescriptive approach to regulation to allow organisations to identify and adopt suitable risk based mitigations for their operations, it is essential that the risks and mitigations are continually reviewed. This is because changes in equipment, personnel, operational requirement etc. can lead to new risks or changes to the severity of existing ones. It is essential that Code compliance is not seen as a 'one off' exercise, but a continuous process open to review and audit.' The Safety Management System should be given the highest priority by the organisations management.
2. The aims of a SMS should be:
 - To achieve an organisation operating within levels of risk to personnel, equipment and the environment that is as low as reasonably practicable.
3. Given that Rescue Boat operations are often inherently risky, absolute safety is unrealistic, therefore the following objectives are appropriate:
 - Ensuring that equipment designs are appropriate to the stated tasks and that they remain so after modification.
 - Ensuring that equipment is appropriately constructed and maintained in a safe condition.
 - Ensuring that personnel are appropriately trained to the required level of competency, and that training is reinforced at appropriate intervals.
 - Equipment is operated within parameters of agreed procedures.
 - Emergency procedures are developed and trained for.
4. A crucial element of the SMS is continuous review and feedback. All procedures should be periodically reviewed. The organisation's risk assessment procedure should be used to identify any new risks or any changes to the severity of existing ones. Changes that require modifications to equipment, procedures and or training are to be implemented as appropriate. The organisational management are to be responsible for the development and implementation of the safety management system. Auditable records are to be maintained to be able to demonstrate the undertaking and implementation of SMS activities. The structure of the SMS shall be defined and documented by the organisation, including the persons (positions) responsible for the implementation of the SMS.
5. A Rescue Boat Organisation should consider and address the following subjects, incorporating those that may be appropriate to the organisation, which should be formally documented:

CONTENTS

Constitution
Management System
Health and Safety
Medical
Equipment
Equipment Maintenance
Interfaces
Training
Operational Area
Operations
Safety Assessment
Insurance
Compliance Matrix

These are elaborated as follows:

5.1 CONSTITUTION

The Constitution may include:

Objectives
Powers
Management Committee Membership
Officers
Termination of Membership
Proceedings of the Committee
Annual General Meeting
Appointment of Crew Members and Boat Officer
Indemnity
Dissolution
Amendments and Alterations to Constitution

5.2 MANAGEMENT SYSTEM

5.2.1 The Management System shall include names, official addresses and contacts details of individuals within the organisation with special duties and responsibilities and shall include details of these duties and responsibilities and to whom they are accountable.

5.2.2 A management structure diagram may be included to graphically represent the hierarchy of authority.

5.2.3 The details of the following should be included as a minimum:

Chairman/Officer in Charge
Management Committee Members

Helmsman
Second Helmsman
Health and Safety Officer
Training Officer/Assistant Training Officer

5.3 HEALTH AND SAFETY

5.3.1 The Health and Safety Policy of the organisation shall be stated.

5.3.2 A means of assessment of the hazards should be developed and may include proforma for the following:

Risk Assessments
Care of Substances Hazardous to Health (COSHH) Assessments
Manual Handling Assessments
Personal Protective Equipment (PPE) Assessments
PPE Inspection Records
Equipment Inspection Records

5.3.3 The responsibility for the preparation and implementation of these assessments and recommendations shall be stated and reflected in the main duties and responsibilities of the individuals as stated in paragraph 5.2.1.

5.4 MEDICAL

5.4.1 All operational crew, including shore crew who may assist in launch and recovery operations, shall sign a declaration as to their current state of health and be medically examined by a suitably qualified person.

5.4.2 No crewmember that is unable to perform the duties expected of them is permitted to assist in the launch, recovery or operation of the Rescue Boat.

5.4.3 If the wearing of glasses is permitted, then the wearing of an elastic safety strap shall be obligatory for Helmsmen.

5.4.4 Each site shall maintain an Accident Book in accordance with requirements of the Health and Safety at Work Act.

5.5 EQUIPMENT

5.5.1 The major items of equipment used by the Rescue Boat, as detailed in the Code, that require particular consideration for reasons of safety and operational effectiveness should be addressed, as appropriate. The list may include, but is not restricted to:

The Rescue Boat
Launch and recovery systems
Propulsion systems including associated spares

5.5.2 Fuel

The following should be addressed:

- Identification
- Storage
- Connection
- Refuelling/Spillage

5.5.3 Electrical

Main considerations are:

- Batteries
- Protection
- Switches
- Lighting

5.5.4 Communications Equipment

Primary and back-up arrangements should be detailed:

- VHF (DSC, when fitted)
- Police radio (if carried)
- Mobile phones and pagers

5.5.5 Navigation Equipment

Policies for the following, where fitted / carried should be included:

- Compass
- Depth Finder
- Radar
- GPS
- Charts

5.5.6 Towing Gear / Arrangements

General towing policy and including:

- Use of strong points
- Towing equipment
- Emergency release

5.5.7 Pyrotechnics

Policies to be included:

- Carriage/disposal
- Stowage

Handling
Usage
Accountability

5.5.8 Fire Fighting

Considerations should include:

Rescue from other burning vessel
Carriage of additional equipment

5.5.9 Medical – Additional Specific Equipment Carried

Additional carriage³⁶ may include:

Stretcher and spinal board
Defibrillator
Oxygen and Entonox
Suction pump and splints

5.5.10 Personal Protective Equipment (PPE)

PPE supplied for the operational crew, shore crew and survivors should be detailed and include:

Dry / wet suit
Helmet (with visor)
Gloves
Body fleece
Life jacket
Thermal blanket

5.6 EQUIPMENT MAINTENANCE

5.6.1 Maintenance can be considered under three headings – preventative (lifer items), routine (regular checks and general application of lubricants etc.) and corrective (repair).

5.6.2 A dedicated person(s)/contact should be made responsible for all equipment maintenance.

5.6.3 All maintenance is to be recorded in a dedicated maintenance log book.

5.6.4 A maintenance schedule should be established, taking into account the equipments manufactures' recommendations, as well as locally developed requirements.

³⁶ Where listed equipment is carried on board the rescue boat, training should be provided e.g. defibrillator training is above the level of medical training required in Appendix 2.3 and Appendix 2.4. This section does not suggest that this equipment should be carried, this should be based on local need.

5.6.5 A Defect Log is to be established which should also record what and when any remedial action taken.

5.6.6 After each launch a post boat recovery maintenance schedule is to be established.

5.7 INTERFACES

5.7.1 Details of all internal and external authorities who interface with the Rescue Boat during normal Operational and Training activities shall be documented.

Operational interfaces may include:

HM Coastguard (MCA)
Ambulance Service
Fire and Rescue Service
Search and Rescue Helicopter (Coastguard, Irish Coastguard, RAF, RN,
Police)
RNLI
Local Authorities, Activity Centres, Boating Clubs etc.
Mountain Rescue Teams
Police
RYA

5.8 TRAINING

5.8.1 A structured training plan should be developed, appropriate to the Rescue Boat Organisation, with nominated person(s) responsible for training.

5.8.2 This section should detail the broad subjects to be covered, adapting as appropriate to the detail in Appendix 2, to best meet the demands of local conditions.

Local procedures should detail:

Amenities
Certification
Communications
First Aid
Location
Pre-user checks
Safety
Staffing
Training aids
Training area
Boats to be used

5.9 OPERATIONAL AREA

5.9.1 The Rescue Boat's operational area should be documented and should include details of:

- Authorised activities
- Helicopter landing sites
- Operational limits
- Any key reference points
- Search zones

5.10 OPERATIONS

5.10.1 Details of the normal operations of the Rescue Boat should be listed here and may include:

- Standard Operations Procedures (SOPS)
- Emergency Operations Procedures (Rescue Boat emergencies)
- Rescue Operations for the Public Good
- Co-ordination with HM Coastguard (to include call-out, reporting and communications protocol)
- Assistance to the Police
- Assistance to the Mountain Rescue Team
- Local Bye Laws
- Policy detail not covered in other sections

Note: SOPS and Emergency Operations Procedures should be detailed in a stand alone document for ease of access and amendment.

5.10.2 Operations Protocol

5.10.2.1 Support organisation for call-out and operation of the Rescue Boat should be clearly documented:

- Primary and Secondary means of call-out
- Incident Report proforma
- Hierarchy of Authority (Helmsman detail)
- Launching Authority
- Minimum crew required to launch and operate the Rescue Boat

5.11 SAFETY ASSESSMENT

5.11.1 Each Rescue Boat Organisation should conduct Risk Assessments of the whole operation, including:

Road Trailing (if applicable)

Launch

On water operations (including out-of-area emergency deployment)

Recovery/return to boat house or mooring

5.11.2 Risk Assessments should be conducted in accordance with a suitable recognised standard, some example guidelines of which are at Appendix 3. Whatever method is adopted, it is beholden on the organisation to mitigate risks to as low as reasonably practicable.

5.12 INSURANCE

5.12.1 A general outline of the Rescue Boat Organisation's insurance policy for boat, crew and Third Parties including other SAR operators / organisations should be documented. Subjects covered may include:

The Insured

The Insurer

Policy No.

Policy Cover and Conditions

Schedule of Boat covered

Limits of Indemnity including Public Liability

5.13 COMPLIANCE MATRIX

5.13.1 The Compliance Matrix at Appendix 5 may be used as a check-off for application of variances (equivalences) to the Code, rather than trying to list all compliances.

APPENDIX 5 - COMPLIANCE CHECKLIST

Section No. (Page / Para)	Applicable to Rescue Boat Organisation (y/n)?	Explanation if Section not considered applicable ³⁷	Requirements met (y/n)? Standard / Alternative.	How is Requirement met? ³⁸	Training Needs identified (y/n)?	Training Needs met? ³⁹	Maintenance need identified (y/n)?	Maintenance need met? ⁴⁰

³⁷ Give reasons why section is not applicable to Rescue Boat Organisation.
³⁸ Can be met by adherence to the text of the section or by an alternative mitigation – in why case reference to a local risk assessment is required.
³⁹ Give cross reference to training documentation.
⁴⁰ Give cross reference to maintenance documentation

APPENDIX 6: BIBLIOGRAPHY AND REFERENCES

(Note: Always refer to latest issue of standards)

BS EN 60079-14, Explosive atmospheres. Electrical Installations design, selection and erection.

BS EN 60079-29-1 Explosive atmospheres. Gas Detectors. Performance requirements of detectors for flammable gases.

BS 6883, Specification for elastomer insulated cables for fixed wiring in ships (suitable for lighting, power, control, instrumentation and propulsion circuits).

BS 8450, Code of Practice for Installation of Electrical and Electronic Equipment in Ships.

BS EN 28846 Small craft - Electrical devices - Protection against ignition of surrounding flammable gases.

BS EN ISO 8847, Small craft. Steering Gear. Cable & Pulley Systems.

EN 301 025-1, VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC); Part 1: Technical characteristics and methods of measurement.

EN 301 025-2, VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC); Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive.

EN 301 025-3, VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC); Part 3: Harmonized EN covering the essential requirements of article 3.3(e) of the R&TTE Directive.

EN 302 885-1, Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D DSC, Part 1: Technical characteristics and methods of measurement.

EN 302 885-2, Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D DSC, Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive.

EN 302 885-3, Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D DSC, Part 3: Harmonized EN covering the essential requirements of article 3.3(e) of the R&TTE Directive.

EN 28848 Small craft - Remote steering systems.

ISO 6185-1 Inflatable boats with a maximum motor power rating of 4, 5 kW.

ISO 6185-2 Inflatable boats with a maximum motor power rating of 4, 5 kW to 15 kW inclusive.

ISO 6185-3 Inflatable boats with a maximum motor power rating of 15 kW and greater.

ISO 6185-4 Inflatable boats with hull length of between 8 and 24 m with motor power rating of 15 kW and greater.

ISO 7000 Graphical Symbols for use on Equipment.

EN ISO 7840 Small craft - Fire-resistant fuel hoses.

EN ISO 8469 Small craft - Non-fire-resistant fuel hoses.

EN ISO 8665 Small craft - Marine propulsion reciprocating internal combustion engines - Power measurements and declarations

ISO 8846 Small craft - Electrical devices - Protection against ignition of surrounding flammable gases

ISO 8847 Small Craft – Steering gear - Cable & Pulley Systems.

ISO 8848, Small craft - Remote steering systems.

ISO 8849 Small craft - Electrically operated direct-current bilge pumps

ISO 9093 -1 Small craft - Seacocks and through-hull fittings - Part 1: Metallic.

ISO 9093 -2 Small craft - Seacocks and through-hull fittings - Part 2: Non-metallic.

ISO 9094 -1 Small craft - Fire protection - Part 1: Craft with a hull length of up to and including 15 m.

ISO 9097 Small Craft - Electric Fans.

ISO 9775 Small craft - Steering gear - Remote steering systems for single outboard motors of 15 kW to 40 kW power.

ISO 10088 Small craft - Permanently installed fuel systems.

ISO 10133 Small craft - Electrical systems - Extra-low-voltage d.c. installations.

ISO 10134 Small craft Electrical devices - Lightning protection systems.

EN ISO 10240 Small Craft Owner's Manual.

EN ISO 10592 Small craft - Hydraulic steering systems.

EN ISO 11105 Small craft - Ventilation of petrol engine and/or petrol tank compartments.

ISO 11192 Small craft - Graphical symbols.

ISO 11547 Small craft - Start-in-gear protection.

ISO 11591 Small craft, engine-driven – Field of vision from helm position.

ISO 11592 Small craft less than 8m length of hull - Determination of maximum propulsion power rating.

ISO 12215-1 Small craft - Hull construction and scantlings - Part 1: Materials: Thermosetting resins, glass fibre reinforcement, reference laminate.

ISO 12215-2 Small craft - Hull construction and scantlings - Part 2: Materials: Core materials for sandwich construction, embedded materials.

ISO 12215-3 Small craft - Hull construction and scantlings - Part 3: Materials: Steel, aluminium alloys, wood, other materials.

ISO 12215-4 Small craft - Hull construction and scantlings - Part 4: Workshop and manufacturing.

ISO 12215-5 Small craft - Hull construction and scantlings - Part 5: Design pressures for monohulls, design stresses, scantling determination.

ISO 12215-6 Small craft - Hull construction and scantlings - Part 6: Structural arrangements and details.

ISO 12216 Small craft - Windows, port-lights, hatches, dead-lights and doors – Strength and water tightness requirements.

ISO 12217-1 Small craft - Stability and buoyancy assessment and categorisation - Part 1: Non-sailing boats of hull length greater than or equal to 6m.

ISO 12217-3 Small craft - Stability and buoyancy assessment and categorisation - Part 3: Boats of up to and including 6 m.

ISO 12402-1 Lifejackets for seagoing ships -- Safety requirements

ISO 12402-2 Lifejackets, performance level 275 -- Safety requirements

ISO 13297 Small craft - Electrical systems - Alternating current installations.

ISO 13929 Small craft - Steering gear - Geared link systems.
ISO 13591 Small craft - Portable fuel systems for outboard motors.
ISO 14945 Small craft - Builder's plate.
ISO 14946 Small craft - Maximum load capacity.
ISO 15083 Small craft - Bilge pumping systems.
ISO 15084 Small craft - Anchoring, mooring and towing - Strong points.
ISO 15085 Small craft - Guardrails, lifelines and handrails, British Marine Federation
ISO 21487 Permanently installed petrol and diesel tanks.
Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.
CEVNI (Code europeen des voies navigation interieure).
COLREG 1972
IEC 60092-350 General construction and test methods of power control and instrumentation cables for shipboard and offshore applications.
IMO Resolution A.656 (16) Fast Rescue Boats.
IMO Resolution A.689 (17) Testing of lifesaving appliances, amended by IMO MSC.54(66) Amendments to the Recommendation on testing of life-saving appliances.
LOLER Lifting Operations and Lifting Equipment Regulations 1998.
1992 edition of "Survey of fire protection arrangements in merchant ships - Instructions for the guidance of surveyors".
MCA Code of Practice for Small Commercial Vessels and Pilot Boats (MGN280).
Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996, (SI 1996/75), as amended.
Merchant Shipping (Fire Protection Small Ships) Regulations 1998, (SI 1998/1011) as amended.
Merchant Shipping Notice 1676 (M) The Merchant Shipping (Life-Saving Appliances for Ships Other Than Ships of Classes III to VI(A)) Regulations 1999 The Merchant Shipping (Life-Saving Appliances for Passenger Ships of Classes III to VI(A)) Regulations 1999, as amended (see also MGN 280).
Merchant Shipping Notice 1677 (M) The Merchant Shipping (Life-Saving Appliances for Ships Other Than Ships of Classes III to VI(A)) Regulations 1999, as amended.
The Recreational Craft Regulations 2004 (SI 2004/1464) (as amended).
Road Traffic Act.
SOLAS, The International Convention for the Safety of Life at Sea, (incl SOLAS Ch V on Safety of Navigation).

Compliance Examination and Declaration Report For an Open Rescue Boat Less Than 15 metres in Length (RB2)

Note: all sections of this document are to be completed with appropriate details, or annotated 'N/A' if not applicable. If possible attach a photo of the Rescue Boat.

Part 1 Particulars of Rescue Boat

Name of Rescue Boat	
Official Number / Letters	
Port of Registry	
Year of Build	
Name of Builder	
Hull Identification (builders) number	
Hull Type	RIB / Rigid / Fully inflatable
Standard Design Type	
Brief Description of Rescue Boat ⁴¹	
Operation Design Category	B / C / D
Significant Wave height limitation (H_{1/3} / m)	
Beaufort wind Force maximum limitation	
Boat Operation limitations ⁴²	
Geographic Area of Operation including departure point	

⁴¹ Including type of operation.

⁴² This should include distance from departure point, day light only operation.

Part 1.1 Dimensions

Length Overall / m	
Length (Load Line) / m	
Beam / m	
Depth Moulded / m	
Freeboard / mm	
Max. number of persons to be carried (including crew members)⁴³	
Minimum number of Crew	

Part 2 Rescue Boat Organisation (RBO) Details

Name of RBO	
Name of Responsible Person ⁴⁴	
Address	
Postcode	
Email	
Telephone	
Fax	

⁴³ Maximum number of passengers must not exceed 12.

⁴⁴ As per definition in Section 2 of the Code.

Part 2.1 General Layout; Plan and Profile

(insert technical drawing and photograph here)

Part 3 Record of Particulars of the Rescue Boat

† Code section references refer to the Rescue Boat Code

INDICATE IF FITTED (YES OR NO), NUMBER, TYPE, NEXT SERVICE DUE DATE, AND LOCATION AS APPROPRIATE IN THE BELOW TABLES:-

3. Application and Interpretation †		
Detail	y/n	Comments
Rescue Boat examined and certificated by Competent Person		
Rescue Boat in accordance with recognised small vessel standards		
Training Plan		
Maintenance Plan		
Standard and Emergency Safety Procedures		
Compliance Matrix		
Certificate of Compliance		
Management Structure and plan		
Record of Services		
All associated formal safety assessment documentation including Risk Assessments		
Operation manuals relevant to the boat's machinery and equipment		
Any other supporting calculations or documentation required by this Code		
Equivalent arrangements accepted for existing boat		

4. Construction and Structural Strength †		
Detail	y/n	Comments
<p>Approved construction materials for hull, deck, buoyancy chamber and partitioning and hull subdivision:</p> <ul style="list-style-type: none"> Steel Aluminium FRP Wood <p>Structural and design tests accepted on basis of a boat of the same design</p> <p>Structure of boat complies with appropriate standard</p> <p>Structure of boat does not comply with appropriate standard, details</p> <p>Recesses</p> <p>Fixings to main boat structure are suitable</p>		

5. Weathertight Integrity †		
Detail	y/n	Comments
<p>Deck freeing ports considered with freeboard stability</p> <p>Penetrations in watertight structure</p> <p>Hatch Closing Arrangements</p> <p>Skin Fittings</p> <p>Piped discharges have non return valves</p> <p>Engine inlets are protected from downflooding</p> <p>Ventilation</p>		

6. Water Freeing Arrangements †		
Detail	y/n	Comments
<p>Details of means of drainage for trapped water</p>		

7. Machinery †		
Detail	y/n	Comments
<u>Main and Auxilliary Engine / s</u> ⁴⁵		
Inboard Diesel with 2 means of starting		
Outboard Petrol or Diesel, 2 means of starting		
Engine/s designed to be operated inclined		
Engine Stop Cords used		
Cat B boats should have at least 2 wholly independent propulsion systems		
Secondary means of propulsion		
All propulsion systems should have an emergency stop facility		
<u>Emergency Controls</u>		
Means of Closing Openings		
Remote Machinery Stops / Quick Closing Valves		
Controls for Sea Inlet, Bilge and Discharge Valves		
Engine Cooling System including alarm		
Exhaust System including alarm		
Crew protected from exhaust and visual warnings displayed		
Fuel system pressure tested		
Fuel gauge fitted		
Fuel Filter fitted		
Fuel containers clearly labelled and safely stowed		

⁴⁵ single engine boats only appropriate for Cat C and D boats.

Fire prevention measures taken		
Fuel tank size adequate for the operation		
Remote Fuel Stops		

8. Electrical Arrangements †		
Detail	y/n	Comments
System to marine standard		
Batteries		
All equipment earthed		
Short circuit protection adequate		

9. Steering Gear †		
Detail	y/n	Comments
Propeller Bather guards fitted / not fitted.		
Waterjet inlets protected		
Primary means of steering.		
Means of emergency steering		

10. Bilge Pumping †		
Detail	y/n	Comments
Self draining wells		
Power Bilge Pumps		
Power Bilge Suctions		
Bilge Alarms		

11. Stability †		
Detail	y/n	Comments
Intact stability test witnessed		
Positive stability maintained during test		
Damage stability test witnessed		
Boat complies with stability Requirements		
Swamp test successfully carried out		
Drainage system tested		
Dynamic Stability – speed and manoeuvrability tests		
Boat Righting System following capsized		
Stability During Lifting Operations test carried out.		
Rescue Boat Code Capacity Plate displayed		

12. Freeboard †		
Detail	y/n	Comments
Freeboard requirements achieved		

13. Life Saving Appliances †		
Detail	y/n	Comments
Immersion Suits		
Dry suits		
Wet suit		
Gloves		
Helmets		
Personal Location Beacons (PLB's)		
Harnesses		

<p>Thermal Protective Aids (TPA's)</p> <p>Liferaft and hydrostatic release unit, last service date</p> <p>Lifejackets / buoyancy aids ⁴⁶</p> <p>Buoyant Apparatus</p> <p>Lifebuoys</p> <p>Rockets and Signals</p> <p>Knife</p> <p>Puncture Repair Kit ⁴⁷</p> <p>Spare Drainage Bungs</p> <p>Buoyant heaving line</p> <p>Bolt croppers / wire cutters</p> <p>Electric Torch for night operations</p> <p>Search light</p> <p>Rescue and Retrieval Equipment (MOB)</p> <p>Additional Equipment carried</p>		
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14. Fire Safety †		
Detail	y/n	Comments
Fire Safety risks addressed		

15. Fire Appliances †		
Detail	y/n	Comments
Portable Extinguishers		
Fixed Firefighting System		

⁴⁶ buoyancy aids allowable on inland waters vessels operated during daylight hours only.
⁴⁷ for inflatable or RIB.

Other Fire Appliances		
Fire Detection System		

16. Radio Equipment †		
Detail	y/n	Comments
Fixed VHF and secondary aerial ⁴⁸		
GMDSS		
Digital Selective Calling (DSC)		
Portable VHF		

18. Navigational Equipment †		
Detail	y/n	Comments
Navigation Lights		
Sound Signals		
Radar Reflector		
Magnetic Compass		
Hand bearing compass		
Fluxgate compass		
Signalling Lamp		
Charts		
Chart Plotter		
Radar		
Echo Sounder		
Distance Measuring Log		
Autopilot and manual override		
Automatic Identification System (AIS)		

⁴⁸ two means of communication required which should be capable of marine band communication

19. Boat Storage †		
Detail	y/n	Comments
Storage is dedicated and appropriate		

20. Anchors and Towing †		
Detail	y/n	Comments
Strong Point for towing / anchoring		
Towing quick release		
Towrope		
Anchor		
Cable		
Warp		
Fairlead		

21. Equipment Stowage †		
Detail	y/n	Comments
All equipment securely stowed		
Essential equipment stowage positions clearly labelled		

22. Protection of Personnel by Design †		
Detail	y/n	Comments
Seating		
Bulwarks		
Guard rails if fitted do not provide a hazard		
Hand and footholds		
Padding		
Hazard signs		

Lighting		
Rounded edges		
Personal protective equipment		
Safety harness and strong points provided, risk assessment carried out		
Restraints fitted, risk assessment carried out		
Non slip working deck		
Adequate personal clothing and footwear provided		
Man overboard recovery arrangement		
Noise adequately catered for		
Vibration adequately catered for		

23. Medical Care †		
Detail	y/n	Comments
First Aid kit		

24. & 25 Owners Manual and Maintenance †		
Detail	y/n	Comments
Operators Manual is provided		
Training Manual is suitable and provided		
Onboard Maintenance Manual is provided		
Maintenance and Survey Plan provided		
Basic tool kit and spares carried		

26. Manning †		
Detail	y/n	Comments
Crew numbers and training is adhered to		

29. Pollution Prevention †		
Detail	y/n	Comments
Garbage, arrangements for retention on board		
Garbage Placard		
Merchant Shipping Prevention of Pollution Requirements complied with		

30. Testing †		
Detail	y/n	Comments
Air pressure test carried out		

Surveyors Comments

Part 4 – COMPETENT PERSON’S REPORT OF CONDITION

The Competent Person (the surveyor) carrying out the compliance examination should complete this Section. The Certificate will be valid for not more than 5 years from the date of examination of the Rescue Boat out of the water carried out by the Competent Person on behalf of the Rescue Boat Organisation.

Each Section in the report should be classified as either:

- A Condition satisfactory no sign of significant deterioration at present
- B Deterioration evident but not to an extent which immediately compromises the safety of the boat. Rescue Boat Organisation to monitor for further deterioration and take appropriate action.
- C Deterioration compromising seaworthiness of boat evident. Immediate remedial action required.

The examiner may withhold the issue of a certificate due to a number of B condition ticks below. In the event of any item classified C, the Competent Person should have received evidence of the completion of the rectification of deficiencies before a certificate is issued.

EXTERIOR EXAMINATION	A		B		C	
1. Ballast, bilge keels, skegs, keel bolts						
2. Rudder blade and hangings						
3. Shaft propeller and associated stern gear.						
4. Skin fittings						
5. Hull Exterior including any inflatable tubes						
6. Cathodic protection						
7. Deck						
8. Deck fittings						
9. Safety rails						
10. Windows / Hatches						
11. Steering gear						
12. Recovery davits, etc						
INTERIOR EXAMINATION	A		B		C	
13. Skin fittings & pipework						
14. Internal structural integrity						
15. Deck fitting						
16. Personal protection (hand holds etc)						
17. Engine mounting						
18. Engine pipework						
19. Stern glands, stern tubes and propeller shafts						
20. Battery installation						
21. Electrical Wiring						
22. Steering gear						
23. Tanks						
24. Passive fire protection (conditions of insulation, cleanline etc)						

Part 4 – Competent Person’s Report of Condition (Cont.d)

The Following table is to be used where ticks appear in Columns B or C

Ref No.	Nature of Defect	Remarks

Notes:

Examination concerns only those parts applicable to the relevant The Code of Practice for Open Rescue Boats of less than 15 metres in Length (The Rescue Boat Code) requirements. This compliance examination document should not be used as a statement of condition of the boat and its equipment for any other purpose. I have not inspected the woodwork or other parts of the boat which are covered, unexposed or inaccessible, unless they are required to be examined as part of the Rescue Boat Code requirements. I am therefore, unable to report that any such parts of the boat are free from defect.

Continue on separate sheet if necessary or attach report of condition or other supporting documentation.

The particulars shown on this form are a record of the arrangements, fittings and equipment provided on the Rescue Boat, and are in accordance with the provisions of the Code of Practice for the Open Rescue Boats of Less Than 15 metres in Length. All items of equipment subject to fixed expiry dates were seen to be correctly serviced and/or in date at time of examination.

Signed		Signed		<div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div>
Name		Name		
Date		Date		<div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div> Official Stamp
Organisation		Organisation		

Part 5 – Declaration of Competent Person

I have examined the Rescue Boat on

at

I hereby declare that the above mentioned boat has been examined in and out of the water and found to be in accordance with The Code of Practice for Open Rescue Boats of less than 15 metres in Length published by the Maritime and Coastguard Agency. The particulars shown on this form are a record of the arrangements, fittings and equipment provided on the Rescue Boat, and are in accordance with the provisions of the Code of Practice for the Open Rescue Boats of Less Than 15 metres in Length. All items of equipment subject to fixed expiry dates were seen to be correctly serviced and/or in date at time of examination.

And that:-

1. The hull, construction, machinery, Life-saving appliances, fire extinguishing equipment, other safety equipment, electrical and bilge systems and general gear are sufficient for the service intended and in good, safe condition in accordance with the Code of Practice for Open Rescue Boats Less than 15 metres in Length.
2. The Rescue Boat Capacity Plate has been observed.
3. In my judgment the Rescue Boat is fit to operate on voyages within:-
 - a) The limitations of significant waveheight and Beaufort Scale wind force maximum as specified in 4.2 of the Code. These are Category B / C / D, significant waveheight.....metres and a maximum Beaufort wind force An open Rescue Boat is not expected to operate in conditions that exceed Category B.
 - b) And in favourable weather, that means wind, sea, and visibility conditions which are deemed by the helmsman to be safe for the rescue boat to operate within the limits applied to it. In any other case means conditions existing throughout a voyage, or excursion, in which the effects either individually or in combination of swell height of waves, strength of wind and visibility are assessed not to cause any unacceptable risks.

Code Section	Comment / Alternative Provisions
26	It is the Responsible Person's responsibility to ensure that the vessel is manned as required by the Rescue Boat Code when operating as a Declared Facility.
29	It is the Responsible Persons responsibility to ensure that measures are in place to comply with national and local anti-pollution requirements.

Competent Person's General Comments and Recommendations (include sketches / attach photos if relevant)

Part 5 – Declaration of Competent Person (Cont.d)

INFORMATION FOR CERTIFICATE

Date of last out of water examination

Date of final examination of hull, machinery and equipment

Limitations / Conditions to appear on the Certificate

Other Remarks

Name of Competent Person

Name of Competent Person

Signature

Signature

Date

Date

Organisation

Organisation

Official Stamp

Part 6 - Record of Annual Examinations

It is the **responsibility of the Responsible Person** to ensure that the Rescue Boat is examined at either the second or third annual examination (known as the intermediate examination) by the Competent Person. Examinations should take place not more than 3 months either side of the anniversary date indicated below. At no time should there be more than 15 months between annual examinations.

Other annual examinations should be conducted annually by the Rescue Boat Organisation. These examinations should take place not more than 3 months either side of the anniversary date provided below. It is the **responsibility of the Responsible Person** to self-certify annually, and to sign the appropriate annual examination panels below confirming that the Rescue Boat:

- has been maintained in a sound and seaworthy condition in compliance with the requirements of the Code;
- is in the condition described by Parts 3, 4 and 5 of this form, and that none of the details in Parts 1 or 2 of the form have changed, without documenting these changes; e.g. that the particulars shown on this form are a record of the arrangements, fittings and equipment provided on the Rescue Boat, and are in accordance with the provisions of the Code of Practice for the Open Rescue Boats of Less Than 15 metres in Length and that all items of equipment subject to fixed expiry dates were seen to be correctly serviced and/or in date at time of examination.
- has not been involved in any collision, grounding, fire or other event that may cause major damage that has not been documented;
- is manned at all times as required by the Code; and
- is operated in compliance with applicable Merchant Shipping Prevention of Pollution Regulations and any local requirements.

General notes

1. At no time should there be more than 15 months between annual examinations.
2. At no time should there be more than 36 months between examinations conducted by an Competent Person.
3. Renewal examinations should be conducted by a Competent Person within the 3 months prior to the expiry date of the Rescue Boat Certificate.

The below is signed on the basis that that Responsible Person / Competent Person has read and understood the Rescue Boat Code and understood the basis of the exemption. He also understands that the requirements are an equivalent standard to that required by direct application of Merchant Shipping legislation and as such, this standard should be fully complied with at all times. He declares that at any time when underway in its duty the listed life saving appliances, fire extinguishing equipment, other safety equipment and general gear will be on board, in date and fully maintained so as to be fit for its intended purpose in accordance with this Code. He further declares that the Rescue Boat is in a safe condition (including the hull, machinery and equipment) and that it is operated within its operation limitations and operating procedures and that risk assessments are followed.

Anniversary Date		Range Dates for examination	
------------------	--	-----------------------------	--

Part 6 - Record of Annual Examinations (Cont.d)

To be entered on the Rescue Boat Organisation's copy by the person carrying out the examination and for an Intermediate Examination following receipt of a declaration of examination.

ANNUAL EXAMINATION 1 (Conducted by Rescue Boat Organisation) (In water)

Conducted at	<input type="text"/>	Name	<input type="text"/>	┌	┐
Date	<input type="text"/>	Signed	<input type="text"/>	└	┘
Official Stamp					

ANNUAL / INTERMEDIATE EXAMINATION* 2 (Conducted by Rescue Boat Organisation/Competent Person)* (In water/ Out of water)*

Conducted at	<input type="text"/>	Name	<input type="text"/>	┌	┐
Date	<input type="text"/>	Signed	<input type="text"/>	└	┘
Official Stamp					

ANNUAL / INTERMEDIATE EXAMINATION* 3 (Conducted by Rescue Boat Organisation/Competent Person)* (In water/Out of water)*

Conducted at	<input type="text"/>	Name	<input type="text"/>	┌	┐
Date	<input type="text"/>	Signed	<input type="text"/>	└	┘
Official Stamp					

ANNUAL EXAMINATION 4 (Conducted by Rescue Boat Organisation) (In water)

Conducted at	<input type="text"/>	Name	<input type="text"/>	┌	┐
Date	<input type="text"/>	Signed	<input type="text"/>	└	┘
Official Stamp					

*Delete as applicable

**APPENDIX 8 – CODE OF PRACTICE FOR OPEN RESCUE BOATS LESS THAN 15 METRES IN LENGTH
RESCUE BOAT ORGANISATION DECLARATION**

I..... the Responsible Person of
Address of Rescue Boat Organisation
.....
.....
The owner of(name of rescue boat)
Make & Type
Base Location
Maximum No . of Persons to be Carried
Unique Identification No.

Have read and understood the aforementioned basis of the exemption, and restrictions and requirements for manning. I also understand that the requirements are an equivalent standard to that required by direct application of Merchant Shipping legislation and as such, this standard should be fully complied with at all times. I declare that at any time when underway in its duty the listed life-saving appliances, fire extinguishing equipment, other safety equipment and general gear will be on board, in date and fully maintained so as to be fit for its intended purpose in accordance with this Standard. I further declare that the Rescue Boat is in a safe condition (including the hull, machinery and equipment) and that it is operated within its operation limitations and operating procedures and risk assessments are followed. Any deficiencies highlighted in the latest survey report have been rectified, as have any outstanding deficiencies from previous reports within the specified time periods.

I confirm that, the appointed Competent Person examined the Rescue Boat in the water and out of the water on..... ,in accordance with the Code of Practice for Open Rescue Boats of Less Than 15 metres in Length and that in his and my opinion the Rescue Boat is fit for service under this Standard.

Signed.....Date.....

APPENDIX 9 – RESCUE BOAT CERTIFICATE OF COMPLIANCE

**RESCUE BOAT CERTIFICATE OF COMPLIANCE
OPEN RESCUE BOAT OF LESS THAN 15 METRES IN LENGTH**

Name of Rescue Boat

Make and Type

Base Location

Maximum Number of
Persons to be Carried

Date of Build

Name and Address of Rescue Boat
Organisation

Length Overall

Unique Identification Number

Operational Limitations

This is to certify that the above listed Organisation and Rescue Boat declarations were examined by

Responsible Person of

at

on

[dd/mmmm/yyyy]

and found to be in accordance with the requirement of the Code of Practice for Open Rescue Boats of less than 15 metres in Length, published by the Maritime and Coastguard Agency, with respect to for the Construction, Machinery, Equipment, Stability, Procedures and Examination.

This certificate will remain valid until

[dd/mmmm/yyyy]

subject to the Rescue Boat, its construction, machinery, equipment, stability and procedures being examined annually as required by the Code and those examinations are recorded on the RB2 form, that it is efficiently maintained by regular self-examination and the manning complies with the Code of Practice.

In addition, an operational inspection of the above named Rescue Boat Organisation was conducted and was found to meet a safe and effective standard. The normal are of operation is

Issued at

on

20

For and on Behalf of

Name of Responsible Person

Date

[dd/mmmm/yyyy]

Signed

┌

└

This Certificate is valid for 5 years

┌

└

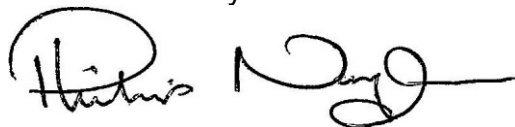
Official Stamp

APPENDIX 10 – GENERAL EXEMPTION

OPEN RESCUE BOATS OF LESS THAN 15 METRES IN LENGTH

1. The Secretary of State has considered the requirements of the Regulations listed in Part 1 of the Schedule to this Appendix (“the Schedule”), and is satisfied that:
 - (1) It is unreasonable, impracticable, or unnecessary for a ship⁴⁹ that complies with the Rescue Boat Code to comply with those Regulations; and
 - (2) Compliance with the Rescue Boat Code is as effective as, and provides an equivalent level of safety to, complying with those Regulations.
2. In exercise of the powers listed in Part 2 of the Schedule, the Secretary of State exempts from the Regulations listed in Part 1 of the Schedule any ship in respect of which a Rescue Boat Certificate of Compliance has been issued and that complies with the conditions in paragraph 4.
3. This exemption has immediate effect and remains in effect until cancelled by the Secretary of State.
4. The conditions mentioned in paragraph 2 are that:
 - (1) The ship’s construction, machinery, equipment, stability and procedures have been examined and found by a Rescue Boat Organisation to comply with the applicable requirements of the Rescue Boat Code;
 - (2) The ship is operated and manned in accordance with any limitations or conditions listed on the Rescue Boat Certificate of Compliance issued by a Rescue Boat Organisation; and
 - (3) The Rescue Boat Certificate of Compliance issued in respect of the ship remains in force.

Dated 22nd May 2013



Philip Naylor
Director of Maritime Safety and Standards, for the Secretary of State

Maritime and Coastguard Agency
105 Commercial Road
Southampton
SO15 1EG

⁴⁹ All references to a ship in this Appendix are references to a boat to which the Rescue Boat Code is capable of applying.

Schedule to Appendix 10

Part 1 – Regulations from which compliant Rescue Boats are exempted

Citation	Reference ⁵⁰
Merchant Shipping (Survey and Certification) Regulations 1995	SI 1995/2010
Merchant Shipping (Training and Certification) Regulations 1997	SI 1997/348
Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997	SI 1997/1320
Merchant Shipping (Crew Accommodation) Regulations 1997	SI 1997/1508
Merchant Shipping (Fire Protection: Small Ships) Regulations 1998	SI 1998/1011
Merchant Shipping (Load Line) Regulations 1998	SI 1998/2241
Merchant Shipping (Marine Equipment) Regulations 1999	SI 1999/1957
Merchant Shipping (Life-Saving Appliances for Ships Other Than Ships of Classes III to VI(A)) Regulations 1999	SI 1999/2721
Merchant Shipping (Safety of Navigation) Regulations 2002	SI 2002/1473
Merchant Shipping (Maritime Labour Convention) (Medical Certification) Regulations 2010	SI 2010/737
Merchant Shipping (Hours of Work) Regulations 2002	SI 2002/2125
Merchant Shipping (High Speed Craft) Regulations 2004	SI 2004/302
Merchant Shipping and Fishing Vessels (Medical Stores) Regulations 1995	SI 1995/1802

Part 2 – Exemption powers exercised

1. SI 1995/1210 – regulation 2(2), in relation to any and all requirements of that SI
2. SI 1997/1320 – regulation 18, in relation to any and all requirements of that SI
3. SI 1997/1508 – regulation 37, in relation to any and all requirements of Part III of that SI

⁵⁰ All references to statutory instruments are references to those statutory instruments as amended.

4. SI 1998/1011 – regulation 47, in relation to any and all requirements of that SI
5. SI 1998/2241 – regulation 5(2), in relation to any and all requirements of that SI
6. SI 1999/2721 – regulation 85(3), in relation to any and all requirements of that SI
7. SI 2002/1473 – regulation 7(5), in relation to the requirements specified in regulation 7(5) of that SI
8. SI 2004/302 – regulation 4(1), in relation to any and all requirements of that SI
9. Merchant Shipping Act 1995 (“MSA”) –
 - (1) Section 48, in relation to any requirements of SI 1997/348 made under section 47 MSA (Manning); and
 - (2) Section 294, in relation to:
 - (a) Any and all requirements of SI 1997/348, other than those made under section 47 MSA (Manning);
 - (b) Any and all requirements of SI 1997/1508, other than those contained in Part III;
 - (c) Any and all requirements of SI 1999/1957;
 - (d) Any and all requirements of SI 2002/1473, other than those specified in regulation 7(5);
 - (e) Any and all requirements of SI 2010/737;
 - (f) Any and all requirements of SI 2002/2125;
 - (g) Any and all requirements of SI 1995/1802; and
 - (h) The requirements for a certificate to be issued in respect of a ship contained in:
 - (i) Regulation 14 of SI 1995/1210; and
 - (ii) Regulation 12 of SI 1998/2241

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