POLICE BOAT CODE
ANNEXES

CONTENTS

10.2.1. Vessels operating less than 60 miles from a safe haven

10.3. Boat Righting Systems

10.4. Lifebuoys

10.5. Lifejackets

10.6. Thermal Protective Aids

10.7. Portable VHF

10.8. 406MHz or Inmarsat E EPIRB

10.9. SART

10.10. General/Fire Alarm

10.11. Pyrotechnics

10.12. Training Manual

10.13 Instruction Manual (on board maintenance)

11. Fire Safety

11.1. General

11.2. Vessels where the Total Installed Power Exceeds 750 kW, or Carrying 16 or More Persons.

11.3. Insulation

11.4. Cleanliness (and Pollution Prevention)

11.5. Open Flame Gas Appliances

11.6. Furnishing Materials

11.7. Fire Detection

11.8. Means of Escape

12. Fire Appliances

    12.1. General

    12.2. Vessels Less than 6 metres in Length Operating less than 3 miles to sea from a safe haven.

    12.3. Open Vessels, Inflatable Boats and Boats with a Buoyant Collar up to 8m in Length not Fitted with a Substantial Enclosure.

    12.4. Vessels Less than 15 metres in Length and Carrying 15 or Less Persons, not covered by Sections 12.2 or 12.3.

    12.5. Vessels 15 metres or More in Length or Carrying 16 or More Persons.

    12.6. Provision for Fire Extinguishing in Machinery Spaces

    12.7. Informative Notes

13. Radio Equipment

    13.1. General Requirements

    13.2. Radio Installation

14. Navigation Lights, Shapes and Sound Signals

15. Navigational Equipment

    15.1. Magnetic Compass

    15.2. Fluxgate Compass

    15.3. Other Equipment

16. Miscellaneous Equipment

    16.1. Nautical Publications

APPENDIX 1	Extract from MGN 105 (M) – Guidelines on the use and fitting of retro-reflective materials on life-saving appliances.
APPENDIX 2	Medical Stores for all Police Boats
APPENDIX 3	Liquid Petroleum Gas Installation for Domestic Use
APPENDIX 4	Pre-departure safety briefing for Police vessels carrying passengers.
APPENDIX 5	MARPOL Oil Pollution Prevention Information
APPENDIX 6	Fire Test for FRP
APPENDIX 7	Ignitability Test for Combustible Material
APPENDIX 8	Exposure of Personnel to Potentially Harmful Noise
APPENDIX 9	Standards Appendix

ANNEX 2 - Application for a Police Boat Certificate

ANNEX 3 – Boatbuilder's Declaration

ANNEX 4 - Owner's Declaration

ANNEX 5 – Record of Particulars

ANNEX 6 – Declaration of Survey

ANNEX 7 – Police Boat Certificate

ANNEX 8 – Firearms

ANNEX 9 – Diving

ANNEX 10 – General Exemption

ANNEX 11 - Amendments to the text of the Police Boat Codes Of Practice (PBC3)

ANNEX 1

TECHNICAL STANDARDS

1 Construction and Structural Strength

1.1 General Requirements

1.1.1 A vessel which operates up to 60 miles from a safe haven (except in special circumstances allowed under Police Boat Code B) should be fitted with a watertight weather deck over the length of the vessel, satisfying the requirements of Section 1.3.1, and be of adequate structural strength to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

1.1.2 A vessel which is not fitted with a watertight weather deck in accordance with Section 1.1.1 should normally be restricted to 20 miles from a safe haven and be provided with adequate reserves of buoyancy and stability for the vessel with its full complement of persons to survive the consequences of swamping. An open boat should normally be restricted to 20 miles from a safe haven.

1.1.3 Sections 1.1.4 and 1.1.5 apply to a vessel referred to in section 1.1.2.

1.1.4 An open boat should not carry cargo, or a combination of passengers and cargo, for which the cargo element is in excess of 1000kg (refer to Sections 8 Stability and 9 Freeboard). Such a vessel may not be fitted with a lifting device, or be engaged in towing operations.

1.1.5 A motor vessel fitted with a watertight weather deck, which does not meet the freeboard requirements of Section 9.2, but which possesses adequate reserves of buoyancy above the weather deck, may be considered for the operations defined in Section 1.1.4 above, provided the following conditions are satisfied:-

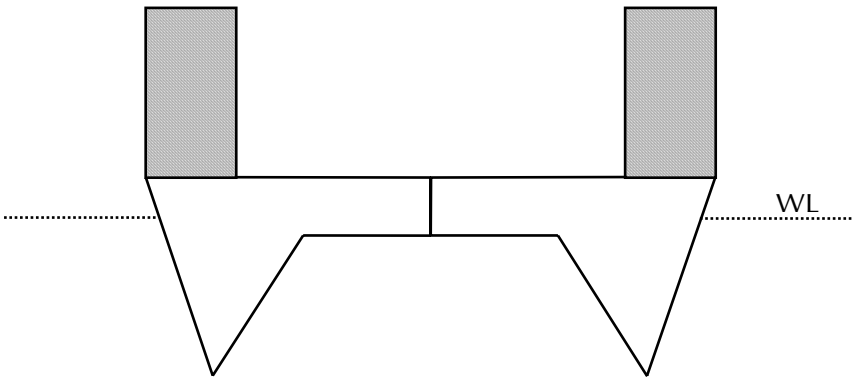
.1 Freeboard to the gunwale edge should meet that required by Section 9.2.2.3.3 Freeboard to the weather deck should be positive in all loading conditions.

.2 The recess bounded by the reserve buoyancy and gunwales should meet the standard for quick-draining cockpits for Category A vessels, within ISO 11812 –

'Small Craft – Watertight Cockpits and Quick-draining Cockpits', or equivalent.

.3 The vessel should comply with the relevant intact stability criteria for transverse stability, and should display positive longitudinal stability, for the duration of the drain time.

1.1.6 A diagram showing a suitable type of arrangement for the purposes of section 1.1.5 is shown below. Shaded areas show buoyancy above the watertight deck, in this case at the vessel sides, but which may equally be fore and aft.



1.2 Structural Strength

1.2.1 General

The design of hull structure and construction should provide strength and service life for the safe operation of a vessel, at its service draught and maximum service speed, to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

1.2.2 Construction materials

1.2.2.1 A vessel may be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy, steel or combinations of such materials. Requirements for materials used for the construction of inflatable and rigid inflatable boats are given in Section 1.5.2.

1.2.2.2 Proposals to use any other material should be submitted to the Certifying Authority for consideration and approval. When a Certifying Authority considers it does not have the necessary expertise to deal with vessels of the hull material proposed, the Administration should be consulted with regard to the procedures to be adopted.

1.2.2.3 The hull of a vessel which has been surveyed and certificated by an UK Load Line Assigning Authority should be acceptable, subject to presentation of a Certificate of Construction.

1.2.2.4 UK Load Line Assigning Authorities, in addition to the MCA, are American Bureau of Shipping, Bureau Veritas, Det Norske Veritas, Germanischer Lloyd, Lloyd's Register, Nippon Kaiji Kyokai and Registro Italiano Navale.

1.2.2.5 A vessel which has not been built under the survey of an UK Load Line Assigning Authority will be considered to be of adequate strength after a satisfactory examination by an authorised person and if it has been built:-

.1 in accordance with the hull certification standards for small vessels, recognised by one of the Authorities; or

.2 in general accord with the standard of a vessel which has a record of at least five years' history of safe operation in an area where the sea and weather conditions are no less severe than those likely to be encountered in the intended area of operation.

1.2.2.6 A vessel not built in accordance with either Section 1.2.2.3 or 1.2.2.5 may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the Certifying Authority.

1.2.2.7 A vessel with an existing certificate at the date of coming into force of the Codes, or in possession of a valid Load Line Certificate or Load Line Exemption Certificate appropriate to the operational area shall continue to be considered of adequate strength for its existing operational area.

1.3 Decks

1.3.1 Weather deck

1.3.1.1 A watertight weather deck referred to in Section 1.1.1 should extend from stem to stern and have positive freeboard throughout, in any condition of loading of the vessel. (Minimum requirements for freeboard are given in Section 9.)

1.3.1.2 A weather deck may be stepped, recessed or raised provided the stepped, recessed or raised portion is of watertight construction.

1.3.2 Recesses

1.3.2.1 For water freeing arrangements generally, see Section 3 and for freeboard requirements, see Section 9.

1.3.2.2 A recess in a weather deck complying with Section 1.3.1.1, should be of watertight construction and have means of drainage capable of efficient operation when the vessel is heeled to 10°. Such drainage is to have an effective area, excluding grills and baffles, of at least 20cm^2 for each cubic metre of volume of recess below the weather deck.

1.3.2.3 Alternative arrangements for the size and drainage of a recess may be accepted provided it can be demonstrated that, with the vessel upright and at its deepest draught, the recess drains from a swamped condition within 3 minutes; or the cockpit or recess should comply with ISO 11812 (Small Craft – Watertight and Quick Draining Cockpits) for the relevant design category as shown in the table in Section 8.7.

1.3.2.4 If a recess is provided with a locker which gives direct access to the interior of the hull, the locker should be fitted with weathertight cover(s). In addition the cover(s) to the locker should be permanently attached to the vessel's structure and fitted with efficient locking devices to secure the cover(s) in the closed position.

1.4 Watertight Bulkheads

1.4.1 The strength of a watertight bulkhead and the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Certifying Authority.

1.4.2 When pipes, cables, etc penetrate watertight bulkheads, they should be provided with valves and/or watertight glands, as appropriate.

1.4.3 A doorway fitted in a watertight bulkhead should be constructed so as to be watertight from both sides and be kept closed at sea, unless opened for access only, at the discretion of the skipper. A notice should be fitted to both sides of the door "To be kept closed at sea, open for access only". Sliding watertight doors, where fitted, are to be provided with suitable safety provision to avoid injury to personnel by closure of the door.

1.5 Inflatable Boats

1.5.1 General

1.5.1.1 The following requirements should apply to an inflatable or rigid inflatable boat, other than a tender (dinghy) covered by Section 21.

1.5.1.2 Generally, an inflatable boat or rigid inflatable boat which is intended to operate as an independent vessel operating up to 60 miles from a safe haven, or a vessel of more than 8 metres in length (and is not a tender operating from a vessel) 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.48(66) – International Life-Saving Appliance Code and MSC.81(70) – Testing and Evaluation 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.

1.5.1.3 An inflatable boat or rigid inflatable boat, of less than 8 metres in length, which is intended to operate as an independent vessel up to 20 miles from a safe haven should be of a design and construction which would meet the requirements of ISO 6185 Part 2 or 3. Inflatable boats or rigid inflatable boats meeting the requirements of ISO 6185 Part 1 are not suitable for operation under the Code of Practice. Vessels over 8 metres in length should be assessed in accordance with Section 1.5.1.1.

1.5.1.4 The structure of the rigid hull of a rigid inflatable boat may alternatively be assessed in accordance with Section 1.2.2.

1.5.1.5 When the production of boats is covered by an approved quality system and boats are built in batches to a standard design, prototype tests on one boat may be accepted for a boat of the same design submitted for compliance with the Code.

1.5.1.6 A boat should be of sufficient strength to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

1.5.1.7 A boat which meets these requirements may be accepted if provided with adequate reserves of buoyancy and stability for the vessel to survive the consequences of swamping, when loaded with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated. (See Section 8 and 9 for applicable standard).

1.5.2 Construction materials

1.5.2.1 For boats complying with Section 1.5.1.1, materials should satisfy the requirements of Chapter III of the 1974 SOLAS Convention, as amended (including ISO 15372:2000 Ships and marine technology. Inflatable rescue boats. Coated fabrics for inflatable chambers), except that fire–retarding characteristics are not required for the hull material.

1.5.2.2 For boats complying with Section 1.5.1.2, materials should satisfy the requirements of ISO 6185 Part 2 or Part 3 as appropriate to the engine size.

1.5.2.3 A new boat of a type certified as a rescue boat under the Merchant Shipping (Marine Equipment) Regulations 1999 (SI 1957) or provided with a letter of compliance for use as a fast rescue boat for offshore stand-by vessels, or any equivalent certification or compliance, should be accepted as complying with the construction requirements of the Codes.

1.5.2.4 A new boat which is not built in accordance with either Section 1.5.1.1 or 1.5.1.2 may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the Certifying Authority.

1.5.2.5 A permanent shelter provided for the protection of persons on-board should be of construction adequate for the intended purpose and the intended area of operation.

1.5.3 Testing

1.5.3.1 In addition to the examination regime in accordance with Section 5 of the Police Boat Common Code the following should be applied during the life of the certificate:

.1 Annually (by the owner/managing agent) – An airtightness test as follows;

- Inflate each compartment of the boat individually to 120% of the safe working pressure.
- Check Integrity of tubes and seams for each compartment with soapy water and, in the case of a rigid inflatable boat, the integrity of the joints between the tubes and the hull.

- Check that after 30 minutes the pressure is still at 120%.

- Inflate all compartments to the safe working pressure, and record the ambient temperature. After 24 hours in this condition, pressures should be rechecked and the ambient temperature retaken. and then check that the pressure is not less than 100% of working pressure.

- A declaration should be sent to the Certifying Authority on completion.

.2 At the renewal survey, testing shall be conducted to the satisfaction of the Certifying Authority by a competent person in accordance with the manufacturer's recommendations.

2 Weathertight Integrity

2.1 General

2.1.1 A vessel should be designed and constructed in a manner which will prevent the ready ingress of sea water and in particular comply with the following requirements. For strength and watertightness purposes only, the requirements of ISO 12216 are considered acceptable.

2.2 Hatchways and Hatches

2.2.1 General requirements

2.2.1.1 A hatchway which gives access to spaces below the weather deck should be of efficient construction and be provided with efficient means of weathertight closure.

2.2.1.2 A cover to a hatchway should be hinged, sliding, or permanently secured by other equivalent means to the structure of the vessel and be provided with sufficient locking devices to enable it to be positively secured in the closed position.

2.2.1.3 A hatchway with a hinged cover which is located in the forward portion of the vessel should normally have the hinges fitted to the forward side of the hatch, as protection of the opening from boarding seas. A hatch with the hinges on the after side of the hatch should be secured closed at sea, and be provided with a suitable blank. This is not intended to apply to small technical spaces drained directly overboard, e.g. anchor lockers.

2.2.1.4 Hatches which are used for escape purposes should be capable of being opened from both sides.

2.2.1.5 Hatches in recessed or stepped decks of vessels described in 1.3.1.2, that provide access to sea inlet valves, should have access openings at least 300mm above the minimum freeboard to deck (see 9.2.2), or the sea inlet valves fitted with remote closing devices.

2.2.2 Hatchways which are open at sea

In general, hatches should be kept secured closed at sea. However, a hatch (other than one referred to in Section 2.3.2) which is to be open at sea for lengthy periods should be:-

.1 kept as small as practicable, but never more than 1m² in plane area at the top of the coaming;

.2 located on the centre line of the vessel or as close thereto as practicable;

.3 fitted such that the access opening is at least 300mm above the top of the adjacent weather deck at side.

2.3 Doorways and Companionways

2.3.1 Doorways located above the weather deck

2.3.1.1 A doorway located above the weather deck which gives access to spaces below should be provided with a weathertight door. The door should be of efficient construction, permanently attached to the bulkhead, not open inwards, and sized such that the door overlaps the clear opening on all sides, and has efficient means of closure which can be operated from either side.

2.3.1.2 A doorway should be located as close as practicable to the centre line of the vessel. However, if hinged and located in the side of a house, the door should be hinged on the forward edge. Doors using articulated systems should be specially considered, in order to provide an equivalent arrangement.

2.3.1.3 A doorway which is either forward or side facing should be provided with a coaming, the top of which is at least 300mm above the weather deck. A coaming may be portable provided it can be permanently secured to the structure of the vessel and can be locked in position whilst at sea.

2.3.2 Companion hatch openings

2.3.2.1 A companion hatch opening from a cockpit or recess which gives access to spaces below the weather deck should be fitted with a coaming or washboard, the top of which is at least 300mm above the sole of the cockpit or recess.

2.3.2.2 When washboards are used to close a vertical opening they should be so arranged and fitted that they will not become dislodged.

2.3.2.3 The maximum breadth of the opening of a companion hatch should not exceed 1m.

2.4 Skylights

2.4.1 A skylight should be of efficient weathertight construction and should be located on the centre line of the vessel, or as near thereto as practicable, unless it is required to provide a means of escape from a compartment below deck.

2.4.2 When a skylight is an opening type it should be provided with efficient means whereby it can be secured in the closed position.

2.4.3 A skylight which is provided as a means of escape should be capable of being opened from both sides.

2.4.4 Unless the glazing material and its method of fixing in the frame is equivalent in strength to that required for the structure in which it is fitted, a portable “blank” should be provided which can be efficiently secured in place in event of breakage of the glazing.

2.5 Portlights and Windows

2.5.1 A portlight or window to a space below the weather deck or in a step, recess, raised deck structure, deckhouse or superstructure protecting openings leading below the weather deck should be of efficient construction which provides weathertight integrity (and be of strength compatible with size) for the intended area of operation of the vessel.

2.5.2 A portlight or window should not be fitted in the main hull below the weather deck, unless the glazing material and its method of fixing in the frame are equivalent in strength, with regard to design pressure, to that required for the structure in which it is fitted.

2.5.3 Portlights fitted in the hull of the vessel below the level of the weather deck should be either non-opening or of a non-readily opening type, have a glazed diameter of not more than 250mm, or equivalent area, and be in accordance with a standard recognised by the Administration. Portlights of the non-readily opening type must be secured closed when the vessel is in navigation. Proposals to accept portlights, to a recognised standard, greater than 250mm diameter, up to a maximum of 400mm or equivalent area, maybe considered, with due regard to their fore and aft, and vertical positioning, to the satisfaction of the Certifying Authority. Proposals for larger portlights may be considered by the Administration.

2.5.4 Portlights, windows and their frames should meet the appropriate Marine Standards defined in equivalent British,

European, National or International Standards or Classification Rules.

2.5.5 A portlight fitted below the weather deck and not provided with an attached deadlight should be provided with a "blank" (the number of blanks should be sufficient for at least half of the number of such portlights of each different size in the vessel), which can be efficiently secured in place in the event of breakage of the portlight. The blank should be of suitable material and strength to the satisfaction of the Certifying Authority.

2.5.6 Such a "blank" is not required for a non-opening portlight which satisfies Section 2.5.

2.5.7 For the wheelhouse:-

.1 windows and their frames should meet the requirements of Section 2.5.4, having due regard to the increased thickness of windows comprising one or more laminations in order to achieve equivalent strength;

.2 polarised or tinted glass should not be used in windows provided for navigational visibility (although portable tinted screens may be provided for nominated windows); and

2.6 Ventilators and Exhausts

2.6.1 A ventilator should be of efficient construction and, where situated on the weather deck and not complying with Section 2.6.3, should be provided with a readily available means of weathertight closure, consideration should be given to requirements of Fire Protection (Section 11).

2.6.2 A ventilator should be kept as far inboard as practicable and the height above the deck of the ventilator opening should be sufficient to prevent the ready admission of water when the vessel is heeled. (See Sections 8.3, 8.4 and 8.6)

2.6.3 A ventilator which must be kept open, e.g. for the supply of air to machinery or for the discharge of noxious or flammable gases, should be specially considered with respect to its location and height above deck having regard to Section 5.5.2 and the downflooding angle. (See Sections 8.3, 8.4 and 8.6.)

2.6.4 Motor vessels which are fitted with engine air intakes in the hull side, which do not satisfy the requirements of the Code may be

accepted by a Certifying Authority, but restrictions on operations may be necessary.

2.6.5 An engine exhaust outlet which penetrates the hull below the weather deck should be provided with means to prevent backflooding into the hull through the exhaust system. The means may be provided by system design and/or arrangement, built-in valve or a portable fitting which can be applied readily in an emergency.

2.7 Air Pipes

2.7.1 When located on the weather deck, an air pipe should be kept as far inboard as possible and have a height above deck sufficient to prevent inadvertent downflooding when the vessel is heeled. (See Sections 8.3, 8.4 and 8.6)

2.7.2 An air pipe, of greater than 10mm inside diameter, serving a fuel or other tank should be provided with a permanently attached means of weathertight closure. Means of closure may be omitted if it can be shown that the open end of the air pipe is afforded adequate protection by other means, which will prevent the ingress of water.

2.7.3 An air pipe serving a fuel tank (also see Section 7.4.4) or other tank, where provided with a closing appliance, should be of a type which will prevent excessive pressure on the tank boundaries. Provision should be made for relieving a vacuum when tanks are being drawn from or emptied.

2.8 Sea Inlets and Discharges

2.8.1 An opening below the weather deck should be provided with an efficient means of closure.

2.8.2 When an opening is for the purpose of an inlet or discharge below the waterline it should be fitted with a seacock, valve or other effective means of closure which is readily accessible.

2.8.3 When an opening is for a log or other sensor, which is capable of being withdrawn, it should be fitted in an efficient watertight manner and provided with an effective means of closure when such a fitting is removed.

2.8.4 Inlet and discharge pipes from marine toilets should be provided with shell fittings as required by Section 2.8.2. When the rim of a marine toilet is less than 300mm above the deepest waterline

of the vessel, unless otherwise indicated by manufacturer's recommendations, anti - syphon measures should be provided.

2.9 Materials for Valves and Associated Piping

2.9.1 A valve or similar fitting attached to the side of the vessel below the waterline, within an engine space or other high fire risk area, should be normally of steel, bronze, copper, or other non-brittle fire resistant material or equivalent.

2.9.2 When plastic piping is used it should be of good quality and of a type suitable for the intended purpose.

2.9.3 Flexible or non-metallic piping, which presents a risk of flooding, fitted in an engine space or fire risk area should be efficiently insulated against fire, or be of fire resistant material, e.g. ISO Standard 7840 or exhaust quality rubber hosing, or a means should be provided to stop the ingress of water in the event of the pipe being damaged, operable from outside the space. (See Section 2.9.1 for valve requirements.)

3 Water Freeing Arrangements

3.1. When a deck is fitted with bulwarks such that shipped water may be trapped behind them, the bulwarks should be provided with efficient freeing ports that will ensure the deck can be effectively drained. This section is not intended to apply to inflatable boats or boats fitted with a buoyant collar, as these requirements are dealt with in other parts of the Code.

3.2. In a motor vessel, the area of freeing ports should be at least 4% of the bulwark area and be situated in the lower third of the bulwark height, as close to the deck as practicable.

3.3 A vessel of less than 12 metres in length, having a well deck aft which is fitted with bulwarks all round and which is intended to operate no more than 60 miles from a safe haven, should be provided with freeing ports required by Section 3.2.1 or may be provided with a minimum of two ports fitted (one port and one starboard), which may be in the transom, each having a clear area of at least 225 cm^2 (0.0225 m^2). Ports may only be fitted in the transom on vessels where the shipping of water will not result in a trim by the head such that water will not drain.

3.4 Smaller ports may however be accepted in a vessel having only small side deck areas in which water can be trapped, the reduced area being based on the volume of water which is likely to become so trapped. The following correction to the required freeing port area may be applied:-

$$FP_{REQ} = FP_{MAX} * (A_{ACT} / A_{MAX})$$

Where

FP_{REQ} = Freeing port area required
FP_{MAX} = Maximum freeing port area required
A_{ACT} = Actual area of deck fitted with enclosed bulwarks, excluding superstructure or deckhouse area
A_{MAX} = Area of maximum sized well (0.7L x B) where L and B are the dimensions of the vessel

3.5 When a non-return shutter or flap is fitted to a freeing port it should have sufficient clearance to prevent jamming and any hinges should have pins or bearings of non-corrodible material.

3.6 A decked vessel which does not comply with the freeboard requirements of Section 9, and does not possess reserve buoyancy above the weather deck, as defined in Section 1.1.5, should be treated as an open boat and be provided with bilge pumping in accordance with Section 7.4.

3.7 In a vessel where freeing ports cannot be fitted, other efficient means of clearing trapped water from the vessel should be provided to the satisfaction of the Certifying Authority.

3.8 Structures and spaces considered to be non-weathertight should be provided with efficient drainage.

3.9 Where cargo, or activity related equipment, is to be stowed on deck, the stowage arrangement should be such as to not impede the free flow of water from the deck.

4 Machinery

4.1 General Requirement

4.1.1 Generally, machinery installations should comply with the requirements given below. Other installations proposed may be specially considered, provided that full information is presented to and approved by the Administration.

4.1.2 In motor vessels, the main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel should be designed to operate when the vessel is upright and when inclined at any angle of heel and trim up to and including 15 degrees and 7.5 degrees respectively either way under static conditions.

4.2 Diesel Engines

4.2.1 A vessel fitted with either an inboard or an outboard diesel engine should be provided with an engine suitable for marine use and with sufficient fuel tankage for its area of operation.

4.3 Petrol Engines

4.3.1 A petrol engine may be accepted provided that the engine is a suitable outboard type.

4.3.2 A vessel of any type may be fitted with a small engine (usually less than 5 horse power) manufactured with an integral fuel tank, provided a safety warning sign is displayed with details of appropriate precautions to be taken when filling the fuel tank.

4.3.3 Vessels other than inflatable boats should supply fuel to the engine from either;

.1 a permanently installed fuel tank constructed to an appropriate standard (see Standards Appendix 9) and in the case of vessels fitted with a watertight weather deck shall have arrangements such that spillage during fuel handling will drain directly overboard; or

.2 a portable tank of 27 litres or less in capacity complying to an appropriate standard (see Standards Appendix 9).

4.3.4 Inflatable boats should supply fuel to the engine from a portable tank of 27 litres or less in capacity complying to an appropriate standard (see Standards Appendix 9).

4.3.5 In locations where an accumulation of hydrocarbon vapours is likely to occur, a suitable hydrocarbon gas detector should be fitted under or adjacent to the tank (located in a safe place). The detector components, and any other electrical equipment residing in the vapour area should not be capable of causing ignition.

4.3.6 A vessel should be provided with sufficient fuel tankage for its area of operation, spare portable petrol containers must not be carried onboard unless it is judged to be essential to assure the safe completion of a voyage or excursion (see Section 4.7).

4.3.7 Attention is drawn to the electrical arrangement requirements (Section 5.6).

4.4 Installation

4.4.1 The machinery, fuel tank(s) and associated piping systems and fittings should be of a design and construction adequate for the service for which they are intended. These should be installed and protected so as to reduce to a minimum danger to persons during normal movement about the vessel, with due regard being paid to moving parts, hot surfaces and other hazards.

4.4.2 Means should be provided to isolate a source of fuel which may feed a fire in an engine space. A valve or cock, which is capable of being closed from a position outside the engine space, should be fitted in the fuel feed pipe as close as possible to the fuel tank.

4.4.3 Fuel filling and venting pipes should be constructed of fuel compatible non-kinking material, adequately supported and of sufficient dimensions to prevent spillage during filling.

4.4.4 A venting pipe should be led to the open atmosphere, terminating in a position level with or higher than the fuel filling mouth and its open end protected against:-

.1 water ingress - by a goose neck or other efficient means; and

.2 for petrol engines or where there is a risk from flame ingress - by a suitable gauze diaphragm (which can be detached for cleaning).

4.4.5 In a fuel supply system unit, where a flexible section of piping is introduced, the flexible pipes should be fire resistant/metal reinforced or otherwise protected from fire (See Applicable Standards Appendix). The flexible pipes shall be secured by either metal hose clamps or permanently attached end fittings (e.g. swaged sleeve or sleeve and threaded insert). Where hose clamps are used, the fitting to which the flexible pipe attaches should have a bead, flare, annular grooves or other means of preventing slippage, the anti-slippage arrangement shall not provide a path for fuel leakage.

4.4.6 When the main engine(s) oil fuel system is provided with water separator filter(s) of a type which has plastic or glass bowl(s), it should be located so that it can be easily seen and protected against heat and accidental damage.

4.5 Engine Starting and Stopping

4.5.1 An engine should be provided with either mechanical, hand starting or electric starting with independent batteries, in accordance with the relevant Code.

4.5.2 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.

4.5.3 All internal combustion machinery should have a secure means of remote stopping from outside the engine space.

4.5.4 All inflatable boats, boats fitted with a buoyant collar, and open boats that achieve planing speed, when fitted with remote throttle controls, should be fitted with a kill-cord, to be used at all times during navigation.

4.6 Portable Equipment

4.6.1 When portable equipment powered by a petrol engine is provided, the unit, unless fully drained of fuel, should normally be stored on the weather deck.

4.6.2 Alternatively it may be stowed in a deck locker or protective enclosure which is to the satisfaction of the Certifying Authority and meets the following requirements:-

.1 vapour tight to the vessel's interior;

.2 not openable from the vessel's interior; and

.3 adequately drained overboard and ventilated to atmosphere.

4.6.3 A safety warning sign should be displayed with details of appropriate precautions to be taken when filling the fuel tank.

4.6.4 Gas welding and cutting equipment bottles, if carried, should be stowed in a secure manner on the open deck at a safe distance away from any potential source of fire and should have the capability of being readily jettisoned overboard if necessary.

4.7 Stowage of Petrol

4.7.1 When spare petrol is carried on-board in portable containers, for any purpose, the quantity should be kept to a minimum, the containers should be clearly marked and should normally be stowed on the weather deck where they can readily be jettisoned and where spillage will drain directly overboard.

4.7.2 In small vessels where Section 4.7.1 is not practicable, a 5-litre container of petrol may be stowed in a deck locker which meets the requirements of Section 4.6.2.

5 Electrical Arrangement

5.1 General

5.1.1 Electrical arrangements should be such as to minimise the risk of fire and electric shock. Tanks, machinery or other metallic objects which do not have good electrical continuity with the water surrounding the vessel should have special earthing arrangements to reduce such risks.

5.1.2 The electrical systems described in this section are the most common types suitable for small vessels, i.e. 12V to 24V direct current systems. However, a vessel may have alternating current electrical equipment of much higher voltage, in which case compliance with an applicable standard will be necessary (see Standards Annex).

5.1.3 For general guidance, a number of the most common standards which are appropriate to a small vessel are listed in the Standards Appendix 9. (Other standards which are considered more appropriate and safe for a particular application may be used, provided they are acceptable to the Certifying Authority.)

5.2 Systems

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

5.2.2 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.

5.2.3 Single pole switches are only acceptable when used in the 'live' (+) conductor in a system with one pole earthed. Fuses should not be installed in an earthed conductor.

5.2.4 All circuits, except the main supply from the battery to the starter motor and electrically driven steering motors, should be provided with electrical protection against overload and short circuit, (i.e. fuses or circuit breakers should be installed). The rating of over current protection devices should not exceed the rated current capacity of the conductor being protected. Short circuit protection should be suitable for the total rated current of the consumers in

the circuit protected. Where a single outboard engine is installed, and fitted with in-line fuses, suitable procedures should be established to enable the engine to be started in the event of a damaged fuse.

5.2.5 Steering circuits, the loss of which would lead to steering failure, should have an overload alarm in lieu of overload protection (this does not apply to auto-pilot motors). However all circuits should be protected against short circuit events.

5.3 Lighting

5.3.1 When general lighting within a vessel is provided by a centralised electrical system, an alternative source of lighting (which may be a suitable portable battery operated lamp(s) if practical, taking into consideration the size and complexity of the vessel) should be provided. This alternative source of lighting should be sufficient to:-

.1 enable persons to make their way to the open deck;
.2 illuminate survival craft launching and embarkation;
.3 illuminate man-overboard rescue equipment and rescue areas;
.4 permit work on essential machinery.

5.4 Batteries

5.4.1 Battery system requirements

5.4.1.1 Batteries and battery systems should be provided as indicated in Section 4.5.1, 4.5.2 and 13.2.7.

5.4.1.2 The battery terminals should be protected against accidental contact with metallic objects.

5.4.1.3 Battery charging systems should be fitted with circuitry to prevent overcharging.

5.4.1.4 A battery cut-out switch should be provided for all systems. It is preferred that this switch acts 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.

5.4.1.5 Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment)

should be located in a position not likely to flood in normal operations or in the event of minor damage.

5.4.2 Battery stowage

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

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

5.4.2.3 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.

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

5.4.3 Ventilation

5.4.3.1 To ensure that any evolved hydrogen is expelled, battery compartments, lockers and containers should be exhausted from the highest point of the space and air supplied at a level below the top of the batteries.

5.4.3.2 If mechanical means are employed to ventilate a battery compartment directly, then the components must not be a potential source of ignition. Reference should be made to the requirements of the ATEX Directive (EC Directive 94/9/EC concerned with equipment and protective systems intended for use in potentially explosive atmospheres).

5.5 Cables

5.5.1 Electric cables should be constructed to a recognised standard for marine use in small vessels.

5.5.2 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 an 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.

5.5.3 Note that when selecting cables, particular attention should be given to environmental factors such as temperature and contact with damaging substances, e.g. polystyrene, which degrades PVC insulation.

5.5.4 Adequate provision should be made for securing electrical connections, e.g. by use of locking washers.

5.6 Hazardous Spaces

5.6.1 Where practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. When equipment is installed in such a space it must comply with a recognised standard for prevention of ignition of a flammable atmosphere.

5.6.2 Any compartment which contains a gas consuming appliance or any compartment into which flammable gas may leak or accumulate, should be provided with a hydrocarbon gas detector and alarm. The detector and alarm should be designed to comply with a recognised standard in accordance with Section 5.6.1. (Refer to Section 11.5).

5.7 Lightning Protection

5.7.1 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 Vessels – Electrical Devices – Lightning Protection’

6 Steering Gear, Rudder and Propeller Systems

6.1 Steering

6.1.1 A vessel should be provided with efficient means of steering.

6.1.2 The control position should be located so that the person conning the vessel has a clear view for the safe navigation of the vessel.

6.1.3 When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control. Arrangements may take the form of the following, and be to the satisfaction of the Certifying Authority:-

.1 a tiller to fit the head of the rudder stock; or

.2 a rod attachment which may be fitted to a Z-drive framework; or

.3 a steering oar; or

.4 in the case of twin screw vessels manipulation of power distribution between the drives. In the case of twin stern-drive arrangements, means should be provided to lock the drives in the midships position; or

.5 in the case of a vessel fitted with outboard(s), a means to control the direction of thrust.

6.1.4 If emergency steering is impractical, alternative safety measures and/or procedures to deal with any steering failure situation should be agreed with the Certifying Authority. (The Certifying Authority may consider the application of restrictions to the service area of the vessel.)

6.1.5 Steering systems should comply with an appropriate standard for small craft steering systems (see Standards Appendix 9).

6.2 Rudder System

6.2.1 As appropriate to the vessel, the rudder and rudder stock construction materials, design in total (including tiller head attachments, bearings and pintles) and the supporting structures

should be adequate for the operating conditions of the vessel. Recognised design standards should be used.

6.2.2 Construction and fittings should be to an appropriate standard, to the satisfaction of the Certifying Authority.

6.3 Propeller System

6.3.1 As appropriate to the vessel, propeller line shaft(s) construction materials and design in total (including shaft brackets, propeller securing, bearings, sterntube and thrust block) and supporting structures should be adequate for the operating conditions for the vessel. Recognised design standards should be used.

6.3.2 Construction and fittings should be to an appropriate standard, to the satisfaction of the Certifying Authority.

7 Bilge Pumping

7.1 General System Requirements

7.1.1 A vessel should have an efficient bilge pumping system, with suction pipes so arranged that any compartment (other than a tank permanently used for the carriage of liquids which is provided with efficient means of pumping or drainage) can be drained.

7.1.2 Provided the safety of a vessel is not impaired, the Certifying Authority may permit dispensation from the means of pumping or drainage of particular compartments.

7.1.3 A bilge pump (other than a portable pump) should be capable of being operated with all hatchways and companionways closed.

7.1.4 When considered necessary to protect the bilge suction line from obstruction, an efficient strum box should be provided.

7.1.5 When considered necessary, to prevent back flooding, bilge suction valves should be of non return type.

7.1.6 Means of providing efficient bilge pumping other than those described in this text may be considered provided that full information is submitted to and approved by the Certifying Authority.

7.1.7 Reference should be made to Section 23.2 which contains requirements for prevention of pollution of the sea.

7.1.8 Unless otherwise stated, pump capacities should meet the following minimum requirements

10 litres per minute for vessels of 6 metres in length or less
15 litres per minute for vessels of between 6 and 12 metres in length
30 litres per minute for vessels of 12 metres in length or greater

7.2 Vessels Carrying 16 or More Persons

7.2.1 A vessel should have at least one hand bilge pump and one engine driven or independent power bilge pump, situated in not less than two separate spaces . All pumped spaces should be capable of being drained after the failure of one pump.

7.2.2 For motor vessels, all compartments shall be able to be drained when the vessel is heeled up to an angle of +/– 10 degrees.

7.2.3 For vessels carrying cargo exceeding 1000kg, towing or carrying out lifting operations (excluding own anchors), in addition to the above, the bilge pumps should have a combined capacity of not less than 210 litres per minute. One pump should be power driven with a capacity not less than 140 litres per minute, and the other(s) may be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute.

7.3 Vessels Carrying 15 or Less Persons and Operating up to 60 miles from a safe haven.

7.3.1 Unless otherwise specified in Section 7.4, a vessel should be provided with at least two bilge pumps, one of which may be power driven situated in two separate spaces. All pumped spaces should be capable of being drained after the failure of one pump.

7.3.2 For vessels carrying cargo exceeding 1000kg or towing or carrying out lifting operations (excluding own anchors) in addition to the above the bilge pumps should have a combined capacity of not less than 140 litres per minute. One pump may be power driven and the other(s) should be hand pump(s) suitable for the suction lift head and of capacity not less than 70 litres per minute.

7.4 Open Boats, Inflatable Boats and Boats with a Buoyant Collar

7.4.1 All open boats, of 6 metres in length and over, should carry a hand bailer or bucket in addition to the bilge pumping requirements in Section 7.2 and 7.3.

7.4.2 For vessels of less than 6 metres in length, operating less than 3 miles to sea from a safe haven, a minimum of one hand powered bilge pump or a bailer or a bucket is to be provided.

7.4.3 Buckets required for this section may also be counted in any requirements for buckets given in Section12.

7.5 Bilge Alarm

7.5.1 A bilge alarm should be fitted;

.1 in any watertight compartment containing propulsion machinery; or

.2 in any other compartment likely to accumulate bilge water, i.e. where a skin fitting is present, excluding void spaces, where the bilge level cannot be readily seen

7.5.2 To prevent pollution, compartments containing potential pollutants should not be fitted with auto-start bilge pumps.

7.5.3 An auto-start bilge pump serving a clean compartment where a significant quantity of water could accumulate unnoticed, should be fitted with an audible alarm at the control position(s). Should a number of such locations/alarms be present, then visual alarm indication should also be fitted to enable rapid location of the source of the alarm.

7.5.4 The alarm should provide an audible warning, and preferably a visual warning also, at the control position.

8 Intact Stability

8.1 All Vessels

8.1.1 General

8.1.1.1 The standard of stability to be achieved by a new vessel should be dependent on the maximum number of persons permitted to be carried and the intended area of operation.

8.1.1.2 The following vessels are required to be provided with a stability information booklet which is approved by the Certifying Authority:-

.1 vessels carrying 16 or more persons; or

.2 vessels carrying cargo greater than 1000kg; or

.3 vessels fitted with a lifting device as defined in 8.6;

Note: Motor vessels covered by .1 are not required to carry stability information booklets if the stability is assessed under section 8.3.8 using ISO 12217 Part 1 ‘Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres’.

8.1.1.3 A vessel carrying 15 or less persons, carrying 1000kg or less of cargo, and operating less than 60 miles from a safe haven shall either comply with Section 8.1.1.2 or be subject to a simplified assessment of stability, and is not required to be provided with approved stability information.

8.1.1.4 If a vessel cannot meet the stability criteria given within Section 8, it should be specially considered by the Certifying Authority, and such cases should be reported to the Administration.

8.1.1.7 For stability requirements for an inflatable vessel or a vessel fitted with a buoyant collar, see Section 8.5. For stability requirements for a decked vessel fitted with a lifting device, see Section 8.6.

8.1.1.9 Where a monohull vessel cannot comply with the specified criteria, due to its hullform displaying stability characteristics similar to that of a multihull vessel, the stability criteria for a multihull vessel may be applied, as appropriate for sailing or motor vessels.

8.1.1.10 A motor multihull type vessel failing to comply with the criteria of either Section 8.3.6 or 8.3.7 may be given special consideration. In such a case, calculations should be submitted to the Administration for assessment.

8.1.1.11 All vessels, other than those vessels deemed unsuitable for carriage of the booklet by the Certifying Authority (i.e. vessels with no cabin or shelter), are required to carry the relevant copy of the MCA Stability Guidance Booklet. Where a booklet is not carried on board a copy is to be made available to crew ashore. These booklets are available free of charge from the MCA or Certifying Authority. Although they contain generic safety advice, the stability and freeboard data already generated during the survey process should be appended to the booklet in the relevant section. It is the responsibility of the Certifying Authority to supply this information, and the owner/managing agent is to ensure this data is included.

8.2 Damage Survivability

8.2.1 General

8.2.1.1 This section applies to all monohull vessels carrying 16 or more persons, subject to minimum safe manning levels being agreed by the Certifying Authority.

8.2.1.2 Vessels should be so arranged that after minor hull damage or failure of any one hull fitting in any one watertight compartment, it will satisfy the residual stability criteria below. This may be achieved by fitting water-tight subdivision or alternative methods to the satisfaction of the Certifying Authority. Minor damage should be assumed to occur anywhere in the length of the vessel but not on a watertight subdivision.

8.2.1.3 In assessing survivability, the following standard permeabilities should be used:-

Space	Permeability %
Appropriated for stores	60
Appropriated for stores but not by a substantial quantity thereof	95
Appropriated for accommodation	95
Appropriated for machinery	85
Appropriated for liquids	0 or 95 whichever results in the more onerous requirements

8.2.1.4 Other methods of assessing floodable volume may be considered, to the satisfaction of the Certifying Authority.

8.2.1.5 In the damaged condition, the residual stability should be such that the angle of equilibrium does not exceed 7 degrees from the upright, the resulting righting lever curve has a range to the downflooding angle of at least 15 degrees beyond the angle of equilibrium, the maximum righting lever within that range is not less than 100mm and the area under the curve is not less than 0.015 metre radians. This damage should not cause the vessel to float at a waterline less than 75mm from the weatherdeck at any point. Proposals to accept reduced freeboard or immersion of the margin line may be accepted subject to special consideration.

8.2.2 Multihull vessels

8.2.2.1 Generally, the requirements of Section 11.2.1 for a monohull vessel should apply to a multihull motor vessel carrying 16 or more persons. If a multihull vessel is of unconventional design or cannot meet the damage criteria given in Sections 8.2.1.2 and 8.2.1.3, the results of the calculations should be submitted to the Administration for assessment.

8.3 Motor Vessels Complying with Section 8.2.1.3

8.3.1 The lightship weight, vertical centre of gravity (KG) and longitudinal centre of gravity (LCG) of a monohull vessel should be determined from the results of an inclining experiment.

8.3.2 The LCG of a multihull vessel should be obtained by a displacement check or by weighing. The KG should be determined either by calculation or by experimental means, noting however that a conventional inclining experiment may not produce satisfactory results.

8.3.3 The lightship weight may include a margin for growth, up to 5% of the lightship weight at the discretion of the Certifying Authority, positioned at the LCG and vertical centre of the weather deck amidships or KG, whichever is the higher. (The lightweight margin should not be used in practice to increase maximum cargo-deadweight.)

8.3.4 Curves of statical stability (GZ curves) should be produced for:-

.1 Loaded departure, 100% consumables;

.2 Loaded arrival, 10% consumables;

.3 Anticipated service conditions; and

.4 Conditions involving lifting appliances (when appropriate).

In addition, simplified stability information in the form of a Maximum KG Curve should be provided, including a worked example to illustrate its use.

Maximum free surface moments should be included within the Loaded Departure condition, and as a minimum, factored according to tank percentage fill for all other conditions.

8.3.5 Generally, buoyant structures intended to increase the range of positive stability should not be provided by fixtures to superstructures, deckhouse, masts or rigging.

8.3.6 The curves of statical stability for the loaded conditions should meet the following criteria:-

.1 the area under the righting lever curve (GZ curve) should be not less than 0.055 metre – radians up to 30 degrees angle of heel and not less than 0.09 metre – radians up to 40 degrees angle of heel or the angle of downflooding if this angle is less;

.2 the area under the GZ curve between the angles of heel of 30 and 40 degrees or between 30 degrees and the angle of downflooding if this less than 40 degrees, should be not less than 0.03 metre – radians;

.3 the righting lever (GZ) should be at least 0.20 metres at an angle of heel equal to or greater than 30 degrees;

.4 the maximum GZ should occur at an angle of heel of not less than 25 degrees; and

.5 after correction for free surface effects, the initial metacentric height (GM) should not be less than 0.35 metres.

8.3.7 If a vessel of catamaran or multihull type does not meet the stability criteria given in Section 8.3.6, the vessel should meet the following criteria:-

.1 the area under the righting lever curve (GZ Curve) should not be less than 0.085 metre-radians up to θ_{GZmax} when $\theta_{GZmax} = 15^{o}$ and 0.055 metre-radians up to θ_{GZmax} when $\theta_{GZmax} = 30^{o}$.

When the maximum righting lever, GZmax, occurs between $\theta = 15^o$ and $\theta = 30^o$ the required area under the GZ Curve up to θ_{GZmax} should not be less than:

$$A = 0.055 + 0.002(30^o - \theta_{GZmax}) \text{ metre-radians}$$

where: θ_{GZmax} is the angle of heel in degrees at which the righting lever curve reaches its maximum.

.2 the area under the righting lever curve between $\theta = 30^o$ and $\theta = 40^o$ or between $\theta = 30^o$ and the angle of downflooding θ_f, if this angle is less than 40^o, should not be less than 0.03 metre-radians;

.3 the righting lever GZ should not be less than 0.2 metre at an angle of heel of 30 degrees;

.4 the maximum righting lever should occur at an a angle not less than 15 degrees; and

.5 the initial metacentric height GM_o should not be less than 0.35 metre.

8.3.8 Vessels complying with ISO 12217 Part 1 'Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres', assessed using Options 1 or 2 of Section 2.4 – `Test and calculations to be applied', may as an alternative, after verification of the stability assessment by the Certifying Authority, be assigned an area of operation in accordance with Section 8.3.9.

8.4 Motor Vessels Complying with Section 8.1.1.3

8.4.1 A vessel should be tested in the fully loaded conditions (which should correspond to the freeboard assigned) to ascertain the angle of heel and the position of the waterline which results when all persons which the vessel is to be certificated to carry are assembled along one side of the vessel. (The helmsman may be assumed to be at the helm.) Each person may be substituted by a mass of 100kg for the purpose of the test.

8.4.2 The vessel will be judged to have an acceptable standard of stability if the test shows that:-

.1 the angle of heel does not exceed 7 degrees; and

.2 in the case of a vessel with a watertight weather deck extending from stem to stern, as described in Section

1.1.1, the freeboard to deck is not less than 75mm at any point.

.3 The angle of heel may exceed 7 degrees, but should not exceed 10 degrees, if the freeboard in the heeled condition is in accordance with that required by Section 12 in the upright condition.

8.4.3 Additionally, for vessels over 15 metres in length, the heeling moment applied during the test described in 8.4.1 should be calculated. Using the formula below, the vessel should attain a value of initial GM not less than 0.5m if using an estimated displacement, or 0.35m if the displacement of the vessel is known and can be verified by the Certifying Authority.

$$GM = \frac{57.3 \times HM}{\theta \times \Delta}$$

where: HM = Heeling moment in kilogramme-metres
θ = angle of heel in degrees obtained from the test as defined in 8.4.1
Δ = the displacement of the vessel in kilogrammes, either estimated, or measured and verified by the Certifying Authority

8.4.4 For vessels carrying a combination of passengers and cargo, for which the cargo element does not exceed 1000kg (see definitions), the test defined in Section 8.4.1 should be carried out with the full complement of passengers and cargo, and additionally with passengers only. For the purposes of these tests the cargo may be assumed to retained at its normal stowage position.

8.4.5 In all cases, the maximum permissible weights of persons and/or cargo derived from the tests conducted shall be recorded on the certificate. Vessel loading will be restricted by the position freeboard mark and maximum permissible weight, and thus for the purposes of this test, attention should be paid to any activity related equipment where this may be significant, e.g. diving equipment.

8.4.6 It should be demonstrated by test or by calculation that an open boat, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons for which it is to be certificated and a mass equivalent to its engine and full tank of fuel.

8.4.7 Vessels complying with ISO 12217 Part 1 ‘Small craft - Stability and buoyancy assessment and categorisation - Non-sailing boats of hull length greater than or equal to 6 metres’, assessed

using any Option of Section 2.4 – `Test and calculations to be applied', may as an alternative, after verification of the stability assessment by the Certifying Authority, be assigned an area of operation in accordance with Section 8.3.9.

8.5 Inflatable Boats or Boats Fitted With a Buoyant Collar

8.5.1 General

8.5.1.1 These requirements apply to an inflatable boat, rigid inflatable boat or those vessels with a buoyant collar. Unless a boat to which the Code applies is completely in accordance with a standard production type, for which the Certifying Authority is provided with a certificate of approval for the tests which are detailed below, the tests required to be carried out on a boat floating in still water are shown below. In all cases, the maximum permissible weights of passengers and/or cargo derived from the tests conducted shall be recorded on the certificate. Vessel loading will be restricted by the position freeboard mark and maximum permissible weight, and thus for the purposes of this test, attention should be paid to any activity related equipment where this may be significant, e.g. diving equipment.

8.5.2 Stability Tests

8.5.2.1 The tests should be carried out with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated, on-board. The engine, equipment and cargo may be replaced by an equivalent mass. Each person may be substituted by a mass of 100kg for the purpose of the tests.

8.5.2.2 The maximum number of persons for which a boat is certified should be crowded to one side, with half this number seated on the buoyancy tube. This procedure should be repeated with the persons seated on the other side and at each end of the inflatable boat, rigid inflatable boat or vessel with a buoyant collar. For the purposes of these tests the cargo, or equivalent alternative mass, should be retained at its normal stowage position. In each case the freeboard to the top of the buoyancy tube should be recorded. Under these conditions the freeboard should be positive around the entire periphery of the boat.

8.5.3 Damage tests – inflatable boats

8.5.3.1 The tests should be carried out with all the vessels' equipment, fuel, cargo, activity related equipment (e.g. diving equipment) and number of persons for which it is to be certificated, on-

board. The engine, equipment and cargo may be replaced by an equivalent mass. Each person may be substituted by a mass of 100 kg for the purpose of the tests:-

8.5.3.2 The tests will be successful if, for each condition of simulated damage, the persons for which the inflatable boat or rigid inflatable boat is to be certificated are supported within the inflatable boat or rigid inflatable. The conditions are:-

.1 with forward buoyancy compartment deflated (both sides if appropriate);

.2 with the entire buoyancy, from the centreline at the stem to the transom, on one side of the inflatable boat or rigid inflatable boat deflated.

8.5.3.3 Purely inflatable boats failing to meet Section 8.5.3.1 may be specially considered by the Certifying Authority, taking into account operational service limitations.

8.5.4 Swamp test

8.5.4.1 It should be demonstrated that, when fully swamped, the vessel is capable of supporting its full outfit of equipment, the total number of persons and equivalent mass of cargo for which it is to be certificated, and a mass equivalent to its engine and full tank of fuel.

8.5.4.2 In the swamped condition the inflatable boat, rigid inflatable boat or vessel with a buoyant collar, should not be seriously deformed.

8.5.4.3 An adequate means of draining the boat should be demonstrated at the conclusion of this test.

8.5.5 Person recovery stability test

8.5.5.1 Two persons should recover a third person from the water into the vessel. The third person should feign to be unconscious and be back towards the inflatable boat or rigid inflatable boat so as not to assist the rescuers. Each person involved should wear an approved lifejacket. The vessel should remain stable throughout the operation, and should not capsize.

8.6 Vessel Fitted with a Deck Crane or other Lifting Device

8.6.1 For the purposes of Section 8 only, a lifting device does not include a person retrieval system, the vessel's own anchor handling equipment, or davits for tenders, where judged by the

Certifying Authority not to have a detrimental effect on the stability of the vessel.

8.6.2 Reference should be made to Section 22 for requirements for safety standards other than stability for a vessel fitted with a deck crane or other lifting device.

8.6.3 A vessel fitted with a deck crane or other lifting device should be a decked vessel (or assessed in accordance with Section 1.1.5) and comply with the general requirements of Section 2, which are appropriate to it.

8.6.4 In addition, with the vessel in the worst anticipated service condition for lifting operations, compliance with the following criteria should be demonstrated by a practical test or by calculations.

.1 With the crane or other lifting device operating at its maximum load moment, with respect to the vessel, the angle of heel generally should not exceed 7 degrees or that angle of heel which results in a freeboard to deck edge anywhere on the periphery of the vessel of 250mm, whichever is the lesser angle. (Consideration should be given to the operating performance of cranes or other lifting devices of the variable load-radius type and the load moment with respect to the vessel for lifting devices situated off centreline).

.2 When an angle of heel greater than 7 degrees but not exceeding 10 degrees occurs, the Certifying Authority may accept the lifting condition providing that all the following criteria are satisfied when the crane or other lifting device is operating at its maximum load moment:-

.1 the range of stability from the angle of static equilibrium to downflooding or angle of vanishing stability, whichever is the lesser, is equal to or greater than 20 degrees;

.2 the area under the curve of residual righting lever, up to 40 degrees from the angle of static equilibrium or the downflooding angle, if this is less than 40 degrees, is equal to or greater than 0.1 metre-radians; and

.3 the minimum freeboard to deck edge fore and aft throughout the lifting operations should not be less than half the assigned freeboard to deck edge at amidships. For vessels with less than 1000mm assigned freeboard to deck edge amidships the

freeboard fore or aft should not be less than 500mm.

.4 The freeboard to deck edge anywhere on the periphery of the vessel is at least 250mm.

8.6.5 Information and instructions to the skipper on vessel safety when using a deck crane or other lifting device should be included in the Stability Information Booklet. The information and instructions should include:-

.1 the maximum permitted load and outreach which satisfy the requirements of Section 8.6.2, or the Safe Working Load (SWL), whichever is the lesser (operating performance data for a crane or other lifting device of variable load-radius type should be included as appropriate);

.2 details of all openings leading below deck which should be secured weathertight; and

.3 the need for all personnel to be above deck before lifting operations commence.

8.6.6 Requirements for a lifting system which incorporates counterbalance weight(s) or vessels that cannot comply with the requirements of Section 8.6.2 but is deemed to have adequate residual stability should be specially considered by the MCA.

8.7 Table 8.1 Permitted areas of operation and Design Categories .

Table 8.1

	Minimum Required Standard	Permitted ISO Stability Assessment Options
Permitted Area of Operation	ISO 12217 Design Category	
Up to 60 miles from a safe haven	B	1
Up to 20 miles from a safe haven	B	1
Up to 20 miles from a safe haven in favourable weather and daylight	C	1 and 2
Up to 3 miles to sea from a safe haven	C	1,2,5 and 6

8.8 Approval of Intact and Damage Stability

8.8.1 A vessel not required to have an approved Stability Information Booklet.

8.8.1.1 A vessel for which stability is assessed on the basis of practical tests or simplified methods, defined in Section 8 of the Code, conducted by a competent person(s), should be approved by the Certifying Authority. In order to give approval, the Certifying Authority should be satisfied that the requirements have been met, accepting the results obtained and keeping a detailed record of the procedure of the tests or calculations and the results which were accepted.

8.8.1.2 The Certifying Authority should file the details in the records retained for the vessel, and these details are to be entered on the certificate. See Section 8.1.1.10 for requirements for the carriage of a Stability Guidance Booklet.

8.8.2 A vessel required to have an approved Stability Information Booklet.

8.8.2.1 The owner(s) should be responsible for the inclining test of a vessel to be undertaken by competent persons and for the calculation of the lightship particulars, which are used in the stability calculations.

8.8.2.2 A person competent to the satisfaction of the Certifying Authority should witness the inclining test of a vessel and be satisfied as to conditions and the manner in which the test is conducted.

8.8.2.3 The owner(s) of a vessel should be responsible for the submission of the Stability Information Booklet, based on the Administration's model booklet prepared by a competent person(s), the content and form in which stability information is presented, its accuracy and its compliance with the requirements of Section 8 for the standard required for the vessel. The owner(s) should submit three (3) copies of the booklet to the Certifying Authority for approval.

8.8.2.4 When satisfied with the form and content of the Stability Information Booklet (including satisfaction with the competency of the person(s) who produced the booklet, methods and procedures used for calculations, the stability standard achieved and instructions which may be given to the skipper but excluding accuracy of hull form data), the Certifying Authority should stamp the booklet with an official stamp which contains the name of the Certifying Authority, the date of approval, a file (or record) reference, number of pages in the booklet and "APPROVED FORM AND CONTENT".

8.8.2.5 Two (2) copies of the approved booklet should be returned to the owner(s). The owners should be instructed to confirm that one (1) copy has been placed on the vessel and will be retained on the vessel at all times for use by the skipper. The second booklet is for the record of the owner(s).

8.8.2.6 The Certifying Authority should retain the third copy of the approved booklet in the records kept for the vessel.

8.8.3 A vessel required to have approved damage stability information

8.8.3.1 The owner(s) of a vessel should be responsible for the submission of the damage stability calculations prepared by a competent person(s), their accuracy (including methods and procedures used for calculations) and compliance with the requirements of Section 8.2.

8.8.3.2 The owner(s) should submit two (2) copies of the calculations to the Certifying Authority for approval.

8.8.3.3 The Certifying Authority should approve the results of the damage stability cases provided that the results meet the standard defined in Section 8.2.

8.8.3.4 Approval (of the results but not the accuracy of the calculations) should be given in a formal letter from the Certifying Authority to the owner(s) and a copy of the calculations returned marked with the name of the Certifying Authority, the date and "RESULTS APPROVED".

8.8.4 Guidance on stability assessment

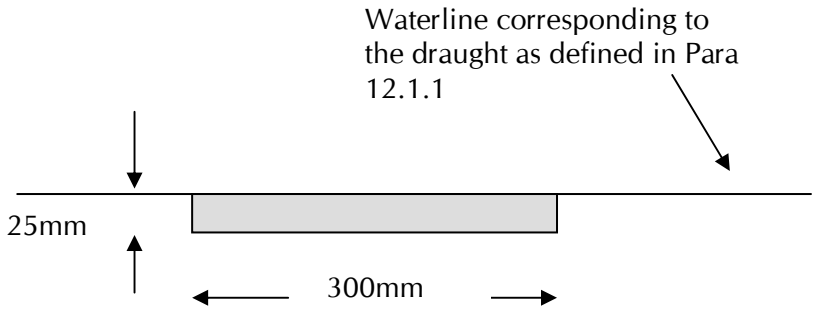
8.8.4.1 It should be noted that the Certifying Authority may require a full stability analysis for a vessel which has been modified from the original design, particularly if the freeboard has been significantly reduced or the modification has involved the addition of, for example, a mast-furled main sail, a roller-reefing headsail, a radar antenna or any other item of equipment which may have caused the position of the vertical centre of gravity to be situated at a higher level than that intended by the designer.

9. Freeboard and Freeboard Marking

9.1 Freeboard mark and loading

9.1.1 The freeboard mark referred to above should measure 300mm in length and 25mm in depth. The marking should be permanent and painted black on a light background or in white or yellow on a dark background. The top of the mark should be positioned at the waterline corresponding to the maximum draught at which the stability of the vessel has been determined, at the position of the longitudinal centre of flotation, as shown in the sketch below:-

Figure 9.1



9.1.2 A vessel should not operate in any condition which will result in its freeboard marks being totally submerged when it is at rest and upright in calm sea water.

9.2 Motor Vessels

9.2.1 General

9.2.1.1 Section 9.2.2.1 defines the requirements for minimum freeboard for a motor vessel whose stability has not been assessed using ISO 12217 'Small craft - Stability and buoyancy assessment and categorisation' Part 1. Section 9.2.3 defines how and when the freeboard mark, and deck line, should be applied. Requirements for an inflatable boat or boat fitted with a buoyant collar, not requiring an approved Stability Information Booklet, are contained within Section 9.2.4.

9.2.1.2 It should be noted that for vessels whose freeboard is not determined using Section 9.2.2.4, and are not provided with an approved stability information booklet, although requirements exist for minimum freeboard, such vessels are not required to be marked with a freeboard mark. In such cases the loading of the

vessel is governed by the maximum permissible weight, in accordance with Section 8, as identified on the vessel's certificate.

9.2.2 Minimum freeboard

9.2.2.1 The freeboard , for a motor vessel whose stability has not been assessed in conjunction with Sections 8.3.8 or 8.4.7, should be not less than that determined by the following requirements:-

9.2.2.2 Vessels which carry cargo or a combination of passengers and cargo for which the cargo element does not exceed 1000kg.

9.2.2.3 A vessel, other than an inflatable or rigid inflatable boat covered by Section 9.2.4, when fully loaded with cargo and non-cargo deadweight items certificated to be carried (each person taken as 100kg) should be upright and:-

.1 in the case of a vessel with a continuous watertight weather deck in accordance with Section 1.3.1.1, which is neither stepped or recessed or raised, have a freeboard measured down from the lowest point of the weather deck of not less than 300 mm for vessels of 7 metres in length or under and not less than 750 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation;

.2 in the case of a vessel with a continuous watertight weather deck in accordance with Section 1.3.1.2, which may be stepped, recessed, or raised, have a freeboard measured down from the lowest point of the weather deck, of not less than 200 mm for vessels of 7 metres in length or under and not less than 400 mm for vessels of 18 metres in length or over. For a vessel of intermediate length the freeboard should be determined by linear interpolation. The raised portion(s) of the watertight weather deck should extend across the full breadth of the vessel and the average freeboard over the length of the vessel should comply with .1 above for a vessel with a continuous watertight weather deck;

.3 in the case of an open boat, have a clear height of side (i.e. the distance between the waterline and the lowest point of the gunwale*) of not less than 400mm for vessels of 7 metres in length or under and not less than 800mm for vessels of 18 metres in length or over. For a vessel of intermediate length the clear height should be determined by linear interpolation;

*(The clear height of the side should be measured to the top of the gunwale or capping or to the top of the wash strake if one is fitted above the capping.)

9.2.2.4 Vessels which carry cargo or a combination of passengers and cargo for which the cargo element exceeds 1000kg, or those that cannot comply with Section 9.2.2.2.

9.2.2.5 Freeboard should be assigned in accordance with the Merchant Shipping (Load Line) Regulations 1998.

9.2.2.6 Such vessels should have a scale of draught marks marked clearly at the bow and stern.

9.2.2.7 A vessel required to be provided with an approved Stability Information Booklet should be assigned a freeboard which corresponds to the draught of the vessel in sea water when fully loaded (each person taken as 75kg), but which in no case should be less than the freeboard required by Section 9.2.2.2 or 9.2.2.4, nor that corresponding to the scantling draught.

9.2.3 Freeboard mark and loading

9.2.3.1 A vessel assigned a freeboard in accordance with Section 9.2.2.4 should be marked with a freeboard mark in accordance with the Merchant Shipping (Load Line) Regulations 1998 and have a scale of draught marks marked clearly at the bow and stern, on both sides of the vessel. The longitudinal position of the draught marks, relative to the longitudinal datum for the hydrostatic data, should be recorded in the Stability Information Booklet, where provided.

9.2.3.2 Where it is considered that the addition of a scale of draught marks is neither practicable or meaningful, for example, due to restricted loading variations, application for special consideration should be made to the Administration.

9.2.3.3 Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck line and freeboard mark should be permanent and painted on a contrasting background.

9.2.3.4 The freeboard mark shall consist of a ring 300 millimetres in outside diameter and 25 millimetres wide, intersected by a horizontal line 450 millimetres long and 25 millimetres wide the upper edge of which passes through the centre of the ring. The top of the intersecting line should be positioned at the waterline corresponding to the assigned freeboard to deck edge at amidships.

9.2.3.5 No mark should be applied for fresh water allowance.

9.2.3.6 The assigning letter marking on the bar of the ring and bar should be D on the left and T on the right when the MCA is the Certifying Authority. In the case of any other Certifying Authority, the assigning letters should be U on the left and K on the right.

9.2.3.7 The freeboard mark for a vessel required to be provided with an approved Stability Information Booklet, other than a vessel complying with Section 9.2.3.1 should be a bar of 300mm in length and 25mm in depth.

9.2.3.8 The marking should be permanent and painted black on a light background or in white or yellow on a dark background. (No assigning letter marking should be placed on the bar marking.)

9.2.3.9 The top of the mark should be positioned at the waterline corresponding to the draught referred to in Section 9.2.2.7, at amidships.

9.2.3.10 Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck-line shall be marked amidships on each side of the ship so as to indicate the position of the freeboard deck. The mark need not be of contrasting colour to the surrounding hull.

9.2.3.11 Where the design of the vessel, or other circumstances, render it impracticable to mark the deck line, the Certifying Authority may direct that it be marked by reference to another fixed point as near as practicable to the position described above.

9.2.3.12 A vessel should not operate in a condition which will result in its freeboard marks being totally submerged when it is at rest and upright in calm sea water.

9.2.4 Inflatable boats and boats fitted with a buoyant collar

9.2.4.1 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 (e.g. diving 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.

9.2.4.2 A freeboard mark is not required. The minimum freeboards recorded during the tests of Section 9.2.4.1 and the permissible

maximum weight which can be carried should be recorded on the certificate for the vessel.

9.2.4.3 For boats operating less than 3 miles to sea from a safe haven only, which do not meet the freeboard requirement of Section 9.2.4.1 at the transom, may still be accepted by the Certifying Authority provided it can be demonstrated that the boat is self-draining when moving ahead, and has a substantial reserve of buoyancy. The Certifying Authority should record such an acceptance in its report for the vessel (report record of particulars).

10 Life-Saving Appliances

10.1 General

10.1.1 All life-saving equipment must be marked in accordance with the guidelines in Marine Guidance Note MGN 105 (M+F) - Use and Fitting of Retro-reflective Material on Life-saving Appliances. See Annex 1 for extract MGN 105 (M+F) for guidelines.

10.1.2 The minimum required life-saving equipment is indicated in Table 10.1.

10.2 Liferafts

10.2.1 Vessels operating less than 60 miles from a safe haven

10.2.1.1 Vessels operating less than 60 miles from a safe haven:-

.1 should be provided with liferaft capacity to accommodate at least the total number of persons on board;

.2 the liferaft(s) provided:-

i) should be constructed to SOLAS standard, Wheelmarked or DfT approved, have insulated floor and canopy and be equipped with a "SOLAS B pack";

ii) should be built to the International Sailing Federation (ISAF), Offshore Special Regulations (OSR) Appendix A Part 2 requirements. Liferaft(s) should be equipped to a level equivalent to that of a "SOLAS B PACK". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft; or

iii) meet the requirements of ISO 9650 – Small Craft Inflatable Liferafts, Part 1, Type 1, Group A provided that they are fitted with a boarding ramp and are equipped to the level of a “SOLAS B PACK”. This may, where necessary, include a ‘grab bag’ to supplement the equipment integral to the liferaft. MIN 241 provides further guidance.

.3 Liferafts should be carried either:-

i) in approved FRP containers stowed on the weather deck or in an open space, and fitted with float free arrangements so that the liferafts float free and inflate automatically; or

ii) in FRP containers or valise stowed in readily accessible and dedicated weathertight lockers opening directly to the weather deck.

.4 Existing vessels using ORC liferafts (ISAF OSR Appendix A Part 1) manufactured before the date of this Code coming into force are not required to upgrade that equipment until the end of its serviceable life. This is also applicable to vessels where the liferaft is supplied on a hired basis. Such liferafts are to be serviced annually at a service station approved by the manufacturer.

.5 Vessels operating less than 3 miles to sea from a safe haven only, may utilise open reversible liferafts, constructed to SOLAS standard, Wheelmarked or DfT approved. Liferaft(s) should be equipped to a level equivalent to a "DfT E Pack". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft.

10.2.1.2 All liferafts, other than those covered in 10.2.1.1.5, should be serviced at a service station approved by the manufacturer and at the manufacturers recommended intervals, however, where the liferaft(s) are stored in valises this should be at least annually.

10.2.1.3 Inflatable liferaft hydrostatic release units (other than the types which have a date limited life and are test fired prior to disposal) should be serviced annually at a service station approved by the manufacturer.

10.2.1.4 To facilitate rapid abandonment in an emergency where a ‘grab bag’ is provided it should be in an accessible position known to all on board.

10.3 Boat Righting Systems

10.3.1 As an alternative to carrying a liferaft, a vessel certified under Police Boat Codes B and D, that does not go more than 20 miles from a safe haven, must be able to return to upright following a capsize, using one of the following approaches:

.1 Manual righting (using an agreed training manual procedure). The number and capability of crew that are required to right the boat must be determined. To prevent

the boat being at sea with less than this capability, the relevant information must be included in documentation and training; or

.2 Automatic and semi-automatic righting; or

.3 Inherent self-righting by design.

10.3.2 It is important to ensure autonomy following capsize. If a Police Authority wishes to use a Police Boat that cannot be righted, mitigation must be provided by the Police Authority. These may be of the following form:

.1 Demonstration that the probability of capsize is very low; or

.2 Two boat operation; or

.3 Operation in close proximity to a beach that affords a safe refuge to boat crews following capsize; or

.4 Provision of a liferaft – if a liferaft is carried it must be accessible when the boat is capsized; or

.5 Demonstration of righting capability – practically or by calculation.

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

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

10.3.5 The effects of trapped water must be considered in terms of stability and righting the boat.

10.4 Lifebuoys

10.4.1 Lifebuoys should be marked with the vessel's name and one other means of identification, e.g. Port of Choice, SSR number, home port if not registered, etc.

10.4.2 All Police vessels should carry lifebuoys fitted with lights .

10.4.3 Buoyant lines, where fitted, should not be less than 18 metres in length.

10.4.4 Where light-weight lifebuoys (e.g. horseshoe type) are used, if not fitted with a buoyant line, they shall be fitted with a drogue (the drogue is required to prevent the lifebuoy being blown across the sea surface at high speed).

10.5 Lifejackets

10.5.1 Lifejackets should be MCA (DfT) or MED approved ("Wheelmarked") or should comply with BS EN 396 of 150N or BS EN 399 of 275N or equivalent ISO/CEN standard.

10.5.2 Lifejackets that comply with BS 3595, and with a current servicing certificate where applicable, may continue to be used where already fitted on a vessel at the time of the Code coming into force.

10.5.3 The MCA will accept due to the operational/tactical needs of the Police Service the following standard of equipment as equivalent to the above requirement provided it is personal issue equipment only:

.1 Lifejackets that conform fully to the requirements of EC Council Directive PPE 89/686/EEC, as amended. In addition the lifejacket shall have a minimum buoyancy of 275 N and fully meet the performance requirements of Part 6.7 of BS EN 399.

10.5.4 All lifejackets should be fitted with a whistle, retro-reflective materials and a light.

10.5.5 If the lifejackets are the inflatable type, an additional 10% or 2, whichever is the greater, should be provided.

10.5.6 Inflatable lifejackets for new vessels and new inflatable lifejackets for existing vessels are to be of the compressed gas inflation type, with either manual or automatic inflation, and fitted with oral top up valves.

10.5.7 Compressed gas inflatable lifejackets should be serviced within one month either side of the Compliance, Renewal and Intermediate examination. In the intervening years they are to be examined annually to the manufacturer's recommendation. Certification/declaration of servicing must be available for inspection by the Certifying Authority/Administration. As far as is reasonable and practicable, visual examinations should be carried out weekly by the owner/managing agent to determine whether they are safe to use.

10.5.8 A suitable lifejacket should be provided for each person on board under 32 kilogrammes.

10.5.9 It is strongly recommended that no more than two different types of lifejacket are permitted on any vessel, to limit any confusion in use.

10.6 Thermal Protective Aids

10.6.1 Police vessels operating under Police Boat Codes A and B must carry at least 100% TPAs, However these need not be onboard the vessel if a personal TPA, dry-suit or immersion suit is provided.

10.6.2 TPAs may be stowed in the 'grab bag'.

10.6.3 When immersion suits are provided for all onboard, as part of the vessel's equipment, only 2 TPAs need to be provided for the use of injured persons.

.1 Immersion suits may be of the non insulated type.

.2 Immersion suits are to be compatible with the lifejackets provided.

.3 Immersion suits may be provided to satisfy the personnel clothing requirements of Section 19.7.

10.7 Portable VHF

10.7.1 Reference should be made to Section 13, Table 13.1.

10.8 406MHz or Inmarsat E EPIRB

10.8.1 The 406MHz or Inmarsat E EPIRB should be installed in an easily accessible position ready to be manually released, capable of being placed in a liferaft, and capable of floating free and automatic activation if the vessel sinks.

10.8.2 Where compliance with Section 10.8.1 is not practicable and the vessel carries less than 16 persons, the EPIRB may be stowed in an accessible place and be capable of being placed readily in a liferaft without being capable of floating free.

10.8.3 All EPIRBS should be maintained in accordance with the manufacturer's recommendations. Batteries should be replaced as required by a manufacturers approved service station.

Additionally, it is a requirement that all EPIRBs are registered with the Administration.

10.9 SART

10.9.1 A SART is not required if the EPIRB provided has a 121.5 MHz frequency transmitting capability and is of the non-float free type for placing in a liferaft.

10.10 General/Fire Alarm

10.10.1 The General/Fire Alarm may be a bell or Klaxon or consist of the vessel's whistle or siren providing it can be heard in all parts of the vessel.

10.11 Pyrotechnics

10.11.1 Parachute flares, red hand flares, smoke signals, and other pyrotechnics should be MED approved ("Wheelmarked") or should comply with MSN 1676, "The Merchant Shipping (Life-Saving Appliances for Ships Other Than Ships of Classes III to VI(A)) Regulations 1999. (Note - Hand held smoke signals need not be approved to the MED or MSN 1676).

10.12 Training Manual

10.12.1 A training and instruction manual should contain instructions and information on the life-saving appliances provided in the vessel and also contain information on the best methods of survival.

10.12.2 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 vessel;

.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), breeches-buoy and shore life-saving apparatus;

.11 instructions for emergency repair of the life-saving appliances;

.12 "Personal Survival at Sea" booklet, e.g. MCA Booklet MCA/075.

10.13 Instruction Manual (on board maintenance)

10.13.1 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;

.6 log of records of inspection.

10.13.2 The manual may be kept ashore by the owner/managing agent in the case of an open boat.

TABLE 10.1

LIFE-SAVING APPLIANCES

Vessel	Code A Launches (≤60 miles to sea)	Code B RIBS (≤60 miles to sea)	Code C Launches (≤3 miles to sea)	Code D RIBS (≤3 miles to sea)
Liferafts (see 13.2)	100%	100% (or for ≤20 miles – self righting)	100%	100% or self righting
Total Number of Lifebuoys	2	2	2	2
Lifebuoy With light (see 10.4)	1	1	1	1
Lifebuoy with buoyant line (see 10.4)	1	1	1	1
Additional Buoyant Line/Throw line	1	1	1	1
Lifejacket (see 10.5)	100%	100%	100%	100%
Parachute Flares	4	4	4 (see note A)	4 (see note A)
Red hand Flares	6	6	6	6
Smoke signals	2	2	2	2
Thermal protective aids (TPA)	100% (see note B)	100% (see note B)	(See 10.6)	(See 10.6)
Portable VHF	1	1	1	1
EPIRB (see 10.8)	1	1	0	0
SART (see 10.9)	1 (see note C)	1 (see note D)	0	0
General Alarm ≥ 16 persons	Yes	Yes	No	No

General Alarm > 750 kW installed power	**Yes**	**Yes**	**Yes**	**Yes**
Life-saving signals table 2 X SOLAS No.2 or 1 x SOLAS No. 1	**Yes**	**Yes**	**Yes**	**Yes**
Training Manual (see 10.12)	**Yes**	**Yes**	**Yes**	**Yes**
Instructions for onboard maintenance (see 10.13)	**Yes**	**Yes**	**Yes**	**Yes**

Note A – Not required for vessels that only operate in categorised waters.
Note B – Need not be provided if a personal TPA or better, i.e. dry suit, is provided.
Note C – Not required if EPIRB has SART capacity (homing capability)
Note D – Advisable when operating over 20 miles from a safe haven.

11 Fire Safety

11.1 General

11.1.1 The boundary of the engine space should, with special consideration given to fire flaps, be arranged to contain the fire extinguishing medium i.e. the engine space should be capable of being closed down in order that the fire extinguishing medium cannot escape. Any fans located within or feeding a machinery space should be capable of being stopped from outside the space in the event of a fire. Systems compromising automatic stopping of fans in the event of a fire should be supplemented with a manual override.

11.1.2 Where it is not practical to have a machinery space, the engine should be enclosed in a box. The box should perform the same function as the machinery space boundaries in Section 11.1.1 above.

11.1.3 Combustible materials and liquids should not be stowed in the engine space. If non-combustible materials are stowed in the engine space, they should be adequately secured against falling on machinery and cause no obstruction to access to or from the space.

11.1.4 Portlights or windows should not be fitted in the boundary of the engine space except that an observation port having a maximum diameter of 150mm may be fitted in an internal boundary bulkhead, provided that the port is of the non-opening type, the frame is constructed of steel or other equivalent material, and the port is fitted with a permanently attached cover with securing arrangements. Only fire rated toughened safety glass (rated A0 in accordance with the FTP Code) should be used in an observation port.

11.2 Vessels where the Total Installed Power Exceeds 750 kW, or Carrying 16 or More Persons.

11.2.1 Steel Construction: Vessels which have the machinery space boundaries constructed of steel, require no additional fire protection. However, surfaces on the opposite side of the machinery space should only be coated with finishes which have a Class 1 surface spread of flame rating when tested in accordance with Standards Appendix 9.

11.2.2 Fibre Reinforced Plastic (FRP) Construction: Machinery space boundaries should prevent the passage of smoke and flame for 15 minutes, when tested in accordance with the procedure shown in Appendix 6. Fire resistance of FRP may be achieved by the use

of woven roving glass layers or additives (which must be added strictly in accordance with the manufacturer's requirements) to the resin. Intumescent polyester, epoxy, vinylester or phenolic resin surface coatings may also be used; however, solvent borne intumescent paints are not acceptable. The Certifying Authority may waive the requirement for the test described in Appendix 6 (Fire Test) if the construction complies with an ISO or equivalent standard to give at least the same level of protection.

11.2.3 Aluminium and Wood Construction: Machinery space boundaries should have an equivalent level of fire protection when compared to FRP construction.

11.2.4 Where insulation is fitted to provide an equivalent level of fire protection to that required in Section 11.2.2 or 11.2.3 the insulation need not be fitted lower than 300 mm below the waterline. (It should be noted that insulation approved by the Administration as satisfying the requirements of an A or B Class division for the construction material, and division scantlings, will exceed these requirements.)

11.3 Insulation

11.3.1 Thermal or acoustic insulation fitted inside the engine space should be of non-combustible material when tested in accordance with Appendix 7.

11.3.2 Insulation should be protected against impregnation by flammable vapours and liquids. Where insulation is cut, the edges should be protected against such impregnation, e.g. by the use of non-combustible tape. Where the insulation is vulnerable to damage it should be protected.

11.4 Cleanliness (and Pollution Prevention)

11.4.1 Provision should be made to retain any oil leakage within the confines of the engine space.

11.4.2 In a vessel constructed of wood, measures should be taken to prevent absorption of oil into the structure.

11.4.3 When it is impracticable to fit a metal drip tray in way of the engine, the use of the engine bearers as a means of containment of the oil may be accepted when they are of sufficient height and have no limber holes. Provision should be made for the clearing of spillage and drainage collected in the engine space.

11.4.4 Efficient means should be provided to ensure that all residues of persistent oils are collected and retained on-board for discharge to collection facilities ashore. Reference should also be made to Section 23, Clean Seas.

11.4.5 The engine space should be kept clean and clear of oily waste and combustible materials.

11.4.6 Where petrol engines are installed, reference should be made to Section 4.3.5.

11.5 Open Flame Gas Appliances

11.5.1 Open flame gas appliances provided for cooking, heating or any other purposes should comply with the requirements of EC Directive 90/396/EEC ("Council Directive of 20 June 1990 on the approximation of the laws of the Member States relating to appliances burning gaseous fuels"), so far as the requirements of the Directive apply to any particular appliance and be suitable for marine use and installation in boats.

11.5.2 Installation of a gas appliance should be in accordance with a recognised standard listed in the Standards Appendix 9 or equivalent and Appendix 3 Gas Installations.

11.5.3 Materials which are in the vicinity of open flame cooking or heating appliances should be non-combustible, except that these materials may be faced with any surface finish having a Class 1 surface spread of flame rating when tested in accordance with a recognised standard, see Standards Appendix 9.

11.5.4 Combustible materials and other surfaces which do not have a surface spread of flame rating should not be left unprotected within the following distances of a standard cooker:-

.1 400mm vertically above the cooker, for horizontal surfaces, when the vessel is upright;

.2 125mm horizontally from the cooker, for vertical surfaces.

11.5.5 Curtains or any other suspended textile materials should not be fitted within 600mm of any open flame cooking, heating or other appliance.

11.5.6 With regard to Section 11.5.4 and 11.5.5 above, ISO 9094 will be taken as acceptable.

11.6 Furnishing Materials

11.6.1 It is recommended that Combustion Modified High Resilient (CMHR) foams are used in upholstered furniture and mattresses.

11.6.2 Upholstery covering fabrics should satisfy the cigarette and butane flame tests of a recognised standard, see Appendix 7 or equivalent.

11.7 Fire Detection

11.7.1 In vessels where the total installed power (propulsion and electrical generation) is greater than 750 kW efficient fire detectors should be fitted in the engine space(s).

11.7.2 In a vessel carrying 16 or more persons efficient fire detectors should be fitted in the engine space(s) and spaces containing open flame devices.

11.7.3 On any vessel, where an area is identified by the Certifying Authority as posing a fire risk to either passengers or crew (e.g. galleys, sleeping accommodation), fire detection equipment shall be installed to protect that area.

11.7.4 The fire detectors should be appropriate to the hazard identified and should give an audible warning that can be heard in the space concerned and in the control position when the vessel is in operation.

11.7.5 Efficient fire detectors may be required in order to comply with Section 11.8.3.

11.8 Means of Escape

11.8.1 Two means of escape should be provided in:-

.1 accommodation spaces used for sleeping or rest; and

.2 other accommodation spaces affected by a fire risk; and

.3 machinery spaces affected by a fire risk except:

i) those spaces visited only occasionally or unmanned during normal operation, and where the single access gives ready escape, at all times, in the event of fire; or

ii) those spaces where any person entering and moving about the space is within 5 metres of the single entrance, at all times.

11.8.2 The means of escape should be such that a single hazardous event will not cut-off both escape routes. Only in the exceptional case, such that the overall safety of the vessel would be diminished, should means of escape contrary to Section 11.8.1.1, .2 or .3 be accepted.

11.8.3 In the exceptional case where a single means of escape from accommodation spaces is accepted, efficient fire detectors should be provided as necessary to give early warning of a fire emergency which could cut off that single means of escape.

11.8.4 Means of escape should be clearly marked for their purpose on both sides, and the function of each escape route demonstrated by practical tests to the satisfaction of the Certifying Authority.

12 Fire Appliances

12.1 General

12.1.1 A vessel should be provided with efficient fire fighting equipment in accordance within this Section. All equipment is to be serviced at the manufacturers recommended service intervals by a service station approved by the manufacturer.

12.2 Vessels Less than 6 metres in Length Operating less than 3 miles to sea from a safe haven.

12.2.1 In a vessel of less than 6 metres in length, which is not fitted, or is only partially fitted with a watertight weather deck and with no cooking appliances, a single extinguisher capable of discharging into the engine space is to be fitted. The extinguisher should be suitably sized for the engine space, but be a minimum of 34B.

12.3 Open Vessels, Inflatable Boats and Boats with a Buoyant Collar up to 8m in Length not Fitted with a Substantial Enclosure.

12.3.1 An open vessel, inflatable boat or boat with a buoyant collar up to 8m in length, not fitted with a substantial enclosure, with no cooking appliances, should be fitted with a minimum of two fire extinguishers, each with a minimum rating of 5A/34B

12.4 Vessels Less than 15 metres in Length and Carrying 15 or Less Persons, not covered by Sections 12.2 or 12.3.

12.4.1 Vessels Less than 15 metres in Length and Carrying 15 or Less Persons, not covered by Sections 12.2 or 12.3 should have one of the following options:

.1 One hand fire pump (outside engine space)* or one power driven fire pump (outside engine space)*, with sea and hose connections, capable of delivering one jet of water to any part of the ship through hose and nozzle. The fire hose should be of adequate length with 10mm nozzle and suitable spray nozzle; or

.2 One multi-purpose fire extinguisher to a recognised standard, see Standards Appendix 9, with minimum fire rating of 13A/113B or smaller extinguishers giving the equivalent fire rating (in addition to that required below).

12.4.2 Not less than one multi-purpose fire extinguisher to a recognised standard, see Standards Appendix 9, with minimum fire rating of 5A/34B provided at each exit from accommodation spaces to the open deck. In no case should there be less than two such extinguishers provided.

12.4.3 At least two fire buckets with lanyards. Buckets may be of metal, plastic or canvas and should be suitable for their intended service.

12.4.4 One fire blanket of a recognised standard, see Standards Appendix 9, in galley or cooking area, where a fire risk can be identified.

12.5 Vessels 15 metres or More in Length or Carrying 16 or More Persons.

12.5.1 Vessels 15 metres or More in Length or Carrying 16 or More Persons should have one of the following options:

.1 One hand fire pump (outside engine space)* or one power driven fire pump (outside engine space)*, with sea and hose connections, capable of delivering one jet of water to any part of the ship through hose and nozzle. The fire hose should be of adequate length with 10mm nozzle and suitable spray nozzle; or

.2 Not less than two multi-purpose fire extinguishers to a recognised standard each with minimum fire rating of 13A/113B or smaller extinguishers giving the equivalent fire rating (in addition to that required below).

12.5.2 Not less than two multi-purpose fire extinguishers to a recognised standard, see Standards Appendix 9, with a minimum fire rating of 13A/113B.

12.5.3 At least two fire buckets with lanyards. Buckets may be of metal, plastic or canvas and should be suitable for their intended service.

12.5.4 One fire blanket of a recognised standard, see Standards Appendix 9, in galley or cooking area, where a fire risk is identified.

Note * This may be one of the pumps required by Section 7 (Bilge Pumping), when fitted with a suitable change over arrangement which is readily accessible.

12.6 Provision for Fire Extinguishing in Machinery Spaces

12.6.1 Fixed fire extinguishing in engine space, which may consist of a portable extinguisher suitably sized for the space being protected and arranged to discharge into that space, shall be provided for vessels fitted with inboard engines. An additional extinguisher, or one of the multi-purpose fire extinguishers required in 12.2, 12.3, 12.4 or 12.5, can also be the extinguisher required for discharge into the engine space, providing it is a suitable type (B) and suitably sized and stowed in a location appropriate to its dual use.

12.6.2 When a fixed fire extinguishing system (which is not a portable extinguisher) is installed in a machinery space, it should be a MCA or equivalent approved type appropriate to the space to be protected and be installed and maintained in accordance with the manufacturer's requirements.

12.6.3 The requirements for fixed fire extinguishing installations are detailed in the Merchant Shipping (Fire Protection – Small Ships) Regulations 1998 SI 1998 No. 1011 and in the 1999 edition of the "Fire Protection Arrangements" of the Instructions for the Guidance of Surveyors" (HMSO publication ISBN 5520007).

12.6.4 Fixed installations in machinery spaces covered by the references are:-

.1 low expansion foam;

.2 medium expansion foam;

.3 high expansion foam;

.4 carbon dioxide;

.5 pressure water spraying;

.6 vaporising fluids (HFC's hydrofluorocarbons);

.7 aerosols (solid pyrotechnic type).

12.7 Informative Notes

12.7.1 Multi-purpose fire extinguishers have a capability to deal with both Category A fires involving solid materials and Category B fires involving liquids or liquefiable solids may be marked with the multipurpose rating, e.g. 13A/113B in Section 12.4.1 above; and 5A/34B in Section 12.4.2 above.

12.7.2 BS EN 3:1996 - Portable fire extinguishers, became a national standard in August 1996. The previous standard, BS 5423:1987, was withdrawn on 1 January 1997. The principal difference between the two standards is the colour coding of the body of the extinguisher which, for BS EN 3, is red.

12.7.3 BS EN 3 allows a zone of colour of up to 5% of the external area of the extinguisher body to be used to identify the extinguishing agent. Manufacturers have complied with this by printing the operating instructions in the appropriate extinguishing agent colour.

12.7.4 Manufacturers producing extinguishers certified and marked to BS EN 3 cannot revert to the colour schemes contained in the withdrawn BS 5423:1987. Owners of vessels must not overpaint red BS EN 3 extinguishers to the "old" colours.

12.7.5 EC Regulation 2037/ 2000 prohibits the sale and use of halons, including material that has been recovered or recycled. No fire fighting equipment containing Halons should be used. Marine Guidance Note MGN 191 provides further information.

13. Radio Equipment

13.1 General Requirements

13.1.1 Radio equipment carried by a vessel shall be capable of fulfilling the following functional requirements with respect to distress and safety communications when the vessel is at sea:-

.1 Provide for the safety of the vessel by:-

i) transmitting ship-to-shore distress alerting;

ii) transmitting ship-to-ship distress alerting;

iii) transmitting and receiving on-scene communications, including appropriate search and rescue co-ordinating communications; and

iv) transmitting locating signals.

2. Assist other vessels in distress by:-

i) receiving shore-to-ship distress alerting; and

ii) receiving ship-to-ship distress alerting.

3. Receive navigational and meteorological warnings and urgent safety information (Maritime Safety Information).

13.1.2 The Global Maritime Distress and Safety System (GMDSS) was implemented on 1 February 1999. The implementation of the GMDSS has involved the adoption of Digital Selective Calling (DSC) for distress alerting in maritime radio frequency bands, e.g. VHF.

13.1.3 Whilst the UK Coastguard will continue coverage of VHF channel 16 for the foreseeable future, the Coastguard watch on channel 16 is now a dedicated headset watch or a loudspeaker watch. Ships are currently obliged to keep a listening watch on channel 16 only where practicable.

13.1.4 For vessels where a fixed VHF is required, it is strongly recommended that vessels are equipped with VHF DSC with its significant benefits in distress situations.

13.1.5 Other than vessels operating to sea less than 3 miles from a safe haven, all new vessels must have installed VHF DSC. Where GMDSS equipment is installed, it should be provided with automatic position updating information from the onboard

navigational receiver, or procedures put in place to ensure positional information is manually updated at intervals not exceeding 4 hours.

13.2 Radio Installation

13.2.1 Table 13.1 lists the minimum and recommended radio equipment for the Code area of operation categories, which fulfil the functional requirements specified in Section 13.1.

13.2.2 VHF transmission and reception ranges are reliable only within the line of sight ranges (see the MCA's Marine Guidance Note MGN 22 – Proper use of VHF channels at sea).

13.2.3 Aerials should be mounted as high as is practicable to maximise performance. When the main aerial is fitted to a mast, which is equipped to carry sails, an emergency aerial should be provided.

13.2.4 Skippers, owners and managing agents should be aware of VHF coverage in the intended area of operation. Where the certainty of good VHF coverage in the UK coastal area is in doubt, skippers owners and managing agents should seek advice from the MCA on whether Medium Frequency (MF) or other equipment with long range transmission capability should be carried (i.e. Inmarsat Ship Earth Station, EPIRB etc).

13.2.5 When batteries are used for the electrical supply to radio equipment, the batteries, when fully charged, should provide sufficient hours of operation to ensure effective use of the GMDSS installation bearing in mind the distance from shore that the vessel can operate. Appropriate charging facilities or a duplicate battery of capacity sufficient for the voyage shall be provided.

13.2.6 The battery electrical supply (reference should be made to Section 5) to the radio equipment should be protected against flooding/swamping as far as practicable and arranged so that radio communications are not interrupted in adverse conditions.

13.2.7 A fixed radio installation should be clearly marked with the vessel's call sign, any other codes applicable to the use of the radio, and MMSI number where applicable. A card or cards giving a clear summary of the radio distress, urgency and safety procedures should be displayed in full view of the radio operating position(s).[1] Brief and clear operating instructions should also be provided for the hand-held VHF (which is part of the vessels Life Saving Appliances) as required by Table 13.1.

[1] Radiotelephony procedures are set out in Merchant Shipping Notice No. M.1646 published in November 1996. This is currently being revised to take account of the introduction of DSC (Digital Selective Calling).

TABLE 13.1

MINIMUM AND RECOMMENDED RADIO EQUIPMENT

Vessel	**Code A Launch (≤60 miles to sea)**	**Code A Launch (≤20 miles to sea)**	**Code B RIBian (≤60 miles to sea)**	**Code B RIB (≤20 miles to sea)**	**Code C Launch (≤3 miles to sea)**	**Code D RIB (≤3 miles to sea)**	Notes
VHF fixed radio installation[1].	1	1	1	1	1	1	See 13.1.2, .3, .4 and .5.
Portable VHF[3]	1	1	1	1	1	1	It is recommended that, where practicable, vessels carrying more than one liferaft carry one portable VHF per raft.
MF SSB radio installation with DSC[1].	R[2]	None	R[2]	None	None	None	HM Coastguard ceased keeping a MF Distress watch (2182 kHz) at 23:59 UTC on 31 May 2002.
Inmarsat Ship Earth Station[1] (or an MF/HF transceiver with DSC) [1]	R	None	R	None	None	None	
NAVTEX receiver	1	None	None	None	None	None	

R = Recommendation only
1 = Number required to be fitted

[1]An appropriate GMDSS certificate should be carried by any person operating this equipment. The MCA can give advice on suitable training courses.

[2]or an Inmarsat Ship Earth Station

[3] Arrangements should be provided to protect the portable VHF from water damage e.g. waterproof cover.

14. Navigation Lights, Shapes and Sound Signals

14.1 A vessel should comply with the requirements of the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996, SI 1996 No.75. A vessel which operates only between sunrise and sunset and in favourable weather is not required to carry navigation lights.

14.2 Sound signalling equipment should comply with the Regulations. A vessel 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.

14.3 If it can be demonstrated to the Certifying Authority that, for a particular vessel, full compliance with the Regulations is impracticable, then application should be made to the MCA via the Certifying Authority for consideration of equivalent arrangements, taking into account the nature of the operation of the vessel concerned.

14.4 Table 14.1 is a summary table of navigation lights, shapes and sound signalling appliances for vessels. This Table is for guidance only and does not cover all possible operations. Reference should be made to the regulations stated in Section 14.1 for all operations not covered.

TABLE 14.1 - Lights, shapes and sound appliances (see Section 14.4)

Overall length	Power vessels when underway	At anchor[4]	Not under command[7]	Restricted in ability to manoeuvre (inc. diving operations)[8]	Aground[11]	Sound appliances
Less than 7m	All round white + sidelights[1, 2]	Required[5, 6]	Not required	Not required[9]	Not required	Means to make an efficient sound signal required
7m - 12m	All round white + sidelights[1] OR Masthead (vis 2 miles) + sidelights[1] + stern light OR (if lights have to be offset from centreline) combined lantern sidelights plus either all round white or masthead and stern light	Required[6]	Not required	Not required[9]	Not required	Means to make an efficient sound signal required

Overall length	Power vessels when underway	At anchor[4]	Not under command[7]	Restricted in ability to manoeuvre (inc. diving operations)[8]	Aground[11]	Sound appliances
12m - 20m	Masthead (vis 3 miles) + sidelights + stern light	Required[6]	Required[6]	Required	Required[6, 10]	Whistle and bell required
20m - 24m	Masthead (vis 5 miles) + sidelights + stern light	Required	Required	Required	Required	Whistle and bell required approved by UK nominated bodies

1 Range of sidelight is 1 mile.
2 Vessels not exceeding 7 knots maximum speed should show sidelights if practicable.
3 If not using a tricolour masthead lantern, a sailing vessel may show (in addition to other lights) two all-round lights near masthead, the upper red and the lower green.
4 By night, all round white light where best seen; by day one black ball (0.6 metres in diameter) in the fore part.
5 Anchor light is required only when anchored in or near a narrow channel, fairway or anchorage or where other vessels normally navigate.
6 Size of the daytime shapes and distances apart may be reduced commensurate with size of vessel.
7 By night, two all round red lights in a vertical line two metres apart and the lowest not less than four metres above the hull (weatherdeck); by day two black balls (0.6 metres in diameters) in a vertical line, 1.5 metres apart.

[8] By night, three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white; By day, three shapes in a vertical line where they can best be seen. The highest and lowest of these shapes shall be balls and the middle one a diamond; If the day shapes are impractical due to the size of the vessel, a rigid replica of the International Code flag “A” not less than 1 metre in height shall be shown. Measures shall be taken to ensure its all-round visibility.

[9] Unless undertaking diving operations.

[10] The distances for the lights may be reduced to one metre apart and two metres above the hull (weatherdeck).

[11] By night two all round red lights in a vertical line 2 metres apart plus anchor light; by day three black balls (0.6 metres diameter) in a vertical line, 1.5 metres apart.

Notes

a Sidelights, stern light and all round lights have range of 2 miles unless indicated otherwise.

b Range of all round white or anchor or Not Under Command lights is 2 miles in all cases.

c All lights (and whistles and bells when they are required to be carried) must be type approved for the size of vessel on which they are fitted.

d In the case of open boats, vertical heights should be measured from gunwale, and in the case of inflatable boats, or boats fitted with a buoyant collar, from the top of the collar or tubes.

15 Navigational Equipment

15.1 Magnetic Compass

15.1.1 A vessel should be fitted with an efficient magnetic compass, or other means of determining its heading, as well as means of correcting heading and bearings to true at all times (e.g. a valid deviation card for a magnetic compass):-

.1 A properly adjusted standard magnetic compass or other means, independent of the vessels main power supply, to determine the ship's heading and display the reading at the main steering position.

.2 In a steel vessel, it should be possible to correct the compass for co-efficients, B, C and D and heeling error.

.3 The magnetic compass or a repeater should be positioned so as to be clearly readable by the helmsman at the main steering position. For vessels operating outside the hours of daylight a compass light should be fitted.

.4 Means should be provided for taking bearings as nearly as practicable over an arc of the horizon of 360 degrees. (This requirement may be met by the fitting of a pelorus or, in a vessel other than a steel vessel, a hand bearing compass.)

15.2 Fluxgate Compass

15.2.1 Fluxgate compasses are acceptable under the Code, as an alternative to that required in 15.1, provided that a suitable back-up power supply is available to power the compass in the event of failure of the main electrical supply.

15.2.2 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.

15.3 Other Equipment

15.3.1 All vessels should be fitted with an echo sounder, or other means, to measure the available depth of water.

15.3.2 All vessels which operate at sea should be provided with:-

.1 A receiver for a global navigation satellite system or a terrestrial radionavigation system, or other means suitable for use at all times throughout the intended voyage to establish and update the vessel's position at all times.

.2 A distance measuring log; except that this need not be provided where the navigational aid in Section 15.3.2.1 provides reliable distance measurements in the area of operation of the vessel.

16 Miscellaneous Equipment

16.1 Nautical Publications

16.1.1 Charts and other nautical publications to plan and display the vessel's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routeing and ship reporting schemes. Nautical publications may be contained within a consolidated publication. However, vessels operating less than 3 miles to sea from a safe haven need not carry publications. An electronic chart plotting system, complying with the requirements detailed in Marine Guidance Note MGN 262, may be accepted as meeting the chart carriage requirements of this sub-paragraph.

16.2 Signalling Lamp

16.2.1 A vessel should be provided with an efficient waterproof electric lamp suitable for signalling.

16.3 Radar Reflector

16.3.1 A vessel is to be provided with a radar reflector approved to current IMO performance standards, or other means, to enable detection by ships navigating by radar. For vessel operating less than 3 miles to sea from a safe haven, where it is not practicable for an efficient radar reflector to be fitted, they must not put to sea in fog, and if visibility starts to deteriorate they are to return to shore.

16.4 Measuring Instruments

16.4.1 A vessel should carry a barometer if practicable.

16.5 Searchlight

16.5.1 A vessel operating outside the hours of daylight should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations.

17 Anchors and Cables

17.1 General

17.1.1 The requirements given in Table 17.1 are for a vessel of normal form which may be expected to ride-out storms whilst at anchor. The anchors and cables are not designed to hold a vessel off exposed coasts in rough weather nor stop a vessel that is moving.

17.1.2 Provision is to be made for the secure storage of the anchor and its cable.

17.2 Anchors

17.2.1 The Tabulated values for anchor masses refer to High Holding Power anchors. Anchors of other designs may be accepted based on the stated holding power.

17.2.2 When a fisherman type of anchor is provided, the mass given in Table 17.1 should be increased by 75% but the diameter of the anchor cable need not be increased.

17.2.3 For vessels with an unusually high windage, due to high freeboard, a large rig, large deckhouses or superstructures, the mass of the anchor and the anchor cable diameter should be increased above that required in Table 20.1 to correspond to the increased wind loading. The increase in anchor mass and corresponding cable strength is to be to the satisfaction of the Certifying Authority.

17.2.4 For vessels of unusual or non-conventional ship form (including pontoon barges) the anchor and cable size should be to the satisfaction of the Certifying Authority.

17.2.5 Anchors are to be rigged ready for use. Only where the particular operating patterns dictate may the anchor be left unready, e.g. Pilot boat duties.

17.2.6 The design of the anchor is to be acceptable to the Certifying Authority.

17.2.7 Stainless steel and aluminium anchors will be separately considered dependent upon the test loads for which the anchor has been designed.

17.3 Cables

17.3.1 The length of anchor cable attached to an anchor should be appropriate to the area of operation but generally should be not less than 4 x the vessel's mean length or 30 metres, whichever is the longer, for each of the main and kedge anchors. (For a definition of mean length see Note 4 of Table 17).

17.3.2 The cable for main anchors and for kedge anchors may be of chain or rope.

17.3.3 When the anchor cable is of fibre rope or wire, there should be not less than 10 metres or 20% of the minimum required cable length, whichever is the greater, of chain between the rope and the anchor. Where the anchor cable is wire then proposals to substitute the chain tail by an anchor and/or chain of enhanced mass will be considered to the satisfaction of the Certifying Authority, with special attention paid to the anchor performance, i.e. catenary.

17.3.4 The strength, form and material of the anchor cable and its attachments to the anchor and the vessel should be approved by the Certifying Authority.

17.3.5 Anchoring systems incorporating a windlass should have the bitter end of the cable secured to the vessel's structure and capable of being released in an emergency.

17.3.6 Anchor steel wire rope is to be fitted with thimbles at both ends.

17.4 Tow line

17.4.1 A vessel should be provided with a towline of not less than the length and diameter of the kedge anchor cable. The towline may be the warp for the second anchor.

17.5 Operations

17.5.1 When an anchor mass is more than 30kg, an efficient mechanical means should be provided for handling the anchor.

17.5.2 There should be a strong securing point on the foredeck or equivalent structure and where appropriate a fairlead or roller at the stem head.

17.6 Vessels operating more than 3 miles to sea from a safe haven.

17.6.1 A vessel should be provided with at least two anchors (one main and one kedge or two main) and cables, subject to Section 17.1 and in accordance with the requirements of Table 17.1.

17.6.2 Anchors of equivalent holding power may be proposed and provided, subject to approval by the Certifying Authority.

17.7 Vessels operating less than 3 miles to sea from a safe haven

17.7.1 An anchor of sufficient mass for the size and type of vessel must be provided, and as a minimum the mass should correspond to that of a kedge, as illustrated in the table 17.1.

TABLE 17.1
ANCHORS AND CABLES

	Anchor Mass		Anchor Cable Diameter			
Mean Length (See note 4)	Main	Kedge	Main		Kedge	
			Chain	Rope	Chain	Rope
(metres)	(kg)	(kg)	(mm)	(mm)	(mm)	(mm)
6	8	4	6	12	6	10
7	9	4	8	12	6	10
8	10	5	8	12	6	10
9	11	5	8	12	6	10
10	13	6	8	12	6	10
11	15	7	8	12	6	10
12	18	9	8	14	8	12
13	21	10	10	14	8	12
14	24	12	10	14	8	12
15	27	13	10	14	8	12
16	30	15	10	14	8	12
17	34	17	10	14	8	14
18	38	19	10	16	8	14
19	42	21	12	16	10	14
20	47	23	12	16	10	14
21	52	26	12	16	10	14
22	57	28	12	19	10	16
23	62	31	12	19	10	16
24	68	34	12	19	10	16

Notes:-

1. Chain cable diameter given is for short link chain. Chain cable should be sized in accordance with EN 24 565:1989 (covering ISO 4565: 1986 and covered by BS 7160:1990 – Anchor chains for small craft), or equivalent.

2. The rope diameter given is for nylon construction. When rope of another construction is proposed, the breaking load should be not less than that of the nylon rope specified in the table.

3. When anchors and cables are manufactured to imperial sizes, the metric equivalent of the anchor mass and the cable diameter should not be less than the table value.

4. For the purposes of this section, mean length is defined as:-

$$\frac{\text{Length + Length on waterline}}{2}$$

18 Accommodation

18.1 General

18.1.1 Hand holds and grab-rails

18.1.1.1 There should be sufficient hand holds and grab-rails within the accommodation to allow safe movement when the vessel is in a seaway.

18.1.2 Securing of heavy equipment

18.1.2.1 Heavy items of equipment such as batteries, cooking appliances etc. should be securely fastened in place to prevent movement due to severe motions of the vessel. In the case of a sailing vessel, the severe motions should include motions leading to inversion.

18.1.2.2 Stowage lockers containing heavy items should have lids or doors with secure fastenings.

18.1.3 Access/escape arrangements

18.1.3.1 Means of escape from accommodation spaces should satisfy the requirements of Section 2.4.1, 2.4.3 and 11.8.

18.1.4 Ventilation

18.1.4.1 There should be adequate ventilation in all accommodation spaces.

18.1.5 Hot water systems

18.1.5.1 Hot water supply systems (if any) should be designed, installed and maintained for the pressure and temperature at which they are to operate.

18.2 Vessels at Sea for More than 24 Hours

18.2.1 General

18.2.1.1 When a vessel is intended to be at sea for more than 24 hours, an adequate standard of accommodation for all on board should be provided. In considering such accommodation, primary concern should be directed towards ensuring the health and safety aspects of persons, e.g. the ventilation, lighting, water

services, galley services and the access/escape arrangements. In particular the following standards should be observed:-

18.2.2 Ventilation

18.2.2.1 Where air conditioning systems are not fitted, mechanical ventilation should be provided to accommodation spaces which are situated completely below the level of the weather deck on vessels making long international voyages or operating in tropical waters, and which carry 9 or more berthed persons below deck. As far as practicable, such ventilation arrangements should be designed to provide at least 6 changes of air per hour when the access openings to the spaces are closed.

18.2.3 Lighting

18.2.3.1 An electric lighting system should be installed which is capable of supplying adequate light to all enclosed accommodation and working spaces.

18.2.4 Water services

18.2.4.1 An adequate supply of fresh drinking water should be provided and piped to convenient positions throughout the accommodation spaces.

18.2.4.2 In addition, an emergency (dedicated reserve) supply of drinking water should be carried at the rate of 2 litres per person on board.

18.2.5 Sleeping accommodation

18.2.5.1 A bunk or cot should be provided for each person on board and at least 50% of those provided should be fitted with lee boards or lee cloths.

18.2.6 Galley

18.2.6.1 A galley should be fitted with a means for cooking and a sink and have adequate working surface for the preparation of food.

18.2.6.2 When a cooking appliance is gimballed it should be protected by a crash bar or other means to prevent it being tilted when it is free to swing, and a strap, portable bar or other means should be provided to allow the cook to be secured in position, with both hands free for working, when the vessel is rolling. A means should be provided to lock the gimbal mechanism to prevent movement.

18.2.6.3 There should be secure storage for food in the vicinity of the galley.

18.2.7 Toilet facilities

18.2.7.1 Adequate toilet facilities, separated from the rest of the accommodation, should be provided for persons on board.

18.2.7.2 In general, there should be at least one flushing marine toilet and one wash hand basin for every 12 persons.

18.2.7.3 Due consideration should be given to the requirements of Section 23 Clean Seas.

18.2.8 Stowage facilities for personal effects

18.2.8.1 Adequate stowage facilities for clothing and personal effects should be provided for each person on board.

19 Protection of Personnel

19.1 Health and Safety at Work

19.1.1 *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)[2] and MGN 175 (M+F)[3]. 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 carrying out risk assessments, which are the basis for mitigating measures under all of the regulations.*

19.1.2 *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 owner/managing agent and skipper 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 work[4];
.2 control of vibration at work[5] [6];
.3 provision and use of work equipment[7];
.4 lifting operations and lifting equipment[8];
.5 working at height[9];
.6 manual handling[10];
.7 personal protective equipment[11];
.8 entry into dangerous spaces[12];
.9 safe movement onboard[13];
.10 working with carcinogens and mutagens[14];

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[2] MGN 20 (M+F) – "Implementation of EC Directive 89/391. Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997".
[3] MGN 175 (M+F) – "Health and Safety Regulations for Ships: Merchant Shipping and Fishing Vessel (Health and Safety at Work) (Amendment) Regulations".
[4] MGN 352 (M+F) – "The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007".
[5] MGN 353 (M+F) – "The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007"
[6] MGN 436 (M+F) – 'WHOLE-BODY VIBRATION: Guidance on mitigating against the effects of shocks and impacts on small vessels'.
[7] MGN 331 (M+F) – "The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006".
[8] MGN 332 (M+F) – "The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006".
[9] MGN 410 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Work at Height) Regulations 2010".
[10] MGN 90 (M+F) – "Implementation of EC Directive 90/269/EC Merchant Shipping and Fishing Vessels (Manual Handling Operations) Regulations 1998".
[11] MSN 1731 (M+F) - The Merchant Shipping and Fishing Vessels Personal Protective Equipment Regulations 1999 - **SI 1999/2205".**
[12] MGN 423 (M+F) – "Entry into Dangerous Spaces".
[13] SI 1988 No. 1641 The Merchant Shipping (Safe Movement on Board Ship) Regulations 1998, as amended.

.11 working with biological agents[15];
.12 working with chemical agents[16];
.13 safe means of access[17];
.14 employment of young persons[18];
.15 new and expectant mothers[19];.
.16 artificial optical radiation[20]; and
.17 asbestos[21]

19.1.3 The requirements include provisions for an onboard complaints procedure and a shoreside complaints procedure. If there are more than 5 seafarers onboard then there is a requirement to have a designated safety official onboard. Chapter 3 of The Code of Safe Working Practices for Merchant Seamen provides further information.

19.2 Structural Requirements and the Carriage of Equipment

19.2.1 19.2 provides minimum mandatory requirements which mitigate the common risks, but these may not be an exhaustive set of safety measures for any particular vessel, and further measures may be required as a result of the assessments made under the regulations highlighted in 19.1.

19.2.1 Deckhouses

19.2.1.1 A deckhouse used for the accommodation of persons must be constructed of adequate strength to withstand the forces of weather and sea to which it will be subjected in use.

19.2.2 Bulwarks, Guard Rails and Handrails (General)

19.2.2.1 Bulwarks, guardrails and guardwires should be supported efficiently by stays or stanchions. When application of such measures would impede the proper working of the vessel, alternative safety measures should be considered, for guidance ISO 15085 refers.

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[14] MGN 356 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Carcinogens and Mutagens) Regulations 2007".
[15] MGN 408 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Biological Agents) Regulations 2010".
[16] MGN 409 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010".
[17] MGN 337 (M+F) – "Provision of Safe Means of Access to Fishing and Other Small Vessels"
[18] MGN 88 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Employment of Young Persons) Regulations 1998".
[19] 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"
[20] MGN 428 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Artificial Optical Radiation) Regulations 2010".
[21] MGN 429 (M+F) – "The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Asbestos) Regulations 2010".

19.2.2.2 To protect persons from falling overboard, and when the proper working of the vessel is not impeded and there are persons frequently on the deck, bulwarks or three courses of rails or taut wires should be provided and the bulwark top or top course should be not less than 1000mm above the deck (in accordance with Load Line rules). The distance between the lowest course and the deck should not exceed 230mm and the distance between other courses should not exceed 380mm.

19.2.2.3 In a vessel fitted with a cockpit which opens aft to the sea, additional guardrails should be fitted so that there is no unprotected vertical opening (i.e. between vertical 'members') greater than 500mm in width.

19.2.2.4 For vessels operating less than 3 miles to sea from a safe haven, where it is impractical and unnecessary to fit guardrails, alternative arrangements may be acceptable subject to the Certifying Authority being satisfied as to the adequacy of the proposed arrangements. For example, on small motor vessels with narrow side decks alongside a deck house, a handrail on the side of the deckhouse may be fitted. On the foredeck, a centreline handrail may be considered more workable.

19.2.2.5 Handrails should be provided for access stairways, ladderways, passageways and for decks without bulwarks or guardrails. This provision should not be used in lieu of guardrails and bulwarks where required by the Code.

19.2.2.6 In an inflatable boat or a rigid inflatable boat, handgrips, toeholds and handrails should be provided as necessary to ensure safety of all persons on board during transit and the worst weather conditions likely to be encountered in the intended area of operation.

19.2.3 Safety Harnesses

19.2.3.1 A vessel should be provided with safety harnesses as necessary for all persons who may be required to work on deck, with a minimum number of 2.

19.2.3.2 Efficient means for securing the life lines of safety harnesses should be provided on exposed decks, and grabrails provided on the sides and ends of a deckhouse.

19.2.3.3 Fastening points for the attachment of safety harness life lines should be arranged having regard to the likely need for work on or above deck. In general, securing points should be provided in the following positions:-

.1 close to a companionway; and

.2 on both sides of a cockpit.

19.2.3.4 When guard rails or wires are not otherwise provided, or do not meet the requirements of Section 19.2.2, jackstays (which may be fixed or portable) secured to strong points, should be provided on each side of the vessel to enable crew members to traverse the length of the weather deck in bad weather.

19.2.3.5 Motor vessels with guardrails of a height less than that required by Section 19.2.2 may be accepted for areas where passengers are not normally allowed. These areas should be restricted to crew use only and alternative arrangements provided onboard for their protection.

19.2.4 Safe Location

19.2.4.1 In a non-decked vessel or rigid inflatable, it is the owner's/operator's responsibility to ensure that a safe location aboard the boat is provided for all persons.

19.2.5 Surface of Working Decks

19.2.5.1 The surface of a working deck should be non-slip.

19.2.5.2 Acceptable surfaces are: chequered plate, unpainted wood; a non-skid pattern moulded into FRP; non-slip deck paint; or an efficient non-slip covering.

19.2.5.3 Particular attention should be paid to the surface finish of a hatch cover when it is fitted on a working deck.

19.2.5.4 In an inflatable boat or rigid inflatable boat the upper surface of the inflatable buoyancy tube should be provided with a non-slip finish.

19.2.6 Recovery of Persons from the Water

19.2.6.1 An efficient means to aid the recovery of an unconscious person from the water, should be provided to the satisfaction of the Certifying Authority.

19.2.6.2 Special consideration should be made for vessels engaged in towing to ensure that a person can be recovered efficiently.

19.2.7 Personal Clothing

19.2.7.1 It is the responsibility of an owner/managing agent/skipper to advise passengers that the following requirements for items of personal clothing should be met:

.1 Each person on board a vessel should have protective clothing appropriate to the prevailing air and sea temperatures and that provides protection from precipitation and spray from the sea.

.2 Each person on board a vessel should have footwear having non-slip soles, to be worn on board.

19.2.7.2 When a vessel proceeds more than 20 miles from a safe haven and is operating in waters of sea surface temperature of 10 degrees centigrade or less, it is the responsibility of an owner/managing agent/skipper to advise passengers that they should have either an approved immersion suit, a dry suit or other efficient garment (such as a floatation suit meeting EN ISO 15027-1) to reduce the likelihood of cold water shock and hypothermia should the wearer enter the sea. Sea temperature data may be found in sources such as the Admiralty Pilot for a given sea area and period.

19.2.8 The Code of Safe Working Practices for Merchant Seamen

19.2.8.1 Every vessel should carry onboard an updated copy of the MCA's publication "The Code of Safe Working Practices for Merchant Seamen".[22]

19.2.8.2 Where it is not practical to carry the publication on board the vessel due to it's design, such as open boats without dry storage areas, The Code of Safe Working Practices for Merchant Seamen may be kept ashore. In such cases it must be made available to be used by all members of the crew.

19.2.9 Protection of Passengers

19.2.9.1 Operators should carefully consider the design and layout of the vessel and whether it is suitable for its intended operation, and suitably protects those onboard.

*19.2.9.2 **In addition** to 19.2.9.1 operators should consider carefully the intended operation of the vessel and whether or not there may be certain passengers which may be more susceptible to injury as a result of that intended operation. As part of the risk assessment required under the General Duties requirements of the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (SI 1997 No. 2962), as amended, (see section 19.1.1), the*

[22] MIN 402 (M) – "Code of Safe Working Practices for Merchant Seamen: Issue of Amendment 10" provides information on the latest amendment at the time of publication. Further amendments are likely.

operator is required to carry out a risk assessment for all persons onboard.

20 Medical Stores

20.1 Medical stores should be carried in accordance with the requirements set out in a Merchant Shipping Notice, currently MSN 1768 (M+F). This requires medical stores according to the distance from shore that a vessel operates. For all vessels operating up to 60 miles from a safe haven Category C stores are required, as listed in Appendix 2 to this Annex. The notice can be obtained from the MCA website at www.mcga.gov.uk or from any Marine Office. Vessels operating in these areas need carry Appendix 6 and 7 of that notice relating to the use of the stores themselves. The owners/managing agent should retain a full copy at the shore base for checking purposes.

20.2 The notes to the MSN explain the flexibility available, under the MSN, in terms of the selection of medicines and medical equipment to be carried. Where, because of the particular type of vessel or operation, and based on a risk assessment and professional medical advice, it is considered impractical or unsafe to carry a specific item, this may be omitted. Where any item is omitted, this should be stated on the medical stores, with a note indicating the specific item that is omitted and that its omission is based on risk assessment and medical advice.

21 Tenders and Dinghies

21.1 When a ship's tender or dinghy is provided (towed or carried by a vessel) it must be clearly marked with the permissible maximum weight which can be safely carried and with the name of the parent vessel.

21.2 All tenders or dinghies should be fit for the purpose intended, regularly inspected by the owner/managing agent and maintained in a safe condition. An inflatable tender is not required to meet the requirements for inflatable boats or rigid inflatable boats in Section 1.5.

22 Vessels fitted with a Deck Crane or Other Lifting Device

22.1 Reference should be made to Section 8.6 for requirements for safety standards for vessel stability during lifting operations.

22.2 Generally, a vessel fitted with a deck crane or other lifting device which will be used when the vessel is at sea should be a decked vessel with a watertight weather deck in accordance with Section 1.1.1 and 1.3.1.1 or be considered under Section 1.1.5.

22.3 Agreement should be obtained from the Administration for any proposal to fit a deck crane or other lifting device on a vessel which is not a decked vessel.

22.4 The vessel's structure, the crane or other lifting device and the supporting structure should be of sufficient strength to withstand the loads that will be imposed when operating at its maximum overturning moment and maximum vertical reaction.

22.5 Load tests and inspections to verify the safe operation of the crane or other lifting device, its foundation and supporting structures should be carried out to the satisfaction of the Certifying Authority. Tests should be conducted in accordance with a recognised standard for the installation. Such tests should be repeated after modifications, including any structural modifications, take place. A visual inspection of the crane or lifting device should be carried out annually.

22.6 Typically, the crane or other lifting device should be subjected to a 25% overload test. (In special circumstances a reduced overload may have to be accepted but in no case should this be less than 10 %.) During the overload test, the hoist, slew and luff performance should be tested at low speed, as appropriate. Tests for a variable load-radius type of crane or other lifting device should correspond to its rated performance (e.g. load radius chart).

22.7 Attention is drawn to the requirements of BS 7121: Part 2:2003 - Code of Practice for Safe Use of Cranes. Inspection, Testing and Examination. Paragraph 17 - Cranes on Water Borne Craft, has particular relevance to vessels certificated in accordance with this Code.

22.8 An inclinometer (pendulum) should be provided onboard for guidance to the crane or lifting device operator when controlling the lifting items of unknown weight.

22.8 A prominent clear notice should be posted on or near the crane or lifting device and contain the following information and instructions:-

.1 the maximum permitted load and outreach which satisfy the requirements of Section 8.6.3, or the safe working load (SWL), whichever is the lesser (operating performance data, i.e. load radius performance chart for a crane or other lifting device of variable load-radius type should be included as appropriate);

.2 in order to satisfy the requirement of the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006 (SI 2006/2184), any crane whose safe working load varies with its operating radius is provided with a means of accurately determining the radius at any time, clearly visible or accessible to the driver of the crane, showing the radius of the load lifting attachments at anytime. Provision should be made to enable the driver to ascertain the safe working load corresponding to that radius;

.3 details of all openings leading below deck which should be secured weathertight; and

.4 instructions for all personnel to be above deck before lifting operations commence.

22.9 A lifting system which incorporates counterbalance weight(s) should be specially considered by the MCA.

22.10 The Certifying Authority should be satisfied that the safety of the vessel is not endangered by lifting operations. Means should be provided for the efficient securing of cargo and loose equipment onboard during lifting operations. Instructions on safety procedures to be followed by the skipper should be provided to the satisfaction of the Certifying Authority.

22.11 It should be noted that the Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations 2006, SI 2006 No. 2184, as amended, introduce measures intended to protect workers from risks arising from the installation, provision and use of lifting equipment. Full guidance is provided in Marine Guidance Note 322 (M+F) and Chapter 21 of the Code of Safe Working Practices for Merchant Seaman.

23 Clean Seas

23.1 General

23.1.1 *A vessel 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 vessel is operating.*

23.1.2 *Responsibility for the vessel to be properly equipped and maintained to meet the prevailing requirements rests with the owner/managing agent.*

23.1.3 *It is also the responsibility of the owner/managing agent to ensure that a charterer of a vessel receives up-to-date and adequate information on prevention of pollution in the area in which the charterer intends to operate. The information may include the need to seek advice from local or harbour authorities, for which contact details should be given.*

23.1.4 *The disposal of ship generated waste to port reception facilities is regulated in the UK through the Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations 2009 (SI 2009 No.1776), as amended. Further guidance on the applicability of these Regulations can be found in MGN 387 (M+F) - Port Waste Reception Facilities Regulations 2003 and the "Port Waste Management Planning – A Guide to Good Practice" booklet available from Marine Offices. Vessel operators should ensure they manage their waste in a sustainable manner and fulfil the applicable requirements (if any) of these Regulations.*

23.2 Requirements for Preventing Pollution

23.2.1 Garbage

23.2.1.1 *The disposal of garbage into the sea is prohibited by the Merchant Shipping (Prevention of Pollution by Sewage and Garbage by Ships) Regulations 2008, SI 2008 No. 3257, as amended. Arrangements for the retention of garbage on board and for discharge to shore waste reception facilities should be provided.*

23.2.1.2 *Every vessel over 12m in length overall must display placards which notify the crew and passengers of the disposal requirements set out in regulations 26 to 28 and regulation 30 of SI 2008 No. 3257. An example of a garbage placard is provided in Appendix 16.*

23.2.1.3 *Every vessel certified to carry 15 persons or more must carry a Garbage Management Plan. SI 2008 No. 3257, as amended, states that the Garbage Management Plan must be in accordance with the guidelines developed by the IMO and set out in Schedule 3 to MSN 1807 (M+F).*

23.2.2 Oil

23.2.2.1 *The Merchant Shipping (Prevention of Oil Pollution) Regulations 1996 (SI 1996 No. 2154), as amended, explain the extent to which a vessel operating in accordance with this Code should comply with the Regulations. Guidance and additional information is provided in Appendix 6.*

23.2.2.2 *The Annex to MEPC.1/Circ 511 provides "Revised Guidelines For Systems For Handling Oily Wastes In Machinery Spaces Of Ships". The guidelines apply to ships of which the keels were laid on or after 1 January 1992.*

23.2.2.3 *Means to prevent pollution by oil should be acceptable to Administrations/authorities in the area in which a vessel operates.*

23.2.2.4 *Merchant Shipping Notice 1197[23] provides information on additional recording and documentation.*

23.2.3 ***Use of Antifouling Paints***

23.2.3.1 *On the 5th October 2001 the International Maritime Organization adopted the International Convention on the Control of Harmful Anti-Fouling Systems on Ships. This Convention prohibits the use of environmentally harmful organotins (for example, Tributyl Tin) in antifouling paints applied on ships and prevents the possible use in the future of other harmful substances in anti-fouling systems. The Merchant Shipping (Anti-fouling Systems) Regulations 2009 (SI 2009 No. 2796)[24] apply.*

23.2.3.2 *As a result of EC Regulation EC 782/2003 on the prohibition of organotin compounds on ships, it became compulsory for all ships in the EEA not to apply or re-apply organotin compounds which act as biocides in anti-fouling systems from 1st July 2003. For ships less than 24 metres in length it is not necessary to provide for a specific survey or declaration.*

23.2.4 ***Air Emissions***

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

23.2.4.2 *Further guidance on air emissions regulations can be found in MSN 1819 (M+F)[25] and the Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008 (SI 2008 No. 2924), as amended.*

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[23] M. 1197 – "The Merchant Shipping (Prevention Of Oil Pollution) Regulations 1983 Additional Recording And Documentation For Oil Record Books.

[24] MGN 398 (M+F) The Merchant Shipping (Anti-fouling Systems) Regulations 2009 provides further guidance.

[25] MSN 1819 (M+F) – "The Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008".

APPENDIX 1

EXTRACT FROM MGN 105 (M)

GUIDELINES ON THE USE AND FITTING OF RETRO-REFLECTIVE MATERIALS ON LIFE-SAVING APPLIANCES

1. Lifeboats and Rescue Boats

1.1 Retro-reflective materials should be fitted on top of the gunwale as well as on the outside of the boat as near the gunwale as possible. The materials should be sufficiently wide and long to give a minimum area of 150cm^2 and should be spaced at suitable intervals (approximately 80cm from centre to centre). If a canopy is fitted, it should be allowed to obscure the materials fitted on the outside of the boat, and the top of the canopy should be fitted with retro-reflective materials similar to those mentioned above and spaced at suitable intervals (approximately 80cm from centre to centre). In the case of partly enclosed or totally enclosed lifeboats, such materials should be placed as follows:

.1 for detection by horizontal light beams - at suitable intervals at half the height between the gunwale and the top of the fixed cover; and

.2 for detection by vertical light beams (e.g. from helicopters) - at suitable intervals around the outer portion of the horizontal (or comparable) part of the top of the fixed cover;

.3 retro-reflective materials should also be fitted on the bottom of lifeboats and rescue boats which are not self-righting.

2. Liferafts

2.1 Retro-reflective materials should be fitted around the canopy of the liferaft. The material should be sufficiently wide and long to give a minimum area of 150cm^2 and should be spaced at suitable intervals (approximately 80cm from centre to centre) at a suitable height above the waterline, doorways included, if suitable. On inflatable liferafts, retro-reflective materials should also be fitted to the underside of the floor, cross-shaped in the centre. The dimension of the cross to be half the diameter of the liferaft, and a similar cross should be applied to the top of the canopy.

2.2 On liferafts which are not equipped with canopies, materials which should be sufficiently wide and long to give a minimum area of 150 cm^2 should be attached to each buoyancy chamber at suitable intervals (approximately 80cm centre to centre) in such a manner that they are visible both from the air and from a ship.

3. Lifebuoys

3.1 Retro-reflective material of a sufficient width (approximately 5cm) should be applied around or on both sides of the body of the lifebuoy at four evenly-spaced points.

4. Buoyant Apparatus

4.1 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.

5. Lifejackets

5.1 Lifejackets should be fitted with patches of retro-reflective materials with a total area of at least 400cm^2 distributed so as to be useful for search from air and surface craft from all directions. In the case of a reversible lifejacket, the arrangement should be complied with no matter which way the lifejacket is put on. Such material should be placed as high up on the lifejacket as possible.

6. Immersion Suits

6.1 Immersion suits should be fitted with patches of retro-reflective material with a total area of at least 400cm^2 distributed so as to be useful for search from air and surface craft from all directions.

6.2 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 with a total area of at least 100cm^2.

7. General Remarks

7.1 The reflective tape used should be wheelmarked (although the wheelmark need not appear on the tape itself).

APPENDIX 2

MEDICAL STORES FOR ALL POLICE BOATS

CATEGORY C STORES, AS REQUIRED BY MSN 1768 (M+F)

Ref.* No.	Statutory Treatment Requirements	Recommended Medicine and Dosage Strength Representing best practice.	Recommended Quantity for 10 workers or for a lifeboat/liferaft
1.	**Cardio Vascular**		
(b)	Anti-angina preparations	Glyceryl Trinitrate Spray 400 micrograms / metered 200 dose aerosol	1 unit
2.	**Gastro intestinal system**		
(b)	Anti-emetics	Hyoscine hydrobromide 0.3 mg tablets or Cinnarizine 15mg	60 60
(d)	Anti-diarrhoeals	Loperamide 2mg tablets	30
3.	**Analgesics and Anti–spasmodics**		
(a)	Analgesics,anti-pyretics and anti-inflammatory agents	i) Paracetamol 500 mg tablets and ii) Ibuprofen 400 mg tablets	50 50
4.	**Nervous system**		
(c)	Seasickness remedies	Hyoscine hydrobromide or (See 2b) Cinnarizine	Use 2(b)
5.	**Medicines for external use**		
(a)	Skin Medicines		
	- Antiseptic solutions	100 ml solution or pre-impregnated wipes containing 0.015% w/v chlorhexidine and 0.15% w/v cetrimide	1 bottle or 1 pack wipes
	- Burn preparations	Proprietary antiseptic cream	1

**The numbering refers to the number allocated to the medicine or equipment in EC Directive 92/29*

MEDICAL EQUIPMENT

	Statutory Treatment Requirements	Recommended Specification	Quantity
1.	**Resuscitation Equipment**		
	Mask for mouth to mouth resuscitation	Pocket Face Mask	1
2.	**Dressing and suturing equipment**		
	Adhesive Elastic bandage	Adhesive Elastic Bandage 7.5cm x 4m	1
	Disposable polyethylene gloves	Latex free, vinyl	5 prs
	Adhesive dressings	Assorted, sterile	20
	Sterile bandages with unmedicated dressings (Ambulance dressings)	(1) medium, No.1 (12x10)cm (2) large, No.2 (20x15)cm (3) extra large No.3(28x20)cm	6 2 2
	Adhesive sutures or zinc oxide bandages	75mm adhesive suture strips	6
	Sterile gauze swabs	Packet containing 5 sterile gauze pads size 7.5cms x 7.5cms	1
		Recommended Additional Items	
		Scissors stainless steel / or sterile disposable	1pr
		Triangular bandages about 90cm x 127cm	4
		Medium safety pins, rustless	6
		Sterile paraffin gauze dressings	10
		Plastic burn bags	1

First Aid Instructions or a First Aid Manual (St John's, Red Cross or St Andrew's) should also be included with the Medical Stores.

APPENDIX 3

LIQUID PETROLEUM GAS INSTALLATION FOR DOMESTIC USE

1. General Information

1.1 This guidance is based on ISO 10239 and a system constructed to the requirements of this standard or equivalent will be acceptable as long as additionally there is suitable gas detection equipment fitted.

1.2 Possible dangers arising from the use of liquid petroleum gas (LPG) open flame appliances in the marine environment include fire, explosion and asphyxiation due to leakage of gas from the installation.

1.3 Consequently, the siting of gas consuming appliances and storage containers and the provision of adequate ventilation to space containing them is most important.

1.4 It is dangerous to sleep in spaces where gas-consuming open-flame appliances are left burning, because of the risk of carbon monoxide poisoning.

1.5 LPG is heavier than air and if released, may travel some distance whilst seeking the lowest part of a space. Therefore, it is possible for gas to accumulate in relatively inaccessible areas, such as bilges, and diffuse to form an explosive mixture with air, this is also the case with petrol vapours.

1.6 A frequent cause of accidents involving LPG installations is the use of unsuitable fittings and improvised “temporary” repairs.

2. Stowage of Gas Cylinders

2.1 LPG cylinders, regulators and safety devices should be stowed on the open deck (where leakage will not accumulate) or in a compartment that is vapour-tight to the vessels interior and fitted with a vent and drain, so that gas which may leak can disperse overboard.

2.2 The vent and drain should not be less than 19 mm in diameter, run to the outside of the craft and terminate 75 mm or more above the 'at rest' waterline. The drain and locker ventilation should be 500 mm or more from any opening to the vessels interior.

2.3 The cylinders and associated fittings should be positively secured against movement and protected from damage in any foreseeable event.

2.4 Any electrical equipment located in cylinder lockers should be certified safe for use in the potential explosive atmosphere.

3. Cylinders and Attachments

3.1 Each system shall be fitted with a readily accessible, manually operated isolating valve in the supply pressure part of the system.

3.2 In multiple cylinder installations, in addition to each cylinder shutoff valve there should be non-return valves near the stop valves. Where there is a change over device (automatic or manual) it should be provided with non-return valves to isolate any depleted container.

3.3 When more than one container can supply a system, the system should not be used with a container removed unless the unattached pipe is fitted with a suitable gas tight plug arrangement.

3.4 Containers not in use or not being fitted into an installation should have the protecting cap in place over the container valve.

4. Fittings and Pipework

4.1 For rigid pipework systems, the pipes should be made from solid drawn copper alloy or stainless steel tube. Steel tubing or aluminium or any materials having a low melting point should not be used.

4.2 Connection between rigid pipe sections should be made with hard solder (minimum melting point 450ºC), appropriate compression or screwed fittings are recommended for general use for pipework in LPG installations.

4.3 Where a flexible hose is used, its length should be kept to a minimum, it should be protected from inadvertent damage where appropriate, it should meet the requirement of EN 1763 or equivalent and be installed in a manner that gives access for inspection along its whole length.

4.4 There should be no joints in the pipework in the engine spaces.

5. Appliances

5.1 All unattended appliances should be of the room sealed type.

5.2 Cookers and hobs are not considered to be unattended appliances.

5.3 All gas burners and pilot flames should be fitted with a flame supervision device which will shut off the gas supply to the burner or pilot flame in the event of flame failure.

6. Ventilation

6.1 The ventilation requirements of a space containing a LPG appliance should be assessed against an appropriate standard (e.g. Annex B of ISO 10239) and should take into account gas burning equipment and persons occupying that space.

6.2 Where ventilators required for LPG appliances in intermittent use can be closed, there should be appropriate signs at the appliance warning of the need to have those ventilators open before the appliance is used.

7. Gas Detection

7.1 Suitable means for detecting the leakage of gas should be provided in a compartment containing a gas-consuming appliance or in any adjoining space or compartment into which the gas, of greater density than air, may seep.

7.2 Gas detectors heads should be securely fixed in the lower part of the compartment in the vicinity of the gas-consuming appliance and other space(s) into which gas may seep. In areas where the detector head is susceptible to damage in the lowest part of the compartment (e.g. engine space bilge) the detector head should at least be fitted below the lowest point of ignition.

7.3 A gas detector system of a suitable type should, preferably, be actuated promptly and automatically by the presence of a gas concentration in air of not greater than 0.5 per cent (representing approximately 25 per cent of the lower explosive limit). The detection system should incorporate a visible and audible alarm, which can be heard in the space concerned and the control position with the vessel in operation.

7.4 Gas detection system components (i.e. gas detector head) likely to be in an explosive air/gas atmosphere should not be capable of igniting that atmosphere.

7.5 In all cases, the arrangements should be such that the detection system can be tested frequently whilst the vessel is in service and should include a test of the detector head operation as well as the alarm circuit, in accordance with the manufacturer's instructions.

7.6 The detection equipment should be maintained in accordance with the manufacturer's requirements.

8. Emergency Action

8.1 A suitable notice, detailing the action to be taken when an alarm is given by the gas detection system, should be displayed prominently in the vessel.

8.2 The information given should include the following:-

.1 The need to be ever alert for gas leakage; and

.2 When leakage is detected or suspected, all gas-consuming appliances should be shut off at the main supply from the container(s). NO SMOKING should be permitted until it is safe to do so (i.e. the gas leakage has been eliminated and the spaces fully ventilated)

.3 NAKED LIGHTS SHOULD NEVER BE USED AS A MEANS OF LOCATING GAS LEAKS.

9. Owner/Operator Testing

9.1 It is strongly recommended that LPG systems are tested for leakage regularly. All connections should be checked by;

.1 routine observation of the bubble leak detector (if fitted),

.2 observation of the pressure gauge for pressure drop with the appliance valves closed and cylinder valve opened then closed (if fitted with gauge on supply pressure side),

.3 visual inspection,

.4 manual leak testing, (without breaking into the system)

.5 testing with soapy water or detergent solution (with appliance-burner valves closed, and cylinder and system valves open).

CAUTION – Do not use solutions containing ammonia

If leakage is present, close the cylinder valve and have the system repaired before further use. WARNING – NEVER USE A NAKED FLAME TO CHECK FOR LEAKS.

APPENDIX 4

MARPOL OIL POLLUTION PREVENTION INFORMATION

1. MARPOL Requirements - Oil Pollution

1.1 Discharge Limits and Equipment

1.1.1 Vessels should, as far as practicable, retain on board oil or oily mixtures for discharge in accordance with 1.3 below, or discharge them in accordance with the requirements of 1.1.2 and 1.2 below. (Reference: Annex I of MARPOL, Reg 14.4.)

1.1.2 Where oil and oily mixtures are to be discharged into the sea they should be discharged in accordance with the following provisions:

.1 the ship is proceeding *en route*; and

.2 the ship has in operation equipment approved by that Administration that ensures that the oil content of the effluent without dilution does not exceed 15 parts per million (ppm);
(Reference: Annex I of MARPOL, Reg 15.6)

1.2 Effluent Retention on board

1.2.1 Where effluent cannot be discharged into the sea in compliance with paragraph 1.1, it shall be retained on board or discharged ashore to reception facilities.

(Reference: Annex I of MARPOL, Reg 15.9)

1.3 Chemicals

1.3.1 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 discharge.

(Reference: Annex I of MARPOL, Reg 15.8)

1.4 Exceptions

1.4.1 The above shall not apply to:-

.1 the discharge into the sea of oil or oily mixture necessary for the purpose of securing the safety of a ship or saving ife at sea; or

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

.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 minimizing the discharge; and

.2 except if the owner or the master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or

.3 the discharge into the sea of substances containing oil, approved by the Administration, 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 any Government in whose jurisdiction it is contemplated the discharge will occur.

(Reference: Annex I of MARPOL, Reg 4)

APPENDIX 5

PRE –DEPARTURE SAFETY BRIEFING FOR PASSENGERS ON POLICE VESSELS

1 Before the commencement of any voyage the skipper should ensure that all persons on board are briefed, as a minimum, on the stowage and use of personal safety equipment such as lifejackets, thermal protective aids and lifebuoys, and the procedures to be followed in cases of emergency.

2 In addition to the requirements of 1, the skipper should brief at least one other person who will be sailing on the voyage regarding the following:-

.1 Location of liferafts and the method of launching;

.2 Procedures for the recovery of a person from the sea;

.3 Location and use of pyrotechnics;

.4 Procedures and operation of radios carried on board;

.5 Location of navigation and other light switches;

.6 Location and use of firefighting equipment;

.7 Method of starting, stopping, and controlling the main engine;

.8 Method of navigating to a suitable port of refuge.

..9 Location of emergency escapes.

Safety cards will be considered to be an acceptable way of providing the above information.

APPENDIX 6

FIRE TEST FOR FRP

1. Heat Source

1.1 The heat source for the fire test should be provided by a Butane or Propane fuelled Bunsen or Tirril burner with a nominal 9.525mm (3/8inch) inside diameter tube adjusted to give a pre-mixed air/gas flame of 38.1mm (1½ inch) length. The minimum temperature measured in the centre of the flame with a calibrated thermocouple pyrometer must be 843.33^{o}C (1550^{o}F).

2. Specimen

2.1 The specimen should be 500mm x 500mm. The edges of the specimen should be housed in a steel frame sufficiently to prevent them igniting during the test. The specimen should be cured for at least 7 days at ambient temperature or 1 day at ambient temperature and 16 hours at 40^{0}c before testing. The lay-up of the panel should be representative of the structure being considered.

3. Test Procedure

3.1 The specimen should be oriented vertically in a draft free location. The flame should impinge on the centre of the specimen with the flame normal to its surface. The surface of the specimen affected by the fire risk should be exposed to the flame at a set distance of 19.1mm (¾ inch) from the end of the burner tube. The flame should not burn through the specimen within 15 minutes.

APPENDIX 7

IGNITABILITY TEST FOR COMBUSTIBLE MATERIAL

1. Test Specimens

1.1 One specimen is to be prepared

1.2 The specimen is to be a minimum of 150mm x 150mm and of the thickness which is used on the vessels, together with any facing with which it is normally covered.

2. Conditioning of Test Specimens

2.1 The conditioning atmosphere should have a temperature of 20 ± 20°C and relative humidity of 65 ± 2%.

2.2 The specimen should be laid flat, in the conditioning atmosphere for a period of 24 hours, or for a sufficiently longer period in order to ensure that the mass of the specimen shows no progressive change greater than 0.25% when it is determined at intervals of 2 hours.

3. Atmosphere for Testing

3.1 The test is to be conducted in an atmosphere the same as for conditioning the specimen, or within 2 minutes of removal from the conditioning atmosphere.

3.2 Appropriate measures should be taken to prevent draughts in the vicinity of the testing equipment when testing is in progress.

4. Testing Procedure

4.1 Source of Ignition

4.1.1 The source should be obtained by using a burner consisting of a copper tube having a length of 150mm and inside and outside diameters of 5mm and 6mm respectively connected by a plastic or rubber tubing to a gas tap supplying natural gas. The copper tube is to have no opening for the supply of air.

4.2 Height of Flame

4.2.1 Before the test takes place the burner flame is to be adjusted to a height of 32mm.

4.3 Test Procedure

4.3.1 Place the specimen horizontally on a metal tripod stand with the upper surface of the specimen facing downwards (i.e. with normally exposed face on underside) such that the height of this surface of the specimen is approximately 8mm below the top of the burner flame. Apply the burner flame at right angles to the plane of the specimen in the centre of specimen. After one minute the burner flame is to be removed clear of the specimen and the time in seconds to extinction of any flaming is to be recorded.

4.3.2 The test in paragraph 4.3.1 is to be repeated after any flaming or smouldering has ceased and the temperature of the specimen has returned to normal except that the centre of the burner flame is to be positioned at the midpoint of any edge of the specimen. Again the time in seconds to extinction of any flaming after the removal of the burner is to be recorded.

5 Pass Criteria

5.1 An insulation is deemed to be "not readily ignitable" when any flaming of the test specimen ceases within 20 seconds of the removal of the burner.

APPENDIX 8

EXPOSURE OF PERSONNEL TO POTENTIALLY HARMFUL NOISE (see Section 19.8.8)

(Edited extracts from MGN 352 (M+F))

1. The following figures illustrate the acceptable maximum daily noise doses for unprotected ears, based on dB(A) sound energy received:-

Less than	80dB(A)	for	no limit (24 hours)
	82dB(A)	for	16 hours
	85dB(A)	for	8 hours
	90dB(A)	for	2 hours
	95dB(A)	for	50 minutes
	100dB(A)	for	15 minutes
	105dB(A)	for	5 minutes
	110dB(A)	for	1 minute

2. <u>Recommended maximum limits for different areas on board ship</u>

The limits below should be regarded as maximum levels, rather than desirable levels, and as appropriate take account of the attenuation (noise reduction) that can be achieved with ear protectors.

Area Recommended Limit
Machinery spaces – general 90 dB(A)
Machinery spaces – unmanned 110 dB(A)
Machinery control rooms 75 dB(A)
Wheelhouse/bridge/chart room/radar room 65 dB(A)
Bridge wings 70 dB(A)
Radio room/communications centre 60 dB(A)
Galleys, serveries, pantries 75 dB(A)
Normally unoccupied spaces 90 dB(A)
Sleeping cabins, Day cabins, hospital 60 dB(A)
Offices, Conferences rooms etc 65 dB(A)
Mess rooms, recreation rooms recreation areas 65 dB(A)
Open deck areas 75 dB(A)
Corridors, changing rooms, bathrooms, lockers and similar spaces 80 dB(A)
Ship's whistle 110 dB(A)
(These levels are only approximate as engine noise varies considerably with type of installation).

APPENDIX 9

STANDARDS ANNEX

Numbering refers to appropriate section reference. Standards are for reference information. When referencing the standards for use during construction, or supply of equipment, the latest edition should be used. Equivalent standards may be considered subject to the acceptance of the Certifying Authority.

1.1.5.2	ISO 11812 Small Craft. Watertight cockpits and quick-draining cockpits
1.2.2.5.1	ISO 12215 Small Craft – Hull Construction/Scantlings
1.3.2.3	As above
1.5.1.3	ISO 6185-2 Inflatable Boats. Boats with a maximum motor rating of 4.5kW to 15kW inclusive
	ISO 6185-3 Inflatable Boats. Boats with a maximum motor rating of 15kW and greater
1.5.2.1	As above
2	ISO 12216 Small craft. Windows, portlights, hatches, deadlights and doors. Strength and watertightness requirements.
4.3.3.1	ISO 10088 Small Craft. Permanently installed fuel systems and fixed fuel tanks
4.3.3.2	ISO 13591 Small craft. Portable fuel systems for outboard motors
4.3.4	ISO 13591 Small craft. Portable fuel systems for outboard motors
4.4.5	ISO 7840 Small Craft. Fire resistant fuel hoses
5.1.3	The Institution of Electrical Engineers Regulations for the Electrical and Electronic Equipment of Ships with Recommended Practice for their Implementation, 6th Edition 1990 and subsequent supplements.
	British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.
	BS 6883 Specification for elastomer insulated cables for fixed wiring in ships. (Suitable for lighting, power, control, instrumentation and propulsion circuits.)

	IEC 92-350, Low-voltage shipboard power cables. (General construction and test requirements for shipboard cables with copper conductors intended for low-voltage power systems at voltages up to and including 0.6/1kV.)
	ISO 10133 Small Craft. Electrical systems. Extra-low voltage d.c. installations
	ISO 13297 Small Craft. Electrical systems. Alternating current installations
	BS EN 28846:1993 Small craft. Electrical devices. Protection against ignition of surrounding flammable gases
	BS EN 61779-4:2000 Electrical apparatus for the detection and measurement of flammable gases
6.1.5	ISO 13929 Small craft. Steering gear. Geared link systems ISO 10592 Small craft. Hydraulic steering systems
8 & 9	ISO 12217-1 Small craft. Stability and buoyancy assessment and categorisation. Non-sailing boats of hull length greater than or equal to 6 metres
11.1.4	International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document
11.2.1	International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document
11.5.2	ISO 10239: Small Craft. Liquefied Petroleum Gas (LPG) system
11.5.3	International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document
11.5.6	ISO 9094-1 Small Craft. Fire protection Craft with a hull length of up to and including 15m
	ISO 9094-2 Small Craft. Fire Protection Craft with a hull length of over 15m and up to 24m
11.6.2	International Code for Application of Fire Test Procedures (FTP Code) – International Maritime Organisation Document
	BS 5852-1 Assessment of the ignitability of upholstered furniture
12.4.1	BS EN 3 Portable Fire Extinguishers
12.4.2	as above

12.4.4 BS EN 1869 Fire blankets

12.5.2 BS EN 3 Portable Fire Extinguishers

12.5.4 BS EN 1869 Fire blankets

19.2.1 ISO 15085 Small craft - Guardrails, lifelines and handrails

19.8.7 BS 5378 Safety signs and colours

APPENDIX 10

This Appendix gives information on the manning and operation of small vessels in police use as follows:

Section 1 - Areas of Application
Section 2 - Minimum Qualifications of the Person in Charge of the Vessel and the Additional Person When Required To Be Carried
Section 3 - Revalidation of Certificates & Licences
Section 4 - Withdrawal of Certificates of Competency or Service

General

Vessels to which this Code applies and which comply with its requirements, will be exempt from the need to comply fully with the Merchant Shipping (Training and Certification) Regulations 1997,(SI 1997 No. 348), as amended, and the Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997 (SI 1997 No.1320), as amended, provided the manning of the vessel is in accordance with the standards given in paragraph 2 below when operating in the areas described in paragraph 1 below.

1. Areas of Application

Police vessels operating within the following areas should carry at least the qualified personnel shown in Section 2 below:

Area Category 1	Police boats operating up to 60 miles from a safe haven
Area Category 2	Police boats operating up to 20 miles from a safe haven
Area Category 3	Police boats operating up to 20 miles from a safe haven in favourable weather and daylight
Area Category 4	Police boats operating up to 3 miles from a safe haven
Area Category 5	Police boats operating up to 3 miles from a safe haven in favourable weather and daylight

2. Minimum Qualifications of the Person in Charge of the Vessel (Skipper) and of the Additional Persons Required to be Carried on Board

2.1 General

2.1.1 All Certificates and Licences of Competency or Service are to be appropriate to the type of vessel in which they are used.

2.1.2 All seafarers should be trained or certified or otherwise qualified to perform their duties. Training may include onboard training or supervised experience, such that the seafarer is competent to perform their duties safely and without risk to others.

2.1.3 All crew helming on Police vessels must be able to demonstrate competency in Police Boat Handling in line with the ”Practice Advice for Tactics and Procedures Used in Marine Policing”.

2.2 IYT Certificates

2.2.1 Holders of International Yacht Training (IYT) certificates, or those with STCW certificates of competency should be aware of their designated safety and pollution prevention duties in the operation of the ship and are required to complete those elements of MCA approved basic training courses. The four elements of basic training are:

.1 personal survival techniques (STCW Code – Table A-VI/1-1);
.2 fire prevention and fire fighting (STCW Code – Table A-VI/1-2);
.3 elementary first aid (STCW Code – Table A-VI/1-3); and
.4 personal safety and social responsibilities (STCW Code A-VI/1-4).

2.3 Qualifications Required

2.3.1 A vessel should be manned in accordance with Table A10.1 of this Appendix. Qualifications differing from those tabled, but of equal standing or specialist application, will be considered by the MCA.

2.5 Radio Qualifications

2.5.1 The skipper of every vessel should hold a Radio Operator’s Certificate suitable for the radio equipment on board. See Annex 1, Section 13 – Radio Equipment.

2.6 Medical Fitness

2.6.1 The Police shall take responsibility for the occupational health of those employed onboard, by ensuring they are medically fit for their duties at sea.

2.7 Basic Sea Survival Course

2.7.1 Skippers and all crew of vessels to which the Code applies should hold an approved Basic Sea Survival Course Certificate, should have familiarisation training with life-saving appliances and emergency procedures on board to ensure that they are able to be self sufficient in an emergency.

.

2.7.2 All passengers should have familiarisation training with life-saving appliances and emergency procedures on board to ensure that they are able to be self sufficient in an emergency.

2.8 First Aid Training

2.8.1 The skipper or nominated first-aider on a police vessel should:

Have completed the NPIA First Aid Learning Programme Learning Descriptor Module 2 (First Aid Skills Police (Emergency First Aider at Work); Initial Training) and Module 4 (First Aid at Work Police; Initial and Requalification) and has been instructed in –

Rescue and Transportation of Casualties - The trainee should be capable of applying appropriate transportation alone, or with the assistance of another person, taking into account confined spaces and differing heights onboard, including:

- temporary ad hoc aids for transport
- stretcher transport
- transport on a chair
- hazards of transport in cases of injury to the casualty's pelvis or spine;

or

hold an MCA approved Elementary First Aid Certificate (or the First Aid at Sea Certificate or Medical First Aid Certificate), an RYA First Aid Certificate, or a SeaFish Basic First Aid Certificate, provided use of the medical stores is covered in the course.

2.8.2 The skipper or nominated first-aider should undertake refresher training at least every five years.

2.9 RYA Professional Practices and Responsibilities

2.9.1 Skippers holding RYA certificates of competency and/or service should undertake a Professional Practices and Responsibilities Certificate.

2.10 Radar Training

2.10.1 In any vessel that carries radar, the Skipper and any member of the crew who is liable to use the radar are strongly recommended to undertake appropriate training in its use.

2.11 Second-in-charge

2.11.1 There should be a second person in charge on board whenever the police vessel is acting in a operational police role, such on patrol. That person should meet as a minimum the following requirements:

.1 Have a valid RYA Powerboat Level 2/Helmsman Certificate, as appropriate;
.2 Have a basic sea survival course certificate (see 2.7);
.3 Meet the minimum requirements for medical fitness (see 2.6); and
.4 Have a radio certificate (see 2.5).

2.11.2 Individual Police Marine Units may wish to increase the level of training provided to second persons in charge due to local conditions, circumstances and operational requirements, if risk assessment demonstrates that it is necessary.

3. Suitable experience

3.1 The senior officer in the Police Marine Unit should be satisfied that the officers working in their Marine Unit are qualified in accordance with PBC3 and are suitably experienced to undertake their duties.

4. Withdrawal of Certificates of Competency or Service

4.1 The Yachtmaster Qualifications Panel reserves the right to withdraw a RYA/DfT Certificate of Competency or Service if due cause is shown.

TABLE A10.1 – Manning Requirements for Police Vessels

	AREA CATEGORY		5	4	3	2	1
SKIPPERS QUALIFICATION ACCEPTABLE FOR GIVEN AREA CATEGORY	STCW Master (Code Vessels less than 200gt unlimited area)	Note E	√	√	√	√	√
	Certificate of Competency -Yachtmaster Ocean (MCA Accepted)	Note A	√	√	√	√	√
	STCW Master (Code Vessels less than 200gt limited to 150 miles from a safe haven)	Note E	√	√	√	√	√
	Certificate of Competency or Service - Yachtmaster Offshore (MCA Accepted)	Note A	√	√	√	√	√
	MCA Boatmasters Licence Grade 1,2 & Modified Grade 3	Note A Note B	√	√	√	√	√
	RYA/DfT Certificate of Competency or Service – Yachtmaster Coastal	Note A	√	√	√	√	
	MCA Police Offshore RIB Course/MCA Police Coastal Patrol Course (Existing certificate holders only)	Note F	√	√	√	√	
	RYA/DfT Advanced Powerboat Certificate .		√	√	√	√	
	Certificate of competence for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√	
	RYA/DfT Day Skipper Theory & Practical Certificate	Note A	√	√			
	Local Authority Licence for appropriate area	Note A Note D	√				
	RYA/DfT Day Skipper Practical Certificate	Note A	√				
	RYA/DfT Powerboat Level 2 Certificate	12 months relevant experience	√				
ADDITIONAL REQUIREMENTS	Unless operating in the single-handed mode in accordance with section 26.9, a second person trained in accordance with the table below who is experienced and capable of assisting the Skipper in an emergency should also be on board.		√	√	√	√	√

Note 1 **Qualifications differing from those tabled, but of equal standing or specialist application will be considered by MCA. MGN 411 (M+F)[26] provides accepted alternatives.**

Note 2 **Vessels regularly engaged on near coastal voyages from ports outside the UK, have to abide by the manning requirements of the Administration regulating that coastal area.**

Note 3 **Refer section 2.2.1 – RYA/DfT certificates of competency and/or service, and other MCA recognised certificates, should carry the endorsement – "valid for commercial use on vessels subject to the Codes of Practice published by the Maritime and Coastguard Agency".**

Note A **Certificate should be designated motor or sail as appropriate.**

Note B **Holders of MCA Boat Master's Licences originally issued prior to 1st January 2007 accepted for use on small commercial vessels, limited to the area of the licence are acceptable. Such licences must be revalidated in accordance with the Merchant Shipping (Inland Waterways and Limited Coastal Operations) (Boatmasters' Qualifications and Hours of Work) Regulations 2006 (SI 2006 No. 3223), as amended.**

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Note C **Competent Authority in respect of manning requirements means either the Maritime and Coastguard Agency or an organisation that issues Certificates of Competence which has applied for and granted recognition by the Maritime and Coastguard Agency as having the appropriate technical and administrative expertise.**

Note D **Local Authority Licence - only those Local Authorities that have the approval of the MCA may issue Licences under this Code.**

Note E **Only valid for use on vessels up to 200GT, and under this Code this restriction is further limited to vessels to which this Code is applicable.**

Note F **Existing certificate holders are those persons who had the MCA Police Offshore RIB Course or MCA Police Coastal Patrol Course before the 1st December 2009.**

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[26] MGN 411 (M+F) – "Training and Certification Requirements for the Crew of Fishing Vessels and their Applicability to Small Commercial Vessels and Large Yachts".

ANNEX 2

Application for a Police Boat Certificate

Name of Vessel_____

Official No._____

Vessel type_____

Gross Tonnage/Weight_____

Overall length_____

Port of Registry_____

Name and address of Owner_____
_____
_____
_____
_____
_____

Date of Build_____

Base Port_____

TO BE CERTIFICATED IN ACCORDANCE WITH CODE '__' (Identify Code by letter)

Intended are of operation (including distance offshore if proceeding to sea)
_____
_____
_____

Maximum number of persons to be carried including crew_____

_____

EXISTING BOATS

Year of build_____

Does the vessel hold a valid Police Boat Certificate? _____

If yes, what is the date of expiry or next inspection? _____

Does the vessel hold a current Small Commercial Vessel or Workboat Certificate?
_____

If yes, what is the date of expiry or next inspection? _____

Area of Operation allowed by any existing certificate_____

Classification Society Certificate or equivalent held? _____

How long has the vessel operated in the requested area of operation?_____

NEW BOATS

Name and address of builder / supplier
_____
_____
_____

Completion / delivery date_____

Boatbuilder's Declaration or Classification Society Certificate attached_____

Declaration by Owners attached_____

_____

SURVEY / EXAMINATION ARRANGEMENTS

Where will the survey / examination be undertaken? _____
_____

Anticipated date_____

Name of Applicant_____

Address_____
_____
_____
_____

Contact Telephone No._____

Signature_____

ANNEX 3

Boatbuilder's Declaration for a United Kingdom Police Boat

Name of Vessel_____ Name and Address of Owner_____

_____

Official No._____ _____

_____

Vessel type_____ _____

_____

Gross Tonnage/Weight_____ _____

Overall length_____ Port of Registry_____

Where built_____

We hereby declare that the above mentioned vessel has been supplied by us in accordance with the following provisions of Code '__' of the Police Boat Code (PBC3) accepted by the Maritime and Coastguard Agency *(insert relevant Code letter).*

*ALL PROVISIONS
*PROVISONS/CLAUSE NO. BUILDER'S INITIALS/SIGNATURE
**delete as appropriate*

_____ _____
_____ _____
_____ _____
_____ _____

Signed_____

For and on behalf of _____Boatbuilders

On _____20___

This declaration does not in itself provide full compliance with the Code, nor do its contents affect the statutory rights of the customer.

ANNEX 4

Owner's Declaration for a United Kingdom Police Boat

Name of Vessel_____ Name and address of Owner_____

_____

Official No._____ _____

_____

Vessel type_____ _____

_____

Gross Tonnage/Weight_____ _____

Overall length_____ Port of Registry_____

Builders/Suppliers_____

I hereby declare that the above mentioned vessel has been supplied with the equipment and fittings as required Code '__' of the Police Boat Code (PBC3) accepted by the Maritime and Coastguard Agency subject to the following exceptions:.

*NONE
*As indicated below
**delete as appropriate*

_____ _____
_____ _____
_____ _____
_____ _____

Signed_____

For and on behalf of _____Police Authority

Address_____
_____
_____

On _____20___

ANNEX 5

Record of Particulars of a Police Boat certified in accordance with

Code ☐

Vessels certified under the Police Boat Code (PBC3) should receive a document with the above title, which is issued by the Certifying Authority. It is anticipated that the "Record of Particulars of a Police Boat certified in accordance with Code A/B/C/D " will be very similar to the SCV2 that the Certifying Authority will have produced for vessels operating under the Codes of Practice for Small Commercial Vessels. The main standards for PBC3 are based upon the Maritime and Coastguard Agency's publication Marine Guidance Note 280 (M).

However the "Record of Particulars of a Police Boat certified in accordance with Code A/B/C/D" will need to take account of the special measures taken for Police Boats in Police Boat Codes A, B, C and D and the slight differences within Annex 1 to PBC3.

ANNEX 6

Declaration of Survey/Examination of a Police Boat.

Name of Vessel_____

Official No._____

Port of Registry_____

Gross Tonnage/Weight_____

Max No. of Persons to be carried____

Date of Build_____

Name and Address of Owner_____
_____
_____
_____
_____
_____

Overall length_____

Hull ID No._____

I hereby declare that the above named vessel has been surveyed/examined and found to be in accordance with the requirements of Code '__' of the Police Boat Code (PBC3) accepted by the Maritime and Coastguard Agency, subject to the following conditions:

_____
_____
_____
_____
_____
_____
_____
_____
_____

Surveyed/examined at_____on _____20__

Name of Authorised Person_____

Signature_____

For and on behalf of_____

Date_____

ANNEX 7

Police Boat Certificate

Name of Vessel_____ Name and address of Owner_____

_____

Official No._____ _____

_____

Port of Registry_____ _____

_____

Gross Tonnage/Weight_____ _____

Max No. of Persons to be carried____ Overall length_____

Date of Build_____ Hull ID No._____

Unique No. _____

This is to certify that the above named vessel was surveyed/examined by:

Name_____ of_____

at_____ on_____

and found to be in accordance with the requirements of Code'__' of the Police Boat Code (PBC3) accepted by the Maritime and Coastguard Agency.

This Certificate will remain valid until _____subject to the vessel, its machinery and equipment being efficiently maintained and to the following conditions:

Permitted Area of Operation

_____

_____

_____

Any other conditions

_____

_____

_____

Surveyed/examined at _____on _____20__

Name of Authorised Person_____

Signature_____ Date_____

For and on behalf of_____

Record of annual inspections and examinations made by a competent person or authorised person.

First Inspection/Examination

Conducted at_____ on _____20____

Performed by_____ of_____

Signature_____ Date_____

Second Inspection/Examination

Conducted at_____ on _____20____

Performed by_____ of_____

Signature_____ Date_____

Third Inspection/Examination

Conducted at_____ on _____20____

Performed by_____ of_____

Signature_____ Date_____

Fourth Inspection/Examination

Conducted at_____ on _____20____

Performed by_____ of_____

Signature_____ Date_____

ANNEX 8

Police Use of Firearms in Waterborne Operations

Guidance regarding the police use of firearms in waterborne operations is contained within the A.C.P.O Police Firearms Manual which also provides advice on the embarkation and disembarkation of authorised firearms personnel.

ANNEX 9

Police Diving Operations

Guidance regarding police diving operations is contained within the A.C.P.O Police Diving Manual.

ANNEX 10

General Exemption

1. The Secretary of State has considered the requirements of the Regulations listed in Part 1 of the Schedule to this General Exemption ("the Schedule"), and is satisfied that:

   (1) It is unreasonable, impracticable, or unnecessary for a ship that complies with the Police Boat Code to comply with those Regulations; and

   (2) Compliance with the Police 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 Police Boat Certificate has been issued and that complies with the conditions in paragraph 4.

3. This exemption has immediate effect and remains in effect unless 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 to comply with the applicable requirements of the Police Boat Code;

   (2) The ship is operated and manned in accordance with any limitations or conditions listed on the Police Boat Certificate; and

   (3) The Police Boat Certificate issued in respect of the ship remains in force.

Dated 1 June 2018

Katy Ware
Director of Maritime Safety and Standards, for the Secretary of State

Maritime and Coastguard Agency
105 Commercial Road
Southampton
SO15 1EG

Schedule to the General Exemption

Part 1 – Regulations from which compliant Police Boats are exempted

Citation	Reference[1]
Merchant Shipping (Survey and Certification) Regulations 1995	SI 2015/0508
Merchant Shipping (Training and Certification) Regulations 1997	SI 2015/782
Merchant Shipping (Safe Manning, Hours of Work and Watchkeeping) Regulations 1997	SI 2015/782
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 2016/1025
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 2018/0058
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 2015/0508 – regulation 5(3), in relation to any and all requirements of that SI
2. SI 2015/782 – regulation 31, in relation to regulations 47 and 48 of that SI
3. SI 1997/1508 – regulation 37, in relation to any and all requirements of Part III of that SI
4. SI 1998/1011 – regulation 47, in relation to any and all requirements of that SI

[1] All references to statutory instruments are references to the versions of those statutory instruments in force at the date of this General Exemption.

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 to 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 or all requirements of that SI

9. Merchant Shipping Act 1995 ("MSA") –

   (1) Section 48, in relation to any requirements of SI 2015/782 made under section 47 MSA (Manning); and

   (2) Section 294, in relation to:

      (a) Any and all requirements of SI 2015/782, 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 2016/1025;

      (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 2018/0058;

      (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 16 of SI 2015/0508; and

         (ii) Regulation 12 of SI 1998/2241.