

## MERCHANT SHIPPING NOTICE

# MSN 1823 (M)

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### **Safety Code for Passenger Ships Operating Solely in UK Categorised Waters**

**Notice to all** Owners & Operators of Passenger Ships operating solely in UK Categorised Waters; Ship Builders, Designers and Surveyors

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#### **Summary**

The Maritime and Coastguard Agency has undertaken a review of the regulations for passenger ships operating solely within UK categorised waters and this Code has been developed to provide the technical requirements for such ships in a single comprehensive document.

The technical standards have been developed in consultation with surveyors and the marine industry.

This Safety Code for Passenger Ships Operating Solely in UK Categorised Waters is made mandatory by The Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010 – SI 2010/680.

## Introduction

This Code applies to all new passenger ships operating solely in UK categorised waters, except those ships to which the High Speed Craft Code applies.

Further information on the contents of this Notice can be obtained from the following address.

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## **1 Foreword**

- 1.1 This Code has been developed for application to new United Kingdom (UK) passenger ships operating solely in UK categorised waters.
- 1.2 The standards in this Code have been developed by the Maritime and Coastguard Agency (MCA) in consultation with surveyors and the marine industry.
- 1.3 This Code provides the requirements in a consolidated document.
- 1.4 The primary aim of the Code is to set standards of safety and protection for all persons onboard and to minimise the potential risk to third parties.
- 1.5 The builder, owner/operator and master of the ship, as appropriate, shall take all reasonable measures to ensure that the ship is constructed, maintained and operated in accordance with the requirements of this Code and is suitable for the purpose intended, having regard to its area of operation.
- 1.6 It is important to stress that, whilst all reasonable measures may have been taken to ensure a safe ship, total safety can never be guaranteed. As a consequence, it is strongly recommended that the owner/operator of a ship shall take out a policy of insurance for all persons onboard. It is recommended that a copy of the certificate of insurance shall be kept on-board the ship.

## **2 Definitions**

In this Code:-

"A' Class Division" means a bulkhead or part of a deck which is -

- (a) constructed of steel or other equivalent material;
- (b) suitably stiffened;
- (c) so constructed as to be capable of preventing the passage of smoke and flame to the end of the 60 minute standard fire test; and

- (d) so insulated where necessary with suitable non-combustible materials that if the division is exposed to a standard fire test the average temperature on the unexposed side of the division shall not increase more than 140°C above the initial temperature nor shall the temperature at any one point, including any joint, rise more than 180°C above the initial temperature within the time listed below –

"A-60" standard 60 minutes;

"A-30" standard 30 minutes;

"A-15" standard 15 minutes;

"A-0" standard 0 minutes.

And in the case of a non-steel or equivalent ship, “‘A’ class division” means -

- (a) an equivalent level of fire resistance to ‘A-60’ or ‘A-30’ as defined for steel or equivalent is achieved by applying fire protection media to the construction material;
- (b) the fire protection media utilised has been subject to the procedure for testing and approval of fire protection media for use with composite and wooden materials. Reference to further information is detailed in Annex 6;
- (c) the fire protection media has been fitted in accordance with procedures applied in the fire testing and has received MCA approval;

“Accident” means any occurrence on board a ship or involving a ship whereby -

- (a) there is loss of life or major injury to any person on board, or any person is lost or falls overboard from, the ship or one of its ship's boats; or
- (b) the ship -
  - (i) causes any loss of life, major injury or material damage;
  - (ii) is lost or is presumed to be lost;

(iii) is abandoned;

(iv) is materially damaged by fire, explosion, weather or other cause;

(v) grounds ("grounds" means making involuntary contact with the ground, except for touching briefly so that no damage is caused);

(vi) is in collision;

(vii) is disabled ("disabled" means not under command for a period of more than 12 hours, or for any lesser period if, as a result, the vessel needs assistance to reach port); or

(viii) causes significant harm to the environment: or

(c) any of the following occur -

(i) a collapse or bursting of any pressure vessel, pipeline or valve;

(ii) a collapse or failure of any lifting equipment, access equipment, hatch-cover, staging or boatswain's chair or any associated load-bearing parts; or

(iii) an escape of any harmful substance or agent,

if the occurrence might have caused serious injury or damage to the health of any person;

“Accommodation space” means any internal space provided for the use of persons onboard;

“Annual survey” means the survey undertaken on an annual basis to verify compliance with this Code to enable the Passenger Ship Safety Certificate to be endorsed;

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

“Auxiliary machinery space” means any space containing refrigerating, stabilising, ventilation, air conditioning machinery or similar;

“Breadth of the ship” means the greatest moulded breadth at or below the ship’s deepest subdivision load waterline;

“Bulkhead deck” means the uppermost deck up to which watertight

bulkheads, as required by this Code, are carried;

“Category A machinery space” means a machinery space which contains either –

- (a) internal combustion type machinery, where such machinery has in the aggregate a total power output of not less than 375 kilowatts;  
or
- (b) any oil fired boiler or oil fuel unit;

“Categorisation of waters” means the categories of waters as detailed in MSN 1776(M), where Category A is the least onerous and Category D is the most onerous of the water categories. The description relating to each category is given below:

“Category A” means narrow rivers and canals where the depth of water is generally less than 1.5 metres;

“Category B” means wider rivers and canals where the depth of water is generally 1.5 metres or more and where the significant wave height could not be expected to exceed 0.6 metres at any time;

“Category C” means tidal rivers and estuaries and large, deep lakes and lochs where the significant wave height could not be expected to exceed 1.2 metres at any time;

“Category D” means tidal rivers and estuaries where the significant wave height could not be expected to exceed 2.0 metres at any time;

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

“Control position” means a conning position which is continuously manned whilst the ship is under way;

“Crew” means a person employed or engaged in any capacity onboard a ship in the business of the ship;

“Decked ship” means a ship with a continuous watertight weather deck which extends from stem to stern and has positive freeboard throughout, in any condition of loading of the ship;

"Enclosed passenger deck" means any passenger deck which is, or may be, enclosed by bulkheads and deck or enclosed by fixed or moveable screens, but does not include a passenger deck which –

- (a) is fitted with a canopy, and
- (b) has no means, either temporary or permanent, for side or endscreens to be fitted to the deck;

"Existing ship" is any ship which is not a new ship;

"Draught" unless stated otherwise, means the vertical distance from the underside of keel amidships to the deepest subdivision load waterline or freeboard mark, as appropriate;

"Freeboard" means the distance measured vertically downwards from the lowest point of the upper edge of the weather deck to the waterline in still water or, for an open boat, the distance measured vertically downwards from the lowest point of the gunwale to the waterline;

"Galley" means a space containing cooking equipment or similar food heating appliances where the maximum power of any appliance is of more than 5 kW;

"High speed craft" (HSC) is a craft capable of maximum speed in metres per second (m/s), equal to or exceeding

$$3.7\nabla^{0.1667}$$

Where:  $\nabla$  = volume of displacement corresponding to the design waterline (m<sup>3</sup>)

"ISM" means the Merchant Shipping (International Safety Management (ISM) Code) Regulations 1998;

"Length" means the length of ship measured between perpendiculars taken at extremities of the deepest subdivision load waterline or freeboard mark, as appropriate.

"LOA" means the distance between the foreside of the stem and the aft side of the stern.

“Master” includes any person (except a pilot) having command or charge of a ship.

“Machinery space” means any space which contains propelling machinery, boilers, oil fuel units, steam, internal combustion engines and generators.

“Margin line” means a line drawn at least 76mm below the upper surface of the bulkhead deck at side.

“MCA” means the Maritime and Coastguard Agency, an executive agency of the UK Department for Transport.

“MED” means the EU Marine Equipment Directive 96/98/EC and “MED approved” means approved in accordance with the requirements of that Directive;

“Merchant Shipping Notice” (MSN) means a Notice described as such and issued by the MCA;

“Merchant Guidance Note” (MGN) means a Notice described as such and issued by the MCA;

“Mobile phone” means a portable telephone which must be maintained charged and operational;

“MRCC” means a Maritime Rescue Co-ordination Centre (MRCC);

“New ship” for the purpose of this Code means a ship in respect of which there does not exist, on the date that this Code comes into force, a valid passenger ship certificate;

“Open ship” for the purpose of this Code means a ship which within its length is:-

- (a) not fitted with a watertight weatherdeck; or
- (b) is fitted with a watertight weatherdeck over part of its length; or
- (c) is fitted with a watertight weather deck over the whole of its length but the freeboard to the deck does not meet the minimum requirement for freeboard;

"Passenger" means any person carried on a ship except:

- (a) a member of the ship's crew,
- (b) a person on board the ship either in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons, or by reason of any circumstance that neither the master nor the owner nor the charterer (if any) could have prevented or forestalled,
- (c) a child of under one year of age;

"Passenger ship" means a ship carrying more than 12 passengers;

"Passenger deck" means any deck space to which passengers have access;

"Ro-ro passenger ship" means a passenger ship with ro-ro spaces or special category spaces;

"Ro-ro spaces" are spaces not normally subdivided in any way and normally extending to either a substantial length or the entire length of the ship in which motor vehicles with fuel in their tanks for their own propulsion and/or goods (packaged or in bulk, in or on rail or road cars, vehicles (including road or rail tankers), trailers, containers, pallets, demountable tanks or in or on similar stowage units or other receptacles) can be loaded and unloaded normally in a horizontal direction;

"Ship" includes every description of a vessel used in navigation;

"Similar stage of construction" means the stage at which –

- (a) construction identifiable with a specific ship begins; and
- (b) assembly of that ship has commenced comprising at least 50 tonnes or one percent of the estimated mass of all structural material, whichever is less;

"Special category spaces" are those enclosed vehicle spaces above and below the bulkhead deck, into and from which vehicles can be driven and to which passengers have access. Special category spaces may be accommodated on more than one deck provided that the total overall clear



height for vehicles does not exceed 10 m;

"Steel or other equivalent material" – in the context of 'steel or other equivalent material', 'equivalent material' means any non-combustible material which, by itself, or due to insulation provided, has structural integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test (e.g. aluminium alloy with appropriate insulation);

"Watertight" in relation to structure means capable of preventing the passage of water in either direction under the head of water likely to occur in the intact or damaged condition;

"Weather deck" means the main deck which is exposed to the elements;

"Weathertight" means capable of preventing the admission of a significant quantity of water into the ship when subjected to a hose test;

"Workers" include every person employed or engaged in any capacity onboard any ship;

### **3 Application and Interpretation**

#### **3.1 Application**

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- 3.1.1 This Code applies to new United Kingdom (UK) passenger ships which operate within UK categorised waters A, B, C or D' irrespective of construction material.
- 3.1.2 This Code does not apply to ships which satisfy the formula defined in the HSC Code and are capable of operating at speeds of 20 knots or more. Such ships shall comply with the HSC Code.
- 3.1.3 The Code contains safety requirements with which the ship must comply in order to secure a Passenger Ship Safety Certificate. Many of the safety requirements are related to the physical design of the ship or equipment the ship must carry, however, there are a number of safety requirements which are of an operational or procedural nature. In these cases, the Surveyor will satisfy himself that there is evidence of procedures in place to demonstrate that the ship will be operated in

accordance with these requirements.

- 3.1.4 The Code consolidates all applicable requirements into a single document. Some of these requirements are made mandatory by the Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010. Other requirements are given legal effect by other legislation. The safety requirements which are made mandatory by SI 2010/680 are those contained in the following sections:

- 4. Requirement for a Partial Declaration of Survey
- 6. Watertight Integrity
- 7. Machinery
- 8. Electrical Arrangement
- 9. Bilge Pumping
- 10. Intact and Damage Stability Criteria
- 11. Freeboard and Freeboard Marking
- 12. Life-Saving Appliances
- 13. Emergency Information for Passengers and Escapes
- 14. Search and Rescue (SAR) Requirements
- 15. Fire Safety
- 16. Safety Management System
- 17. Access and Mooring
- 19. Navigation
- 20.2 First Aid Kits
- 20.3 Code of Safe Working Practice
- 21.1 Minimum Manning Levels
- 21.3 Training
- 22. Passenger Counting and Registration
- 23. Passenger and Crew Accommodation
- 24. Survey and Certification Requirements
- 25. Additional Requirements for Ro-Ro Passenger Ships.
- 26. Additional requirements for planing and semi-displacement passenger ships which are not High Speed Craft

- 3.1.5 The following sections of the Code are also mandatory requirements but are made mandatory by other legislation. This Code does not amend the detail of that legislation, it is included within the Code to allow all applicable requirements to be identified in a single comprehensive document.

- 3.1.6 The requirements made mandatory by other Statutory Instruments (SIs) are those contained in the following sections. The requirements can be found in more detail in the individual SIs and related guidance as detailed in Annex 6 if required -

18 – Pollution Prevention

20.1 – Safe Movement of Passengers and Crew

20.4 – Alcohol Licensing

20.5 – Health and Safety

20.6 – Noise

20.7 – Smoking Onboard Ships

21.2 – Minimum Qualifications

21.4 – Hours of Work Provisions

21.5 – Alcohol and Drugs

23.7 – Crew Accommodation

- 3.1.7 The Code also includes items of best practice guidance which should be observed where practicable, but is not a mandatory requirement.

- 3.1.8 The non-mandatory guidance contained in the Code is section-  
5. – Access for Persons with Reduced Mobility

- 3.1.9 Survey and Certification requirements of section 24 are mandatory. The requirements are made mandatory by The Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010.

- 3.1.10 Planing and semi-displacement passenger ships which are not high speed craft in accordance with section 3.1.2 must additionally comply with the requirements of Part C of this Code - Additional requirements for planing and semi-displacement passenger ships.

- 3.1.11 For the purpose of this Code a new passenger ship is any ship not holding a valid passenger ship certificate issued under the regulation 11 of The Merchant Shipping (Survey and Certification) Regulations 1995 (SI 1995/1210) on the date this Code enters into force. Transitional arrangements are permitted in some circumstances as outlined in SI 2010/680.

- 3.1.12 Ro-ro ships shall comply with the additional requirements given in Part B

of this Code.

- 3.1.13 A ship that changes to operate in a more onerous mode or area of operation, shall comply with the section of this Code applicable to that mode or area of operation.

## **3.2 Areas of Operation**

- 3.2.1 The areas of operation are:-

- Category A only
- Categories A and B only
- Categories A, B, and C only
- Categories A, B, C and D

## **3.3 Certification**

- 3.3.1 To be issued with a certificate for a particular area of operation, a ship must fully comply with all of the requirements of this Code for that operating area to the satisfaction of the surveyor.
- 3.3.2 The Passenger Ship Safety Certificate will be issued by the Secretary of State and will be of the format given in Annex 8.
- 3.3.3 The Passenger Ship Safety Certificate is to be valid for nominally five years and shall be subject to the ongoing survey regime of section 24 to maintain its validity.

## **3.4 Interpretation**

Any clarification or interpretation of this Code should be sought through the local Marine Office of the MCA.

## **3.5 Updating of this Code**

- 3.5.1 This Code may be subject to review.
- 3.5.2 The Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010 provide for, from time to time, any document amending this Code which is considered relevant to be

specified by the Secretary of State in a Merchant Shipping Notice.

### **3.6            Equipment Standards and Guidance**

- 3.6.1    When this Code requires that a particular piece of equipment or machinery shall be provided or carried onboard, or that any particular provision shall be made, the required standard is detailed in Annex 5 of this Code.
- 3.6.2    Further guidance related to the requirements of this Code is referenced in Annex 6.
- 3.6.3    The MCA may permit any other piece of equipment or machinery to be provided or carried, or any other provision to be made other than those detailed in Annexes 5 and 6, provided that the MCA is satisfied by trials or otherwise that the alternative is at least as effective as that required by this Code and any such equivalence is documented using the Assessment of Equivalence to Statutory Requirements Form.

## **PART A – General Requirements**

### **4 Requirement for a Partial Declaration of Survey of a Passenger Ship (Partial Declaration) for Hull Construction, Machinery, Control Systems, Electrical Arrangements and Bilge pumping systems**

Rationale: MCA do not produce technical standards, therefore hull, machinery, control, electrical systems and bilge pumping arrangements shall be in accordance with Classification Society Rules or Sea Fish Industry Authority standards, as outlined below.

- 4.1** Every ship must be issued with a Partial Declaration of Survey of a Passenger Ship (Partial Declaration) to verify that the hull construction, machinery, control systems, electrical arrangements and bilge pumping systems are in accordance with recognised standards.
- 4.2** The recognised standards are the appropriate Rules and Regulations of any of the UK authorised Classification Societies listed in 4.3.
- 4.3** UK Authorised Classification Societies
- American Bureau of Shipping,
  - Bureau Veritas,
  - Det Norske Veritas,
  - Germanischer Lloyd,
  - Lloyds Register of Shipping,
  - Nippon Kaiji Kyokai,
  - Registro Italiano Navale.
- 4.4** The plan approval and survey work during design and build shall be undertaken by the Classification Society that the ship owner has chosen to engage. The Classification Society surveyor will issue a Partial Declaration of Survey of a Passenger Ship.
- 4.5** In the case of ships of less than 24 metres in length operating in Category C and D waters or ships of any length operating in Category A or B waters, the plan approval and survey may be undertaken by the MCA, subject to prior agreement by the MCA.
- 4.6** Where ships are constructed under survey solely by the MCA, they shall be constructed in accordance with Lloyds Register Rules for Special

Service Craft with MCA plan approval and survey. A Partial Declaration for such ships will be issued by the Secretary of State.

**4.7** Ships of under 24 metres in length, with a single passenger accommodation deck and carrying not more than 70 passengers may be constructed in accordance with the Sea Fish Industry Authority (SFIA) standards, as an alternative to the provisions of 4.2. Ships constructed in accordance with SFIA standards must have plan approval, be surveyed during the build and be issued a Partial Declaration of Survey of a Passenger Ship, by a SFIA approved surveyor. Depending upon the length of the passenger ship, the SFIA standards applicable in this case are: Construction Standards for New Fishing Vessels less than 15 metres Length Overall or Construction Standards for for Steel Fishing Vessels of 15 to 24 metres Length Overall.

**4.8** Construction plans and relevant calculations for new ships shall be produced in accordance with the requirements specified by the Classification Society's Rules, SFIA Rules, or Lloyds Register Rules for Special Service Craft, as appropriate. Plans shall be submitted allowing adequate time for plan appraisal to be completed before construction begins. It is essential that the surveyor appointed by the Certifying Authority to validate the standard of construction is involved at the outset of the new build project.

**4.9** The Partial Declaration of Survey of a Passenger Ship shall take the format given in Annex 9 of this Code.

## **5. Access for Persons with Reduced Mobility**

Ships should be designed and operated to accommodate the needs of persons of reduced mobility as far as is practicable. The guidance in this section is not mandatory but should be observed and implemented unless there are specific aspects of the ship which prevent doing so.

Persons of reduced mobility could include, and should not be limited to: wheelchair users, the elderly, passengers travelling with young children, passengers with impaired hearing or vision or physical or mental disability.

## **5.1 General**

- 5.1.1 Ships should be constructed and equipped in such a way that a person with reduced mobility can embark, disembark and move throughout the ship easily and safely.
- 5.1.2 Passenger areas should meet the needs of persons with reduced mobility as far as practicable.

## **5.2 Ramps**

- 5.2.1 Ramps should be fitted where door sills are of such a height as to reduce the access capabilities for persons of reduced mobility.
- 5.2.2 Where ramps are fitted in order to give access over a door sill then care should be taken not to allow this to become a tripping hazard to other passengers.
- 5.2.3 It is helpful to paint or 'hatch' a ramp in order that it is easily recognizable as a change in floor level height.
- 5.2.4 Longitudinal slopes and ramps should be kept as shallow as possible, and of consistent gradient, with a slope of 1:20 or less. Where this cannot be achieved, the maximum gradient should never exceed 1:12.
- 5.2.5 The ramp surface should be slip resistant (especially when wet).
- 5.2.6 There should be a colour contrast between a landing and a ramp.
- 5.2.7 Staff assistance should also be available, when required.

## **5.3 Handrails**

- 5.3.1 Handrails should continue beyond the end of the ramp slope or end of stairs and should either return to the wall or down to the floor. The change in slope of the handrail and its return into a wall will signal the start or finish of the ramp.
- 5.3.2 Handrails should:
  - be round, with a diameter of 40-45 mm and no sharp bends;



- have a minimum clearance of 60 to 75 mm between handrails and any adjacent surface;
- have an easy to grip non-slip surface, in a colour which provides a clearly visible contrast (in both colour and tone) with the background against which it is seen;
- return to the wall, floor or post in a smooth curve at the end. The method used should be consistent throughout the ship; and
- be provided on each side of steps and ramps. A central double handrail is desirable on wide staircases (over 2000mm).

## 5.4 Doors on ships

- 5.4.1 It should be possible for crew to unlock toilet doors from the outside in the event of an emergency. An alarm should be installed in the toilet facilities for a passenger to alert the crew if they require assistance.
- 5.4.2 Door openings to public spaces should be wide enough for wheelchairs to pass unimpeded with a free opening of at least 800 mm.
- 5.4.3 Special consideration should be made to the size and operable force of opening/closing doors, especially for the use of persons with reduced mobility.

## 5.5 Best practice guidance

- 5.5.1 Marine Guidance Note (MGN) 306, Designing and Operating Smaller Passenger Vessels; Guidance on Meeting the Needs of Persons with Reduced Mobility, provides practical guidance to help ensure that the design and operation of smaller passenger ships meets the needs of people with reduced mobility.
- 5.5.2 The table below outlines the basic minimum requirements against comparable best practice guidance.

	<b>Minimum Legal Requirement</b>	<b>Best Practice Recommendations</b>
<b>Corridor</b>	-The minimum clear width of corridors shall, as a minimum, be 750 millimetres and should be	- Minimum width of 1200mm. - A clear width 1800mm to allow wheelchairs to pass

	increased by 50 millimetres for every 5 persons where passenger numbers exceed 75.	each other. - Minimum clear head room of 1980mm from the deck.
<b>Stairway</b>	-The minimum clear width of stairways should, as a minimum, be 750 millimetres and should be increased by 50 millimetres for every 5 persons where passenger numbers exceed 75.	- Minimum width between handrails should be 1200mm. - Resting areas should be a minimum of 1200mm by 1200mm, although 1800mm by 1800mm is preferred. - Maximum rise of stairway flights be no more than that of height between decks.
<b>Seating</b>	- No specific requirement for seating for persons with reduced mobility, however seating requirements can be found in section 23.	- At least 4% of the seating in each lounge should have a design and an adjacent clear floor space that permit easy transfer of a person to and from a wheelchair. The floor space should be large enough for an Assistance Dog to lie down.
<b>Space for wheelchair</b>	- No minimum requirements	- Any permanent wheelchair spaces should be designed in the ratio of at least one per hundred passengers so that the wheelchair user may travel sitting in the wheelchair together with other passengers. - At least one of these spaces should be provided. It should be possible to place the wheelchair safely in position.
<b>Toilets</b>	- No dimensional requirements.	- Toilet doorways should be a minimum width of 925mm

		- The toilet should have a floor space that permits manoeuvring of a wheelchair and have a height and location that allows easy transfer for a person in a wheelchair
<b>Doorways</b>	-The minimum clear width of doorways should, as a minimum, be 750 millimetres and should be increased by 50 millimetres for every 5 persons where passenger numbers exceed 75.	- Doorways should have a clear minimum opening width of 800mm.

## 6 Watertight Integrity

The ship must comply with the relevant hull construction standards of the Classification Society or Sea Fish Industry Authority that has been engaged to issue the Partial Declaration. The standards included in this section specify minimum requirements the Classification Society or Sea Fish Industry Authority standards must satisfy, they are not an alternative to full compliance with Classification Society or Sea Fish Industry Authority requirements.

### 6.1 Watertight subdivision

- 6.1.1 Every subdivided ship shall be subdivided by bulkheads, which shall be watertight up to the bulkhead deck, into compartments the maximum length of which shall be calculated in accordance with the requirements for stability and survivability given in Section 10 of this Code. Every other portion of the internal structure which affects the efficiency of the subdivision of the ship shall be watertight, and shall be of a design which will maintain the integrity of the subdivision.
- 6.1.2 The stern gland of every such ship shall be situated in a watertight shaft tunnel or other watertight space.

## **6.2 Weatherdeck**

On a subdivided ship the bulkhead deck or a deck above the bulkhead deck shall be weathertight. All openings in an exposed weathertight deck shall have coamings of a height specified in the table below and shall be provided with efficient and rapid means of closing so as to make them weathertight. Freeing ports and scuppers shall be fitted as necessary for rapidly clearing the weather deck of water under all weather conditions.

Access	Coaming height (mm)
Direct to machinery space	460
To accommodation on a lower deck	230
To accommodation on the same deck	100
To accommodation on a higher deck	50

## **6.3 Partial subdivision above the bulkhead deck**

On subdivided ships all reasonable and practicable measures shall be taken to limit, where necessary, the entry and spread of water above the bulkhead deck. Such measures may include partial bulkheads or webs. Where such partial watertight bulkheads and webs are fitted on the bulkhead deck, above or in the immediate vicinity of main subdivision bulkheads, they shall have a watertight shell and bulkhead deck connections so as to restrict the flow of water along the deck when the ship is heeled in a damaged condition. Where such partial watertight bulkheads do not coincide with the bulkheads below, the bulkhead deck between shall be made effectively watertight.

## **6.4 Marking of valves, doors and mechanisms**

Suitable notices and signs shall be provided on, or in the vicinity of, all doors, valves and closing appliances relating to the damage control and watertight integrity for protection of the ship to indicate, as necessary, the procedures for operating them, the purpose of the controls and any precautions to be observed.

## **6.5 Routine inspections for watertight integrity**

- 6.5.1 All deadlights, watertight doors, valves and closing mechanisms of scuppers shall be opened and closed at intervals of not more than seven

days.

- 6.5.2 All closing appliances and devices relating to the damage control or watertight integrity for protection of the ship shall be inspected by a person appointed by the master for that purpose before the ship proceeds on any voyage or at intervals of not more than seven days.
- 6.5.3 A record of any inspection shall be kept as part of the Safety Management System.

## **7 Machinery**

The ship must comply with the relevant machinery standards of the Classification Society or Sea Fish Industry Authority that has been engaged to issue the Partial Declaration. The standards included in this section specify minimum requirements the Classification Society or Sea Fish Industry Authority standards must satisfy, they are not an alternative to full compliance with Classification Society or Sea Fish Industry Authority requirements.

### **7.1 Machinery Requirements**

- 7.1.1 The machinery, boilers and other pressure vessels, associated piping systems and fittings shall be of a design and construction adequate for the service for which they are intended and shall be so installed and protected as to reduce to a minimum any danger to persons on board, with due regard being paid to moving parts, hot surfaces and other hazards. The design shall have regard to the materials used in construction, the purpose for which the equipment is intended, the working conditions to which it will be subjected and the environmental conditions on board.
- 7.1.2 Any propulsion systems not adequately covered by the Classification Society rules or Sea Fish Industry Authority standards such as electronic, solar, horse drawn or sail-powered ships shall be considered by the MCA on a case by case basis.

## **7.2 Means of manoeuvring and going astern**

- 7.2.1 Every ship shall have sufficient power for going astern to secure proper control of the ship in all normal circumstances.
- 7.2.2 The ability of the machinery to reverse the direction of thrust in sufficient time so as to bring the ship to rest from maximum ahead service speed shall be demonstrated and recorded. The ship shall be capable of stopping within a safe distance, to be determined by the Surveyor, with due regard to the operating environment.

Rationale: The stopping distance and manoeuvrability is not quantified as this will be dependent on the type of ship, speed and operating environment. The ship must be capable of stopping and also capable of returning to recover a person from the water within an acceptable period of time and within a safe distance.

- 7.2.3 The effective operation of any supplementary means of stopping or manoeuvring the ship shall be demonstrated and recorded.

## **7.3 Steering Gear**

- 7.3.1 Every ship shall be provided with an efficient main and auxiliary steering gear. The main steering gear and the auxiliary steering gear shall be arranged so that the failure of one of them will not render the other one inoperative. The auxiliary steering gear shall be capable of being rapidly brought into action and shall be of adequate strength and of sufficient power to enable the ship to be steered at navigable speed.
- 7.3.2 Means of communication shall be provided to enable orders to be transmitted from the bridge to any alternative steering position.

## **7.4 Means for stopping machinery, shutting off flammable oil supply pipes, pumps and closing of openings**

- 7.4.1 Means shall be provided -
  - (1) for stopping ventilating fans serving machinery and accommodation spaces;
  - (2) for closing all doorways, ventilators, and other openings to such spaces; and
  - (3) to permit the release of smoke from machinery spaces.

- 7.4.2 Such means shall be capable of being operated from positions outside the said spaces and which would not be made inaccessible by a fire within such spaces.
- 7.4.3 Means shall be provided for shutting off fuel, lubricating oil and hydraulic oil supplies and associated pumps and shall be readily accessible, situated outside the machinery space and shall be clearly labelled.
- 7.4.4 The means of stopping machinery, shutting off flammable oil supply pipes, pumps and closing of openings, for other types of propulsion shall be considered, on a case by case basis, to the satisfaction of the MCA.

## **7.5 Fuel and associated pipework**

### **7.5.1 Flash point of fuel**

Any oil fuel used in boilers or machinery shall have a flash point of not less than 60°C (closed test).

### **7.5.2 Flexible fuel pipes**

- (1) Minimum lengths of flexible hoses may be used where necessary to allow for relative movements and vibration between machinery and fixed piping systems. The hoses and any couplings shall be suitable for the intended purpose.
- (2) Documentary evidence shall be provided to show the pipework complies with the relevant standards.
- (3) Flexible fuel pipework shall be installed in accordance with the manufacturer's instruction and correctly supported. The pipework shall be provided with sufficient free movement to accommodate vibration and to avoid contact with any structure. Where protective sleeves are fitted, the sleeve shall extend beyond the length of the pipe, with appropriate leak proof end connections.
- (4) Flexible fuel pipework shall be renewed according to the pipe manufacturer's instructions. Records of the most recent pipe renewal shall be kept onboard and ashore, where practicable.

### **7.5.3 High pressure fuel lines**

- (1) Oil fuel lines shall not be located immediately above or near units of high temperature, including boilers, steam pipelines, exhaust manifolds, silencers. As far as practicable, oil fuel lines shall be arranged far apart from hot surfaces, electrical installations or other sources of ignition and shall be screened or otherwise suitably protected to avoid oil spray or oil leakage onto the sources of ignition.
- (2) External high-pressure fuel delivery lines between the high-pressure fuel pumps and fuel injectors shall be protected with a jacketed piping system capable of containing fuel from a high-pressure line failure. A jacketed pipe incorporates an outer pipe into which the high-pressure fuel pipe is placed, forming a permanent assembly. The jacketed piping system shall include a means for collection of leakages and arrangements shall be provided with an alarm in case of a fuel line failure.
- (3) Components of a diesel engine fuel system shall be designed considering the maximum peak pressure which will be experienced in service, including any high-pressure pulses which are generated and transmitted back into the fuel supply and spill lines by the action of fuel line injection pumps. Connections within the fuel supply and spill lines shall be constructed having regard to their ability to prevent pressurised oil fuel leaks while in service and after maintenance.

## **8 Electrical Arrangement**

The ship must comply with the relevant electrical standards of the Classification Society or Sea Fish Industry Authority that has been engaged to issue the Partial Declaration. The standards included in this section specify minimum requirements the Classification Society or Sea Fish Industry Authority standards must satisfy, they are not an alternative to full compliance with Classification Society or Sea Fish Industry Authority requirements.



## **8.1 Electrical requirements**

- 8.1.1 The electrical equipment and installations (including any electrical means of propulsion) shall be such that the ship and all persons onboard are protected against electrical hazards.
- 8.1.2 The electrical equipment and installations shall be maintained to ensure the ship is in an operational and habitable condition.
- 8.1.3 The main source of electrical power shall be capable of illuminating any part of the ship normally accessible to and used by the passengers or crew.

## **8.2 Emergency power**

- 8.2.1 Additionally, emergency power shall be provided to supply the following where required by this Code:
  - (a) navigation lights;
  - (b) audible warning devices;
  - (c) emergency lighting;
  - (d) fixed VHF installations;
  - (e) alarm and public address systems;
  - (f) searchlights;
  - (g) fire alarm system;
  - (h) other safety equipment such as automatic pressurised sprinkler systems or fire pumps;
  - (i) bilge pumping systems;
  - (j) electronically powered signage where fitted; and
  - (k) survival craft launching system, where appropriate.
- 8.2.2 The following are admissible for use as an emergency power source:
  - (1) auxiliary generator sets with their own independent fuel supply and independent cooling system which, in the event of a power failure, start and take over the supply of power within 45 seconds automatically or, if they are located in the immediate vicinity of the wheelhouse or any other location permanently manned by crew members, can be brought into operation within 45 seconds; or

- (2) accumulator batteries, which, in the event of a power failure, connect automatically or, if they are located in the immediate vicinity of the wheelhouse or any other location permanently manned by crew members, can be connected manually. They shall be capable of powering the items listed in 8.2.1 without recharging and without an unacceptable voltage reduction throughout the projected operating period.
- (3) The projected operating period for the emergency power supply shall not be less than 60 minutes.

8.2.3 The emergency power source and any associated switchboard plant shall be in a separate space to the main power supply. Cables feeding the electrical installations in the event of an emergency shall be installed and routed in such a way as to maintain the continuity of supply of these installations in the event of fire or flooding. These cables shall never be routed through the main engine room, galleys or space where the main power source and connected equipment is installed, except where necessary to provide emergency equipment in such areas. The emergency power source shall be installed above the line of the bulkhead deck of subdivided ships and as high as possible in open ships.

8.2.4 For the following rooms and locations, emergency lighting shall be provided:

- (a) locations where life-saving equipment is stored and where such equipment is normally prepared for use;
- (b) escape routes, access for passengers, including gangways, entrances and exits, connecting corridors, lifts and accommodation areas companionways, cabin areas and accommodation areas;
- (c) markings on the escape routes and emergency exits;
- (d) in other areas intended for use by persons with reduced mobility;
- (e) operation rooms, engine rooms, steering equipment rooms and their exits;
- (f) wheelhouse;
- (g) spaces containing the emergency power supply source other than battery lockers;

- (h) points at which extinguishers and fire extinguishing equipment controls are located; and
- (i) areas in which passengers, shipboard personnel and crew muster in the event of danger.

## **9 Bilge Pumping**

The ship must comply with the relevant bilge pumping standards of the Classification Society or Sea Fish Industry Authority that has been engaged to issue the Partial Declaration. The standards included in this section specify minimum requirements the Classification Society or Sea Fish Industry Authority standards must satisfy, they are not an alternative to full compliance with Classification Society or Sea Fish Industry Authority requirements.

### **9.1 Fixed Bilge Pumping Requirements**

- 9.1.1 All ships shall be provided with at least two fixed and independently powered pumps capable of being supplied by the emergency source of power. They shall not be installed within the same space, where practicable, and suction pipes shall be arranged so that any compartment can be effectively drained. One bilge pump may be the fire pump as required by Section 15.1.2.

### **9.2 Bilge Valves**

- 9.2.1 All distribution boxes and valves fitted in connection with the bilge pumping arrangements shall be in positions which are accessible at all times in ordinary circumstances. If in any such ship there is only one system of pipes common to all such pumps, the necessary valves for controlling the bilge suctions shall be capable of being operated from above the ship's bulkhead deck.
- 9.2.2 Every valve which is required by this Code to be operated from above the bulkhead deck shall have its control, at its place of operation, clearly marked to show the purpose it serves and how it may be opened and closed. It shall be provided with a means to indicate whether it is open or closed.

### **9.3 Requirements for bilge pumps and bilge suction**

- 9.3.1 Every bilge pump provided shall be self-priming.
- 9.3.2 Each bilge pump shall be of a capacity of not less than the fire pump to ensure the ship is capable of discharging fire fighting water of at least the rate of input in a fire scenario. Where a fire pump is not required for ships operating in Category A waters, the bilge pump capacity shall be calculated in accordance with the equation detailed in 15.1.2.
- 9.3.3 Each independent power bilge pump shall have a direct suction from the space in which it is situated, provided that not more than two direct suction shall be required in one space. Where two or more such suction are provided in a single space, they shall be positioned on either side of the ship or space. Direct suction in a machinery space shall be of a diameter not less than that required for the bilge main.
- 9.3.4 All fixed bilge suction shall be fitted with readily accessible strainers.

### **9.4 Arrangement of bilge pipes**

- 9.4.1 All bilge suction piping up to the connection to the pumps shall be independent of other piping. All bilge pipes shall be of steel or equivalent material.
- 9.4.2 Bilge suction pipes shall not be led through oil tanks except in the case of double bottom tanks. Where bilge suction pipes pass through water tanks, such pipes shall be of heavy gauge and pipe joints shall be of the fully welded type, however, the number of pipe joints shall be kept to a minimum.

### **9.5 Precautions against flooding through bilge pipes**

- 9.5.1 The bilge pumping systems shall be so arranged as to prevent external water passing into any part of the ship. The bilge connection from any pump which also has an external suction or suction from the ballast system shall be fitted with a non-return valve.
- 9.5.2 Provision shall be made to prevent the flooding of any watertight compartment served by a bilge suction pipe by means of non-return

valves in the event of the pipe being severed or otherwise damaged in any compartment through collision or grounding. Where any part of such pipe is situated nearer to the side of the ship than one-fifth of the breadth of the ship (such a distance being measured at right angles to the centre line of the ship at the level of the deepest subdivision load waterline), or in any duct keel, a non-return valve shall be fitted to the pipe in the watertight compartment containing the open end of the pipe.

## **9.6 Bilge Alarms**

9.6.1 A bilge alarm shall be fitted;

- (1) in any compartment containing propulsion machinery; and
- (2) in any other compartment likely to accumulate bilge water.
- (3) The alarm shall provide an audible warning, and a separate visual warning, for each protected space at the control position. Once activated the audible alarm shall continue to sound until acknowledged.

## **9.7 Alternative arrangements for small ships**

Where the surveyor considers the fitting of a bilge main is not practical, the requirements of 9.1 to 9.4 may be satisfied by the use of individual submersible pumps.

## **10 Intact and Damage Stability Criteria**

### **10.1 Intact Stability**

The intact stability requirements are dependent on the area of operation and the number of passengers onboard. The table below indicates which requirements apply to each ship type and provide the reference to the relevant paragraphs in this section.

Water Category	Maximum Number of Passengers	Number of Decks	Applicable Standards	Section Reference
A	≤50	0 or 1	Heel Test	10.1.1
A	≤50	>1	Righting Lever Criteria	10.1.2
A	>50	Any	Righting Lever Criteria	10.1.2
B	≤50	0 or 1	Heel Test	10.1.1
B	≤50	>1	Righting Lever Criteria	10.1.2
B	>50	≥1	Righting Lever Criteria	10.1.2
C	Any	≥1	Righting Lever Criteria, Heel on Turn, SWRC	10.1.2, 10.1.3 & 10.1.4
D	Any	≥1	Righting Lever Criteria, Heel on Turn, SWRC	10.1.2, 10.1.3 & 10.1.4

**Notes:-**

In the “Decks” column in the above table,

“0” means a ship which is completely open, as depicted in Annex 7.

“1” means a partially or fully decked ship.

**10.1.1 Heel Test Standard**

- (1) A heel test shall be undertaken to determine that the angle of heel does not exceed 7° with a specified imposed passenger heeling moment, in accordance with the heel test procedure given in Annex 7.
- (2) Alternatively, for ships having sufficient information available such as a lines plan, hydrostatics and righting arm curves, the physical heel test may be waived at the Surveyor’s discretion and the requirements of paragraph 10.1.1(1) demonstrated by calculation.

**10.1.2 Righting Lever Criteria**

- (1) The area under the righting lever curve (GZ curve) shall not be less than 0.055 metre-radians up to  $\phi = 30^\circ$  angle of heel and not less than 0.09 metre-radians up to  $\phi = 40^\circ$  or the angle of down-flooding

$\varphi_f^1$  if this angle is less than  $40^\circ$ . Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of  $30^\circ$  and  $40^\circ$  or between  $30^\circ$  and  $\varphi_f$ , if this angle is less than  $40^\circ$  shall not be less than 0.03 metre-radian.

- (2) The righting lever GZ shall be at least 0.20 m at an angle of heel equal to or greater than  $30^\circ$ .
- (3) The maximum righting lever shall occur at an angle of heel not less than  $30^\circ$ . This angle may be permitted to be reduced to  $25^\circ$  having regard to the design of a particular ship.
- (4) The following shall be applied where a ship's characteristics render compliance with the criterion of 10.1.2(1) to (3) impracticable:

The area under the curve of righting levers (GZ curve) shall not be less than 0.070 metre-radians up to an angle of  $15^\circ$  when the maximum righting lever (GZ) occurs at  $15^\circ$  and 0.055 metre-radians up to an angle of  $30^\circ$  when the maximum righting lever (GZ) occurs at  $30^\circ$  or above. Where the maximum righting lever (GZ) occurs at angles of between  $15^\circ$  and  $30^\circ$ , the corresponding area under the righting lever curve shall be:

$$0.055 + 0.001 (30^\circ - \varphi_{\max}) \text{ metre-radians}^2$$

- (5) The initial metacentric height  $GM_0$  shall not be less than 0.15 m.
- (6) The angle of heel on account of crowding of passengers to one side as defined below shall not exceed  $10^\circ$ .

### 10.1.3 Heel on Turn

The angle of heel on account of turning shall not exceed  $10^\circ$  when calculated using the following formula:

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<sup>1</sup>  $\varphi_f$  is an angle of heel at which openings in the hull, superstructures or deckhouses which cannot be closed weathertight immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open.

<sup>2</sup>  $\varphi_{\max}$  is the angle of heel in degrees at which the righting lever curve reaches its maximum.

$$M_R = 0.200 * \frac{v_0^2}{L_{WL}} * \Delta * \left( KG - \frac{d}{2} \right)$$

where:

$M_R$  = heeling moment (kNm)

$v_0$  = service speed (m/s)

$L_{WL}$  = length of ship at waterline (m)

$\Delta$  = displacement (t)

$d$  = mean draught (m)

$KG$  = height of centre of gravity above baseline (m)

#### 10.1.4 Severe wind and rolling criterion (weather criterion)

(1) The ability of a ship to withstand the combined effects of beam wind and rolling shall be demonstrated, with reference to the figure 10.1.4 as follows:

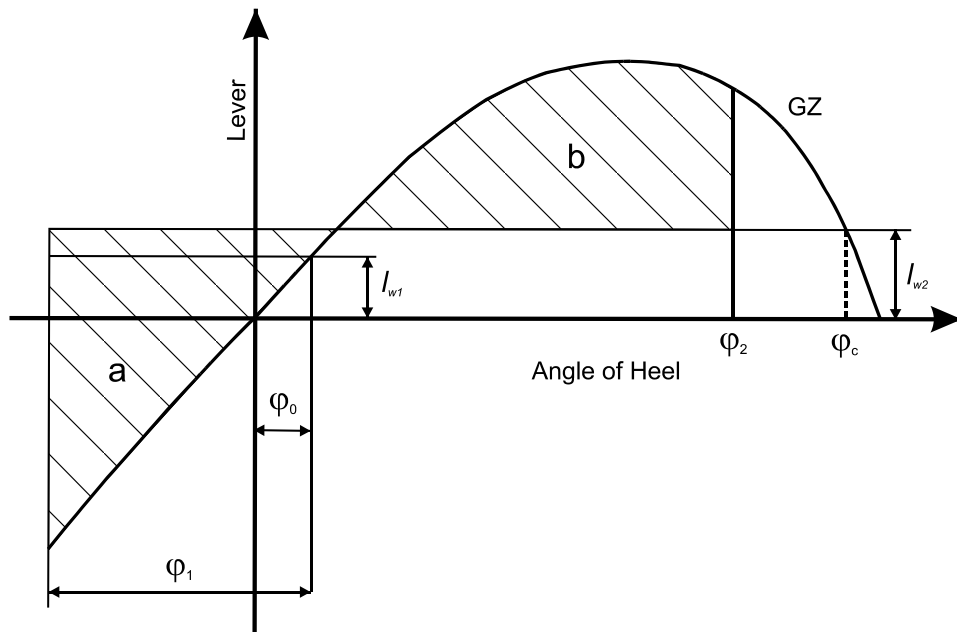
(a) the ship is subjected to a steady wind pressure acting perpendicular to the ship's centreline which results in a steady wind heeling lever ( $l_{w1}$ ).

(b) from the resultant angle of equilibrium ( $\varphi_0$ ), the ship is assumed to roll owing to wave action to an angle of roll ( $\varphi_1$ ) to windward. The angle of heel under action of steady wind ( $\varphi_0$ ) shall not exceed  $16^\circ$  or 80% of the angle of deck edge immersion, whichever is less.

(c) the ship is then subjected to a gust wind pressure which results in a gust wind heeling lever ( $l_{w2}$ );

(d) under these circumstances, area  $b$  shall be equal to or greater than area  $a$ ;





**Figure 10.1.4 – Severe wind and rolling**

The angles in the above figure 10.1.4 are defined as follows:

$\varphi_0$  = angle of heel under action of steady wind

$\varphi_1$  = angle of roll to windward due to wave action (see footnote 3)

$\varphi_2$  = angle of down-flooding ( $\varphi_f$ ) or  $50^\circ$  or  $\varphi_c$ , whichever is less

where:

$\varphi_f$  = angle of heel at which openings in the hull, superstructures or deckhouses which cannot be closed weathertight immerse. In applying this criterion, small openings through which progressive flooding cannot take place need not be considered as open.

$\varphi_c$  = angle of second intercept between wind heeling lever  $l_{w2}$  and GZ curves.

- (2) The wind heeling levers  $l_{w1}$  and  $l_{w2}$  referred to in 10.1.4 (1)(a)-(c) are constant values at all angles of inclination and shall be calculated as follows:

$$l_{w_1} = \frac{P * A * Z}{1000 * g * \Delta} \quad (m) \quad \text{and}$$

$$l_{w_2} = 1.5 * l_{w_1} \quad (m)$$

where:

$P$  = wind pressure of 168 Pa (N/m<sup>2</sup>).

$A$  = projected lateral area of the portion of the ship and deck cargo above the waterline (m<sup>2</sup>);

$Z$  = vertical distance from the centre of  $A$  to the centre of the underwater lateral area or approximately to a point at one half the mean draught (m);

$\Delta$  = displacement (t)

$g$  = gravitational acceleration of 9.81 m/s<sup>2</sup>

(3) Alternative means for determining the wind heeling lever ( $lw_1$ ) may be accepted, to the satisfaction of the MCA, as an equivalent to calculation in 10.1.4 (2). When such alternative tests are carried out, reference shall be made to the relevant part of IMO MSC.1 Circ 1200. Here the wind velocity used in the tests shall be 15 m/s in full scale with uniform velocity profile.

(4) The angle of roll ( $\varphi_1$ )<sup>3</sup> referred to in 10.1.4 (1) (b) shall be calculated as follows:

$$\varphi_1 = 109 * k * X_1 * X_2 * \sqrt{r * s} \quad (\text{degrees})$$

where:

$X_1$  = factor as shown in table 10.1.4 (4)(a)

---

<sup>3</sup> The angle of roll for ships with anti-rolling devices should be determined without taking into account the operation of these devices unless the MCA is satisfied with the proof that the devices are effective even with sudden shutdown of their supplied power.

$X_2$  = factor as shown in table 10.1.4 (4)(b)

$k$  = factor as follows:

$k$  = 1.0 for round-bilged ship having no bilge or bar keels

$k$  = 0.7 for a ship having sharp bilges

$k$  = as shown in table 10.1.4 (4)(c) for a ship having bilge keels, a bar keel or both

“Sharp bilge” shall be considered a bilge radius  $<1\%$  breadth (B) and an angle between piecewise lines representing the bilge smaller than 120 degrees

$$r = 0.73 + 0.6 OG/d$$

with:

$$OG = KG - d$$

$d$  = mean moulded draught of the ship [m]

$s$  = factor as shown in table 10.1.4 (4) (d) where  $T$  is the ship roll natural period. In absence of sufficient information, the following approximate formula can be used:

$$\text{Rolling period } T = \frac{2 * C * B}{\sqrt{GM}} (s)$$

where:

$$C = 0.373 + 0.023(B/d) - 0.043(L_{wl}/100).$$

The symbols in tables 10.1.4 (4)(a), 10.1.4 (4)(b), 10.1.4 (4)(c), and 10.1.4 (4)(d), and the formula for the rolling period are defined as follows:

$L_{wl}$  = length of the ship at waterline (m)

$B$  = moulded breadth of the ship (m)

$d$  = mean moulded draught of the ship (m)

$C_B$  = block coefficient (-)

$A_k$  = total overall area of bilge keels, or area of the lateral projection of the bar keel, or sum of these areas (m<sup>2</sup>)

$GM$  = metacentric height corrected for free surface effect (m).

**Table 10.1.4 (4)(a) – Values of factor  $X_1$**

B/d	$X_1$
$\leq 2.4$	1.0
2.5	0.98
2.6	0.96
2.7	0.95
2.8	0.93
2.9	0.91
3.0	0.90
3.1	0.88
3.2	0.86
3.4	0.82
3.5	0.80
3.6	0.79
4.0	0.78
4.5	0.76
5.0	0.72
5.5	0.68
6.0	0.64
6.5	0.62

**Table 10.1.4 (4)(b) – Values of factor  $X_2$**

$C_B$	$X_2$
$\leq 0.45$	0.75
0.50	0.82
0.55	0.89

0.60	0.95
0.65	0.97
$\geq 0.70$	1.00

**Table 10.1.4 (4)(c) – Values of factor  $k$**

$\frac{A_k \times 100}{L_{WL} \times B}$	$k$
0	1.0
1.0	0.98
1.5	0.95
2.0	0.88
2.5	0.79
3.0	0.74
3.5	0.72
$\geq 4.0$	0.70

**Table 10.1.4 (4)(d) – Values of factor  $s$**

T	s
3.5	0.100
4.0	0.099
4.5	0.096
5.0	0.090
7.0	0.064
9.0	0.042
9.5	0.038
10.0	0.037
10.5	0.035

(Intermediate values in these tables shall be obtained by linear interpolation. If values lie outside of the range, see 10.1.4 (5) below or refer to MCA Stability Unit.)

- (5) The tables and formulae described in 10.1.4 (4) are based on data from ships having:
- (a)  $B/d$  between 2.4 and 6.5;
  - (b)  $(KG/d-1)$  between -0.3 and 0.5;
  - (c) T smaller than 10.5 seconds.

- (6) For ships with parameters outside of the above limits the angle of roll ( $\phi_1$ ) may be determined with model experiments of a subject ship with the procedure described in MSC.1 Circ 1200 as the alternative. In addition, the MCA may accept such alternative determinations for any ship, if deemed appropriate.

#### **10.1.5 Assumptions for Intact Stability**

- (1) A minimum weight of 75 kg shall be assumed for each passenger except that this value may be increased subject to the approval of the MCA. In addition, the mass and distribution of the luggage shall be approved by the MCA.
- (2) The height of the centre of gravity for passengers shall be assumed equal to:
- (a) 1.0 m above deck level for passengers standing upright. Account may be taken, if necessary, of camber and sheer of deck;
- (b) 0.30 m above the seat in respect of seated passengers.
- (3) Passengers and luggage shall be considered to be in the spaces normally at their disposal, when assessing compliance with the criteria given in 10.1.2 (1) to 10.1.2 (5), above.
- (4) Passengers without luggage shall be considered as distributed to produce the most unfavourable combination of passenger heeling moment and/or initial metacentric height, which may be obtained in practice, when assessing compliance with the criteria given in 10.1.6 (6) and 10.1.3, respectively. In this connection, a value higher than four persons per square metre is not necessary.

### **10.2. Subdivision and Damage Stability**

#### **10.2.1 Damage Stability Requirements**

The subdivision standard and damage stability criteria are dependent on the area of operation and the number of passengers onboard. The requirements for each ship

type are summarised in the table below.

Water Category	Maximum Number of Passengers	Number of Decks	Subdivision Standard and Damage Stability Criterion	Section Reference
A	Any	Any	None	Intact Stability only
B	≤50	Any	Margin Line Residual GZ & Range	10.2.8
B	>50 & <400	≥1	SOLAS 1 compartment	10.2.2 - 10.2.7
B	≥400	≥1	SOLAS 2 compartment	10.2.2 - 10.2.7
C	<400	≥1	SOLAS 1 compartment	10.2.2 - 10.2.7
C	≥400	≥1	SOLAS 2 compartment	10.2.2 - 10.2.7
D	<400	≥1	SOLAS 1 compartment	10.2.2 - 10.2.7
D	≥400	≥1	SOLAS 2 compartment	10.2.2 - 10.2.7

**Notes:-**

- (1) A 1-compartment subdivision standard means the ship shall be so constructed as to provide sufficient intact stability in all service conditions to enable the ship to withstand the total or partial flooding of any one of the main compartments anywhere in the length between main transverse watertight bulkheads.
- (2) A 2-compartment subdivision standard means the intact stability shall be adequate to withstand the total or partial flooding of any two adjacent main compartments anywhere in the length including a main transverse watertight bulkhead (see also 10.2.4 below, regarding damage length).
- (3) In the “Decks” column in the above table,
 

“0” means a boat which is completely open, as depicted in Annex 7.

“1” means a partially or fully decked ship.

### 10.2.2 Subdivision Standards

The requirements for subdivision, set out at paragraphs 10.2.3 to 10.2.8 are applicable to plane subdivision only. Any other arrangements should be referred to the Stability Unit of the MCA for special consideration.

### 10.2.3 Collision and aft peak bulkheads

- (1) A forepeak or collision bulkhead shall be fitted which shall be watertight up to the bulkhead deck. This bulkhead shall be located at a distance from the forward perpendicular of not less than 5 % of the length of the ship and not more than 3 metres plus 5 % of the length of the ship.
- (2) For ships of under 24 metres in length, this bulkhead shall be located at a distance from the forward perpendicular of not less than 3% of the length of the ship and not more than 10% of the length of the ship.
- (3) Where any part of the ship below the waterline extends forward of the forward perpendicular, e. g. a bulbous bow, the distances stipulated in paragraph 1 shall be measured from a point either:
  - (a) at the mid-length of such extension; or
  - (b) at a distance 1.5 % of the length of the ship forward of the forward perpendicular; or
  - (c) at a distance 3 metres forward of the forward perpendicular, whichever gives the smallest measurement.
- (4) Where a long forward superstructure is fitted, the forepeak or collision bulkhead shall be extended weathertight to the next full deck above the bulkhead deck. In ships where a bow door is fitted, this extension shall be so arranged as to preclude the possibility of the bow door causing damage to the bulkhead, in the case of damage to or detachment of a bow door.
- (5) The extension required in paragraph 4 need not be fitted directly above the bulkhead below provided all parts of the extension are not located forward of the forward limit specified in paragraph 1 or in



paragraph 2.

- (6) Ramps not meeting the above requirements shall be disregarded as an extension to the collision bulkhead.
- (7) An afterpeak bulkhead, and bulkheads dividing the machinery space, from the cargo and passenger spaces forward and aft, shall also be fitted and made watertight up to the bulkhead deck. The afterpeak bulkhead may, however, be stepped below the bulkhead deck, provided the degree of safety of the ship as regards subdivision is not thereby diminished. Variations of plane bulkhead will be considered separately by the MCA.
- (8) In all cases stern tubes shall be enclosed in watertight spaces. The stern gland shall be situated in a watertight shaft tunnel or other watertight space separate from the stern tube compartment and of such volume that, if flooded by leakage through the stern gland, the margin line will not be submerged.

#### **10.2.4 Minimum spacing of bulkheads**

If the distance between the two adjacent main transverse bulkheads required to be watertight, or their equivalent plane bulkheads, or the distance between the transverse planes passing through the nearest stepped portions of the bulkheads is less than 3 metres plus 3 per cent of the length of the ship or 11 metres, or 10 percent of the length of the ship, whichever is the least, only one of these bulkheads shall be regarded as forming part of the subdivision of the ship.

#### **10.2.5 Cross-flooding control**

- (1) Ships shall be so constructed as to keep asymmetrical flooding, when the ship is in a damaged condition, at the minimum consistent with efficient arrangements.

Cross-flooding control arrangements shall be in accordance with IMO Resolution MSC.245(83), adopted on 12th October, 2007.

- (2) In ships fitted with cross-flooding arrangements, the fittings shall

be, where practicable, self-acting but, in any case, where controls to cross-flooding fittings are provided, they shall be capable of being operated from an accessible position above the bulkhead deck.

- (3) Any cross-flooding control systems shall ensure that equalisation shall occur at an angle not exceeding 15° or less, as necessary, to ensure the safety of the ship.
- (4) If the margin line may become submerged during the flooding for the assumed damage in 10.2.6, the construction of the ship shall be such as will enable the master of the ship to ensure -
  - (a) that the maximum angle of heel during any stage of such flooding will not be such as will endanger the safety of the ship; and shall not exceed 15 degrees
  - (b) that the margin line will not be submerged in the final stage of flooding.

#### 10.2.6 Calculation of stability in the damaged condition

The sufficiency of stability of every ship following damage and flooding shall be determined by calculation which has regard to the design and construction of the ship, and the damaged compartments, and which is in accordance with the following:

- (a) Damage calculations shall be made over the operational draught range as a basis for curves of minimum metacentric height or maximum vertical centre of gravity;
- (b) The assumed average permeabilities shall be as follows -
  - (i) Accommodation spaces for passengers and crew .. 95%  
Machinery spaces. . . . . 85%  
Tanks for liquids . . . . . 0 or 95%,  
Spaces occupied by vehicular cargo . . . . . 90%  
Spaces occupied by other cargo or stores . . . . . 60%  
(whichever results in the more onerous requirements).
  - (ii) Higher surface permeabilities shall be assumed in respect of

spaces which, in the vicinity of the damaged water plane, contain no substantial quantity of accommodation or machinery and spaces which are not generally occupied by any substantial quantity of cargo or stores.

(c) The extent of damage shall be assumed to be as follows -

- (i) Longitudinal extent; 3 metres plus 3 per cent of the length of the ship, or 11 metres, or 10 percent of the length of the ship, whichever is less.
- (ii) Transverse extent: full breadth of the ship at the level of the deepest subdivision load waterline taken parallel to the keel;
- (iii) vertical extent; from the base line upwards without limit;
- (iv) if any damage of lesser extent than that indicated in subparagraphs (i), (ii) and (iii) would result in a more severe condition regarding heel or loss of metacentric height, such damage shall be assumed for the purposes of the calculation.

(d) Where the ship is fitted with decks, inner skins or longitudinal bulkheads of sufficient tightness to restrict the flow of water, regard shall be had to such restrictions in the calculation.

#### **10.2.7 Standard of stability in the damaged condition**

The stability of the ship shall be deemed to be sufficient if the calculations in section 10.2.6 show that, after the assumed damage, the condition of the ship is as follows:

- (1) In the final stage after damage, and after equalisation where provided -
  - (a) the positive residual righting lever curve has a range of at least 15 degrees beyond the angle of equilibrium; this range may be reduced to a minimum of 10 degrees in the case where the area under the righting lever curve is that specified in subparagraph 1(b) is increased by the ratio  $15/\text{Range}$ , where Range is expressed in degrees;

- (b) the area under the righting lever curve is at least 0.015 metre-radians, measured from the angle of equilibrium to the lesser of –
- (i) the angle at which progressive flooding occurs;
  - (ii) 22 degrees (measured from the upright) in the case of one compartment flooding, or 27 degrees (measured from the upright) in the case of simultaneous flooding of two or more adjacent compartments;
- (c) a residual righting lever (GZ) value, is to be obtained within the range specified in subparagraph (1)(a), when determined by the formula -

$$GZ(m) = \frac{\text{heeling moment}(t.m)}{\text{displacement}(t)} + 0.04$$

where the heeling moment is to be taken as the greatest value resulting from any one of the following effects -

- (i) the crowding of all passengers towards one side of the ship;
- (ii) the launching of all fully loaded davit-launched survival craft on one side of the ship;
- (iii) the pressure of the wind on one side of the ship;

where in no case shall the GZ value so determined be less than 0.10 metres;

- (d) for the purpose of calculating the heeling moments in subparagraph (1)(c), the following assumptions shall be made -
- (i) moments due to crowding of passengers -
    - (aa) 4 persons per square metre;
    - (bb) a mass of 75 kilogrammes for each passenger;
    - (cc) passengers shall be distributed on available deck

areas towards one side of the ship on the decks where muster stations are located and in such a way that they produce the most adverse heeling moment;

(ii) moments due to launching of all fully loaded davit-launched survival craft on one side -

- (aa) all lifeboats and rescue boats fitted on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out fully loaded and ready for lowering;
- (bb) for lifeboats which are arranged to be launched fully loaded from the stowed position, the maximum heeling moment during launching shall be taken;
- (cc) a fully loaded davit-launched liferaft attached to each davit on the side to which the ship has heeled after having sustained damage shall be assumed to be swung out ready for lowering;
- (dd) persons not in the life-saving appliances which are swung out shall not provide either additional heeling or righting moment;
- (ee) life-saving appliances on the side of the ship opposite to the side to which the ship has heeled shall be assumed to be in a stowed position;

(iii) moments due to wind pressure -

- (aa) a wind pressure of  $120\text{N/m}^2$  (Pa) to be applied;
- (bb) the area applicable shall be the projected lateral area of the ship above the waterline corresponding to the intact condition;

(e) in intermediate stages of flooding, or during equalisation where applicable, the maximum righting lever shall be at least 0.05 metres and the range of positive righting levers shall be at least 7 degrees. In all cases only one breach in the hull and only one free surface need be assumed;

(2) The final condition of the ship after damage and, in the case of asymmetrical flooding, after equalisation measures have been

taken shall be as follows –

- (a) in the case of symmetrical flooding there shall be a positive residual metacentric height of at least 50 millimetres as calculated by the constant displacement method;
  - (b) in the case of asymmetrical flooding the angle of heel for one-compartment flooding shall not exceed 7 degrees. For the simultaneous flooding of two or more adjacent compartments a heel of 12 degrees may be permitted;
  - (c) in no case shall the margin line be submerged in the final stage of flooding. At intermediate stages of flooding the margin line is not to be submerged unless partial subdivision above the bulkhead deck limits sufficiently the spread of water along the bulkhead deck and results in an angle of heel not exceeding 15 degrees. In the case of ships carrying vehicles on the bulkhead deck, the angle of heel at intermediate stages of flooding shall not be greater than that which will submerge the margin line;
- (3) For the purpose of the requirements in this section -
- (a) when major progressive flooding occurs, that is, when it causes rapid reduction in the righting lever of 0.04 metres or more, the righting lever curve is to be considered as terminated at the angle at which the progressive flooding occurs, and the range and area referred to in subparagraphs (1)(a) and (b) shall be measured to that angle; and
  - (b) in cases where the progressive flooding is of a limited nature that does not continue unabated and causes an acceptable slow reduction in righting lever of less than 0.04 metres, the remainder of this curve shall be partially truncated by assuming that the progressively flooded space is so flooded from the beginning.

**10.2.8 Damage Stability for Undecked, Partially Decked or Single Deck Ships Operating within UK Category B Waters and carrying less than 50 Persons**

- (1) The ship shall be capable of remaining afloat at equilibrium with a minimum freeboard anywhere in the length of 76 mm on a decked ship (or 76 mm below the gunwale on ships without a deck or with an incomplete deck) following a minor damage which penetrates the side shell into any single main internal compartment.
- (2) During intermediate stages of flooding, and at final equilibrium, the maximum righting lever shall be at least 0.05 metres within a range of 0 – 25 degrees and the range of positive righting levers shall be at least 7 degrees.
- (3) The determination of this requirement shall be by calculation where:
  - (a) calculations shall be made with all non-floodable tanks in either fully pressed or empty conditions (whichever is more onerous);
  - (b) calculations shall be made with all floodable tanks assumed to be flooded to their full capacity with their intended content or to be empty should this condition be possible with the ship in her flooded state (whichever is more onerous);
  - (c) the mass of the ship shall be that equating to her mark of least allowable freeboard and movable components of this shall be positioned so as to produce the most severe heeling moment;
  - (d) the volume of the ship contributing to buoyancy shall include all structure and fixed equipment which is non-permeable in nature and the solid portions of permeable items.
- (4) The intact stability of the ship in the condition described in 10.2.8(3) shall, in all cases, comply with the requirements of the heel test (see paragraphs 10.1.1 and Annex 7).
- (5) Buoyancy fitted which is not integral to the hull shall be so contained as not to be able to become displaced in the event of damage,

excepting that portion which may be within the limits of the assumed extent of damage.

### **10.3 Stability Information**

- 10.3.1 Ships complying with the heel test requirements of 10.1.1 shall be issued with a heel test report.
- 10.3.2 Every subdivided ship on completion shall be inclined and the elements of her stability determined to demonstrate compliance with the requirements of 10.1 and 10.2. The stability information shall be submitted to the MCA for approval. The master shall be supplied by the owner with approved information relating to the stability of the ship.
- 10.3.3 Full stability information shall be submitted to the MCA for a full independent stability check.
- 10.3.4 All ships shall keep a written record of stability information onboard.

### **10.4 Subsequent Stability Verifications**

#### **10.4.1 Heel Test Ships**

- (1) The stability of the ship is required to be reconsidered every 5 years either by repeating the heel test or undertaking a lightship survey, provided the lightship survey undertaken at the previous heel test was well documented and the freeboard measurements recorded. The owner must also prepare and sign a declaration to verify no changes have been made to the ship in the intervening period.
- (2) The ship shall be placed in the same "light" condition as recorded. The upright freeboards shall be re-recorded and compared with the previous values. Should the result be the same then the ship is deemed to be unchanged and the stability is accepted for a further five years. Due to measurement errors freeboards are considered unchanged if within 2 cm of the original figures at the bow and stern and 1 cm at the amidships measuring point. Slightly larger figures may be accepted if reasons for the change can be accounted for. However, if the change in freeboard exceeds these



margins and cannot be accounted for (thereby indicating an increase in the lightship displacement) then the heeling test must be repeated.

#### **10.4.2 Subdivided Ships**

(1)

- (i) In each period of five years every subdivided ship shall have a lightship survey, to verify any changes in lightship displacement and longitudinal centre of gravity.
- (ii) Such periods shall commence on the date of issue of either a Passenger Certificate or from a previous inclining or lightship survey, whichever date is earliest.
- (iii) The ship shall be re-inclined whenever, in comparison with the ship's approved stability information derived from the previous inclining experiment, a deviation from the lightship displacement exceeding 2 per cent or a deviation of the longitudinal centre of gravity exceeding 1 per cent of the ship's length is found or anticipated.
- (iv) Every inclining or lightship survey or tests made for this purpose or for the purpose of this section of the Code shall be carried out in the presence of an MCA surveyor.
- (v) The interval between the lightship surveys or tests of any such ship may be extended for a period of not more than one year if, on the production of relevant information about the ship, it can be shown that the lightship survey or test is not necessary at the required interval.

(2) An approved report of each inclining or lightship survey or test carried out in accordance with this Code and of the calculation therefrom of the lightship condition, shall be placed on board for the use of the master.

(3) Where elements of a ship's stability have been found to have changed following any inclining or lightship survey or test carried out in accordance with the requirements of paragraph (2), the

master shall be supplied with amended approved stability information.

- (4) Where any alterations are made to a ship so as materially to affect the stability information supplied to the master amended stability information shall be provided and the ship shall be re-inclined
- (5) The stability information provided pursuant to paragraphs (2), (3) and (4) shall be furnished in the form of a book (the stability information book) which shall be kept on board the ship at all times in the custody of the master. The information shall include particulars appropriate to the ship and shall be in a form acceptable to the certifying authority.

## **11 Freeboard and Freeboard Marking**

### **11.1 Draught marks**

Every ship shall have a scale of draughts marked clearly at the bow and stern in accordance with SI 1993 No. 3138 Schedule 3.6. The accuracy of the draught marks shall be witnessed and confirmed by the MCA.

### **11.2 Freeboard Marking**

Every ship shall be marked on each side of the ship at amidships with its assigned freeboard. The marks shall consist of horizontal lines 25 millimetres in breadth and 300 millimetres in length. The marks shall be painted in white or yellow if the background is dark or in black if the background is light and, if the sides of the ship are of metal, they shall be cut in, centre punched or indicated by welded beads; if the sides of the ship are of wood, the marks shall be cut into the planking to a depth of not less than 3 millimetres; if the sides are of other materials to which the foregoing methods of marking cannot effectively be applied, the marks shall be permanently affixed to the sides of the ship by bonding or some other effective method. The location and accuracy of the freeboard mark shall be witnessed and confirmed by the MCA. Normally the freeboard mark shall be centred at midships LBP but if this cannot be done for any reason it shall be placed as near to that point as possible and the distance of any deviation noted.

### **11.3 Assigning of freeboard**

- 11.3.1 For subdivided ships the assigned freeboard shall be the freeboard of the deepest approved loading condition recorded in the stability information booklet.
- 11.3.2 Ships complying with the heel test requirements shall be marked with the assigned loaded freeboard corresponding to the full load condition at which the heel test was conducted. Where the heel test requirements were demonstrated by calculation, the marked freeboard shall be the freeboard corresponding to the full load condition used in the calculation.
- 11.3.3 For ships complying with the damage stability requirements of section 10.2.8 the assigned freeboard shall be the freeboard in the undamaged condition for the ship as evaluated in the analysis.

### **11.4 Sounding Arrangements**

All tanks shall be provided with an efficient sounding arrangement and all watertight compartments, not being part of the machinery space, shall be provided with efficient sounding arrangements to ascertain the water level therein, which shall be protected where necessary against damage.

## **12 Life-Saving Appliances**

Rationale: Liferafts - Evacuation in an emergency should be direct to shore, liferaft or attending ship as far as practical, therefore passengers should not be expected to enter the water. In category A waters, ships should use the most appropriate life saving appliance or equipment to achieve this goal. In other categories of water, based on analysis undertaken regarding survival times of ships in the event of flooding it is of paramount importance to evacuate the ship as quickly as possible. Open Reversible Inflatable Liferafts (ORILs) provide a safe evacuation platform and total evacuation time will be less than scenarios when other ships attend to evacuate passengers.

Rationale: Buoyant Apparatus – The provision of buoyant apparatus or lifebuoys is to provide some LSA for the very low probability/high consequence events such as a serious collision leading to capsize with no time to launch and evacuate to liferafts. In this unlikely event, buoyant apparatus would give passengers in the water something

to hold on to until help arrives.

Life-saving appliances and equipment shall be provided in accordance with tables 1 & 2.

**Table 1 - Life Saving Appliances & Equipment**

Requirement	Most Onerous Water Category of Operation			
	A	B	C	D
<b>LIFERAFTS or ORILs *</b>	N/A, See 12.1.1	100% See 12.1.2 and 12.2.1	100% See 12.2.1	100% See 12.2.1
<b>ADDITIONAL BUOYANT APPARATUS OR LIFEBOOYS *</b>	N/A	20%	20%	20%
<b>LIFEBOOYS (Total) **- Comprising of :-</b> see 12.2.3	10% with a minimum of 4, see 12.1.1 (4)	4, see 12.1.2 (2)	4, see 12.1.3	4, see 12.1.4
<b>LIFEJACKETS/BUOYANCY AIDS</b> (see 12.2.4)	N/A	100%	100%	100%
<b>PUBLIC ADDRESS SYSTEM</b> (see 12.4.1)	YES	YES	YES	YES
<b>PRIMARY MEANS OF COMMUNICATION</b> (See 12.4.2(1))	VHFDSC	VHFDSC	Fixed VHFDSC	Fixed VHFDSC
<b>PORTABLE COMMUNICATION DEVICE</b> (See 12.4.2 (2))	N/A	VHF or mobile - 1 per liferaft	VHF radio - 1 per liferaft	VHF radio - 1 per liferaft
<b>PYROTECHNICS</b>	N/A	N/A	N/A	YES
- RED PARACHUTE ROCKET	N/A	N/A	N/A	2
- RED HANDHELD	N/A	N/A	N/A	2
- BUOYANT ORANGE SMOKE	N/A	N/A	N/A	2
<b>RESCUE BOAT</b>	N/A	N/A	YES (for over 24m.) See 12.2.2	YES (for over 24m.) See 12.2.2
<b>SET OF LINE THROWING APPLIANCES (2 lines plus 2 Projectiles)</b>	N/A	N/A	N/A	1 (for over 24m)
<b>BOATHOOK &amp; SEARCHLIGHT</b>	YES	YES	YES	YES
<b>MEANS OF RECOVERY OF PERSONS FROM THE WATER</b> (see 12.2.5)	YES	YES	YES	YES

NOTE: Where a percentage is specified this denotes the percentage of total passenger numbers for whom provision shall be made

\* ORILs and Buoyant Apparatus shall be float free.

\*\* These can be the same lifebuoys detailed in the Additional Buoyant Apparatus or Lifebuoys section of the table.

**Table 2 - Documentation Required**

Requirement	Most Onerous Water Category of Operation			
	A	B	C	D
<b>TRAINING MANUAL</b> (see 16.4.1 (2))	YES	YES	YES	YES
<b>POSTERS AND SIGNS SHOWING SURVIVAL CRAFT AND EQUIPMENT OPERATING INSTRUCTIONS</b> (see 12.2.1 (1))	YES (if applicable)	YES	YES	YES
<b>INSTRUCTIONS FOR ONBOARD MAINTENANCE</b> (see 16.4.3)	YES	YES	YES	YES

## **12.1 Life-Saving Appliances and Equipment Carriage Requirements**

### **12.1.1 Ships which may operate in Category A waters only**

- (1) Provision must be made to enable all persons onboard to transfer direct to shore safely in an emergency scenario wherever possible. Equipment capable of efficiently transferring all persons ashore must be provided; this may include vertical ladders, gangways, inflatable slides, tenders or other craft as appropriate.
- (2) The method and equipment adopted will vary, dependant upon the shoreline within the area of operation, the ship's freeboard and probable emergency scenarios. Where the shoreline is generally of a similar height to the embarkation point(s), passenger transfer ashore may be achieved via a suitably constructed gangway. If the height of the shoreline is generally significantly higher than the embarkation point(s), means of transferring passengers maybe via the use of vertical ladders as appropriate. In cases where the shore line is predominantly lower than the embarkation points(s) then inflatable slides maybe used.
- (3) All means of transferring passengers ashore in emergency scenarios shall be to the satisfaction of the surveyor.
- (4) Sufficient lifebuoys shall be provided for a least 10% of passengers, at least two lifebuoys shall be provided with buoyant lifelines and at least two with lights.

### **12.1.2 Ships which may operate in Category B waters**

- (1) In operating areas where the width of water means deployment of a liferaft is not practicable, then 100% buoyant apparatus or lifebuoys may be provided as an alternative (liferafts may be considered impractical where the combined diameter of liferaft and beam of ship exceed the width of water for 50% or more of the distance of the voyage).
- (2) At least two of the lifebuoys shall be provided with lifelines and two with lights. Where additional lifebuoys are carried in accordance with 12.1.2 (1), 50% of these lifebuoys shall be fitted with lights.

### **12.1.3 Ships which may operate in Category C Waters**

At least two of the lifebuoys shall be provided with lifelines and two with lights. In the case of a ship over 24 metres in length, not less than two of the lifebuoys provided with lights shall also be provided with 3 minute smoke floats and be capable of quick release from the wheelhouse. At least 50% of any additional lifebuoys carried shall be fitted with lights.

### **12.1.4 Ships which may operate in Category D Waters**

- (1) At least two of the lifebuoys shall be provided with lifelines and two with lights. Ships of under 24 meters in length shall carry at least two 3 minute smoke floats. In the case of a ship over 24 metres in length, not less than two of the lifebuoys provided with lights shall also be provided with self-activating smoke signals and be capable of quick release from the navigating bridge. At least 50% of any additional lifebuoys carried shall be fitted with lights.
- (2) Lifeboats or approved Marine Evacuation Systems (MES) shall be accepted as an alternative to the liferaft requirements stated in Table 1.

## **12.2 General equipment requirements**

### **12.2.1 Liferafts (Including ORILs)**

#### **(1) Operating instructions for launching rescue boats and liferafts**

Posters and signs shall be provided in the vicinity of rescue boats and liferafts illustrating the purpose of the controls and the procedures for launching and manoeuvring the liferaft/rescue boat.

#### **(2) Distribution of liferafts**

Where liferafts are carried they shall, as far as practicable, be equally distributed on each side of the ship. Alternative arrangements can be accepted provided it is demonstrated that all people can get ashore dry shod.

**(3) Assembly and Embarkation arrangements for liferafts**

- (a) Suitable embarkation arrangements shall be provided to ensure safe and efficient evacuation of passengers dry shod.
- (b) Liferaft embarkation arrangements shall comply with the following:
  - (i) Where the distance between the embarkation deck and the top of the liferaft buoyancy tube exceeds 1 metre with the ship in its lightest condition, either an evacuation slide or Solas type embarkation ladder are to be provided.
  - (ii) Where the distance between the embarkation deck and the top of the liferaft buoyancy tube exceeds 4.5 metres with the ship in its lightest condition, davit launched liferafts and at least one launching appliance shall be provided on each side of the ship.
- (c) Assembly points shall be readily identifiable by signage. All routes to the assembly points shall be clearly marked.

**(4) Launching stations for liferafts**

- (a) A launching station for liferafts (including open reversible liferafts) shall be in such a position as to ensure safe launching. Ships over 24 metres shall have particular regard to its clearance from the propeller and steeply overhanging portions of the hull so that, as far as practicable, liferafts can be launched down the straight side of the ship. Care shall also be given to avoid the ship's side in way of the machinery space. Life saving appliances shall also be stowed abaft the collision bulkhead.
- (b) Where davit launch liferafts are carried they shall be capable of being boarded from a position immediately adjacent to the stowed position or from a position the liferaft is transferred to prior to launching.
- (c) Handling of liferafts at any one launching station shall not interfere with the handling of liferafts at another launching

station.

**(5) Stowage of liferafts**

- (a) Liferafts and buoyant apparatus shall be so stowed that they can be put into the water safely even under unfavourable conditions of trim and of up to 15 degrees of list either way.
- (b) Liferafts shall be stowed so that they can all be released from one position on the ship or alternatively so that all the liferafts on each side of the ship can be released from one position on that side.
- (c) Such position or positions shall be in or adjacent to the position from which the ship is steered.
- (d) The stowage and release arrangements shall be such that each liferaft automatically inflates on reaching the water.
- (e) Liferafts shall be stowed, as far as practicable, in a secure and sheltered position.
- (f) Every liferaft shall be stowed:
  - (i) with its painter permanently attached to the ship, with a suitable weak link able to break under the force of the buoyancy of the liferaft.
  - (ii) so that the liferaft can be manually released from its securing arrangements.
- (g) Any float-free arrangement shall be capable of being activated in the depths of water in which the ship operates. The recommendations of MGN 343 should be followed.
- (h) As far as practicable, liferafts shall not be positioned in the vicinity of any over-board discharge.

**12.2.2 Rescue Boats**

- (1) The requirement for the carriage of a rescue boat may be relaxed for ships under 35 metres in length. The surveyor will consider the manoeuvrability of the ship to return to a person overboard and the



arrangements for recovery, with due regard to the ship's freeboard and operating environment. Rescue boats shall be served by their own launching appliances.

- (2) Sufficient inflatable lifejackets for the crew of the rescue boat shall be provided.

#### **12.2.3 Lifebuoys**

- (1) Lifebuoys shall be so distributed as to be readily available on both sides of the ship and, as far as practicable, positioned near mooring or embarkation points. At least one lifebuoy shall be placed in the vicinity of the stern.
- (2) Lifebuoys shall not be permanently secured in any way and shall be stowed to be capable of being rapidly cast loose.
- (3) Lifebuoys with lights and those with both lights and smoke signals shall, so far as practicable, be equally distributed on both sides of the ship.

#### **12.2.4 Lifejackets / Buoyancy Aids**

- (1) Where required by Table 1, buoyancy aids or lifejackets shall be carried for all persons onboard, including provision for infants, children and oversized passengers.
- (2) Lifejackets shall be stored where they are readily accessible and their location clearly marked. They shall be stowed with straps in their most relaxed positions for easy donning and clear guidance on donning fastening and tightening shall be provided nearby.
- (3) Lifejackets shall be stowed throughout the passenger accommodation. The distribution of lifejackets around the ship shall follow approximately the distribution of passengers.

#### **12.2.5 Means of recovery of persons from the water**

- (1) Operators must carry out a risk assessment to determine the means necessary to effect rescue of persons incapable of self

recovery from the water.

- (2) Arrangements will be dependent on the individual ships, but ships with good manoeuvrability, together with adequate onboard equipment (such as a boom with a lifting device or a recovery cradle and boathooks) shall be so designed to effect safely the recovery of persons from the water. Ships of over 24 metres in length operating in Category C or D waters are required to carry a rescue boat, subject to the concessions in 12.2.2.
- (3) The means of recovery of persons from the water must be demonstrated to the surveyor.

## **12.3 Servicing of LSA**

12.3.1 Liferafts shall be serviced in accordance with the manufacturer's instructions and at least twice in every 5 year period for the first 10 years of service life. Thereafter, such liferafts shall be serviced annually, in accordance with the manufacturer's instructions.

12.3.2 Inflatable lifejackets shall be serviced in accordance with the manufacturers instructions and at least every 2 years. Where any inflatable lifejackets are used on a regular basis, they shall be serviced annually.

## **12.4 Communications**

### **12.4.1 Public Address / General Alarm system**

Ships shall be provided with a general emergency alarm system, or a public address system, which can be used for broadcasting a general emergency alarm. This shall also be in accordance with section 13.1.

### **12.4.2 Primary & Portable Communications**

#### **(1) Primary Communications**

All ships shall carry suitable means of contacting emergency services for the area of operation. This shall normally be by VHF/DSC unless operating in areas without suitable VHF coverage.

In such circumstances, primary communication shall normally be by mobile phone or other communication system that can be shown to be a reliable connection at all times. In category C and D waters the ship's VHF/DSC radio shall be fixed.

**(2) Portable Communication**

A portable VHF shall be provided for each liferaft, where carried, subject to adequate coverage as outlined in sub-paragraph (1) above. These are to be portable, waterproof and shall be stowed in a protected and easily accessible position.

**12.5 Retro-reflective material**

Life-saving appliances shall be fitted with retro-reflective material. The dimensions and location of the material shall be as specified in Annex 6.

**12.6 Tunnel and Lock Transits**

12.6.1 Owners/Operators shall carry out a risk assessment to determine adequate LSA provision.

12.6.2 Passage through a canal tunnel of over 300 metres in length without a towpath requires special consideration by the surveyor. This will be dependant upon the type of propulsion, location, availability of emergency services and the tunnel safety procedures supplied by British Waterways and the operator.

12.6.3 Where a towpath is provided, irrespective of tunnel length, a gangway and powerful hand lamps shall be carried.

12.6.4 Ships transiting locks shall ensure a means of raising alarm in the case of an emergency and must carry equipment such as:

- (1) Additional rope for lashing
- (2) Loop harness and safety rope
- (3) Ladders and torches, as appropriate.

## **13 Emergency Information for Passengers and Escapes**

### **13.1 Public Address Systems**

- 13.1.1 Ships are to be provided with a public address system, operable from at least one point that can be heard by all persons onboard. All ships carrying more than 100 passengers or more than 30 metres in length shall have a public address system operable from at least two well separated points.
- 13.1.2 In ships carrying not more than 50 passengers in which the passengers have access to only one passenger compartment or space, a portable loud hailer may be carried in lieu of the a public address system required by 13.1.1.
- 13.1.3 Entertainment systems shall be turned off automatically when the public address system is used. Manual shut off shall be available on ships with loud hailers.

#### **(1) System Requirements**

- (a) The system shall be used to inform the passengers of the action they shall take in the event of an emergency which could lead to the ship being abandoned. This information, detailed in 13.1.3 shall be given either prior to or immediately on leaving the berth. An example of such an announcement is given at 13.1.4. In the case of ships which operate a waterbus or regular ferry service of short duration where compliance would result in very frequent broadcasting of the safety message, other arrangements will be considered by the surveyor. Arrangements such as, drawing attention to the relevant safety notices may suffice.
- (b) The speakers in the public address system must be so located that broadcasts will be audible in all public spaces, including open decks, to which passengers have access.
- (c) A public address system shall be powered from the main source of electrical power and from an alternative source of electrical power situated in a location remote from the main source. Battery back-up or spare batteries shall be carried for loudhailers.

(2) **Passenger Emergency Instructions Notices**

- (a) Passenger Emergency Instructions notices shall be displayed in each passenger compartment. The number to be displayed will depend on the layout of the compartments and the service the ship is engaged in. Notices shall also be provided in waiting rooms and terminals, where practicable. The information provided in a notice shall include:

- The method to be used to inform passengers that an emergency has occurred;
- The action they will be required to take;
- How to use the life-saving equipment;
- How to don a lifejacket; and
- Where lifejackets are carried.

(3) **Passenger Emergency Instructions Announcement**

- (a) The announcement required to be made at the commencement of each voyage shall contain as a minimum:
- The method to be used to inform passengers that an emergency has occurred;
  - The type of life-saving appliances on board;
  - Action to take in event of an emergency;
  - How to use the life-saving appliances.
- (b) Announcements shall be made in a clear and simple manner bearing in mind that in some services a significant number of foreign tourists may be carried. Announcements shall be brief in order to convey sufficient information to assist all concerned in the event of an emergency.
- (c) Announcements shall be prefaced by a special signal followed by a request for everyone's attention. An example of such an announcement is given below.

(4) **Example of Emergency Instruction Broadcast**

- (a) Special signal sounded.
- (b) Ladies and gentlemen, please listen very carefully to the following safety announcement.

- (c) In the unlikely event of an emergency you will be informed by means of an announcement\*/a signal consisting of seven or more short blasts followed by one prolonged blast on the ship's whistle and/or the alarm bells\*/by a crew member\*. Please follow the instructions given in the event of an emergency.
- (d) The ship is equipped with lifejackets\* with donning instructions. Crew members will assist where necessary.
- (e) The ship is equipped with liferafts\*, buoyant apparatus\* and lifebuoys\* which can be manually launched or will float free in the event of the ship sinking.
- (f) In the unlikely event of an emergency requiring evacuation you will be instructed by the Master to proceed to the nearest assembly area or embarkation point to board a liferaft or embark safely to shore or an attending ship. All exits are clearly marked. Please do not attempt to abandon the ship unless specifically instructed to do so by the crew.
- (g) Lifebuoys and buoyant apparatus are fitted with grablines. Each lifebuoy will support two persons.
- (h) In the unlikely event of an emergency, it is of great importance that all passengers remain calm and listen for instructions.

\* As appropriate

## **13.2 Means of escape**

13.2.1 Every ship shall provide means of escape from all crew and passenger spaces. These escapes may be in the form of doorways, stairways, ladder ways and in fully enclosed ships, emergency windows. They shall lead to embarkation points close to the stowage position of life saving appliances or assembly areas. There shall be at least two widely separated escapes from each space although in spaces normally occupied by crew only this may reduced to one.

- (1) In fully enclosed ships, there shall be at least two escapes on each side of the ship on each deck.
- (2) The means of escape shall be so designed and constructed as to be capable of being easily used by the persons for whom they are intended.

- (3) Where escapes are in the form of doors or windows they shall be capable of being opened from either side.
  - (4) All escapes shall be clearly marked.
  - (5) Main and emergency lighting shall be provided at each escape point.
- 13.2.2 The minimum clear width of doorways, corridors and stairways shall as a minimum be 750 millimetres and shall be increased by 50 millimetres for every 5 persons where passenger numbers exceed 75. Stairways shall, where practicable, be arranged in the fore and aft direction and at an inclination of not less than 45 degrees to the vertical.
- 13.2.3 Where any of the means of escape are windows, these shall be easy to open. The minimum dimension of windows used for escape shall be 600mm by 600mm and shall be readily accessible.
- 13.2.4 All doors provided for passenger use and leading from passenger compartments to open decks shall be clearly indicated with one or more signs marked "EXIT". All doors, windows, and other openings provided for emergency escape purposes shall be clearly indicated with one or more signs marked "EMERGENCY ESCAPE DOOR" or "EMERGENCY ESCAPE WINDOW" as appropriate. Signs shall be:
- (1) Inherently luminous or electrically powered by an internal power source which is maintained and charged in normal service.
  - (2) Located over the door, window or escape where possible. Where a door is not readily visible from within the space it serves, a further sign shall be provided to indicate the direction in which the door lies. Signs shall not be on doors except in cases where a door is never in the open position when the ship is in service. Signs shall be composed of white or light coloured letters on a green background, examples of signage are given in Annex 4.
- 13.2.5 The means of escape from any public room which may be used for entertainment shall be adequate. The seating shall be arranged to ensure free access to the exits. All doors shall be constructed to open outwards.
- 13.2.6 All decked machinery spaces, shaft tunnels, boiler rooms or similar shall be provided with two means of escape as widely separated as practicable.

The means of escape shall consist of steel ladders leading directly or indirectly to the stowage position of the LSA or assembly areas. In any such ship the surveyor may permit one of the means of escape required by this paragraph to be dispensed with having regard to the nature and location of the space and whether persons are normally employed in that space.

## **14 Search and Rescue (SAR) Requirements**

### **14.1 SAR Plan**

14.1.1 All ships must carry an agreed and up to date plan for co-operation with relevant SAR services for the ship's area of operation. The aim of the co-operation plan is to ensure that, in the event of an emergency, ships' staff, the company response team ashore and SAR services are able to work efficiently together to respond to an emergency. Brief details of the passenger ship, the company and the SAR services must be exchanged and maintained ready for use and shall include direct contact details.

14.1.2 The SAR plan shall be of the format detailed in Annex 10.

14.1.3 Copies of the SAR co-operation plan shall be held onboard, in the company office and at the relevant SAR service. This would normally be the nearest MRCC but for inland areas this may be a relevant Police Authority, in these cases, advice shall be sought from the nearest MRCC.

### **14.2 SAR Exercises**

14.2.1 Exercises shall be undertaken to test the plan's effectiveness periodically. This shall be combined with any other exercise programs, to test SAR services and co-operation arrangements without imposing an additional burden on ships' staff.

14.2.2 For companies who nominally operate six or more ships, an overall program of exercises shall be developed by the company and the relevant SAR services, to ensure that all staff participate. Where possible, it is recommended that joint exercises with the relevant SAR services shall be undertaken annually. In most cases this can take the



form of a simple tabletop exercise.

14.2.3 The fundamental principles of the SAR plan will be discussed at the annual survey to demonstrate procedures are clearly understood, are readily accessible and contain up-to-date information.

14.2.4 Records of such exercises and names of participants shall be recorded in the Safety Management System.

### **14.3 Accident Reporting**

14.3.1 It is a requirement that all accidents involving or occurring onboard a ship must be reported in accordance with The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005.

14.3.2 When an accident occurs, the following persons associated with the ship shall send a report as soon as possible to the Chief Inspector of the Marine Accident Investigation Branch (MAIB);

(1) the master or, if he has not survived, the senior surviving officer, and

(2) the ship's owner, unless he has ascertained to his satisfaction that the master or senior surviving officer has reported the accident in accordance with paragraph (a).

14.3.3 Any incident or defect which affects the safety of the ship is to be reported to the MCA at the earliest opportunity.

## **15 Fire Safety**

### **15.1 Fixed fire fighting arrangements**

#### **15.1.1 System Capability**

(1) The ship must be provided with at least one power operated fire pump capable of delivering at least one jet of water to any part of the ship accessible to passengers and crew.

(2) The requirements of (1) may be relaxed for ships operating in

Category A waters only provided an additional 9 litre water extinguisher is carried in lieu of the power operated fire pump. This is in addition to the portable extinguishers required by section 15.2.

#### 15.1.2 Fire Pumps

(1)The power driven fire pump shall have a volume flow rate not less than the quantity obtained from the following formula:

Quantity of water in cubic metres per hour =  $2.5d^2$  where:

$$d = 1 + 0.066\sqrt{L(B + D)}$$

$d$  is taken to the nearest 0.25

where:

$L$  = the length of ship measured in metres

$B$  = the greatest moulded breadth measured in metres

$D$  = the moulded depth measured to the bulkhead deck at amidships measured in metres

(2)Every centrifugal pump which is connected to the fire main shall be fitted with a non-return discharge valve.

#### 15.1.3 Fire Main and Hydrants

- (1) The fire main and hydrants shall be so positioned to meet the requirements of 15.1.1.
- (2) The fire main shall have no connections other than those necessary for fire-fighting and washing down.
- (3) The fire hydrants shall be so placed that the fire hoses may be easily coupled to them.
- (4) At least one hose must be provided for every hydrant fitted.
- (5) Hydrant valves of the screw lift type shall be fitted in such position that any of the fire hoses may be isolated and removed while the fire pumps are at work.
- (6) The arrangements of pipes and hydrants shall be such as to avoid the possibility of freezing.

#### **15.1.4 Fire hoses and nozzles**

- (1) Fire hoses shall be of suitable length and diameter to satisfy the requirements of 15.1.1 (1) and 15.1.2.
- (2) Fire hoses and associated tools and fittings shall be kept in readily accessible and known locations, close to the hydrants or connections on which they will be used.
- (3) Each hose shall be provided with jet/spray nozzles incorporating a shut-off facility.
- (4) Every such hose shall be made of non-perishable material.

#### **15.1.5 Drainage of fire extinguishing water from enclosed spaces**

- (1) Passenger and crew spaces shall be fitted with drainage arrangements such that fire fighting water is cleared from the space no less quickly than the rate at which it may be input by the fire fighting system in order to avoid the accumulation of water and associated free surfaces.
- (2) Such drainage mechanisms shall be so arranged as to ensure effective drainage, taking account of possible heel or trim of the ship which might cause an accumulation of water in one part of a compartment. The drainage system shall allow free-flow of water, any valves or closures must be so designed as to reliably open automatically when the fire extinguishing system is in operation.
- (3) Regardless of the route of discharge of water from the ship, which may involve free-flow overboard or drainage to the bilge and pumping from there, it must be able to be discharged at no less than the rate at which it is capable of accumulating. In the design of systems the dimensions of orifices and piping, their shapes and friction factors shall be taken into account where necessary.
- (4) Freeing ports, drains and pump suctions shall be kept free of obstructions and be suitably protected to avoid their blockage during operation. Regular inspection shall be carried out to ensure that they are not blocked.

## 15.2 Portable Fire Extinguishers

15.2.1 Every ship shall be provided with:

- (1) At least one portable fire extinguisher in each of the crew and passenger spaces above the bulkhead deck.
- (2) At least two portable fire extinguishers in each of the crew and passenger spaces below the bulkhead deck.
- (3) The portable extinguishers required by (1) and (2) shall be so arranged such that a portable extinguisher is available for use within a distance of 10m from any location. A minimum of at least three portable fire extinguishers shall be provided.

15.2.2 Extinguishers provided in crew and passenger spaces shall be either foam, water, dry powder or a combination thereof, depending on the type of fire risks in specific areas.

15.2.3 In spaces where significant amounts of electronics are present, such as the bridge, suitably sized carbon dioxide or dry powder extinguishers shall be used and inlet ports on equipment shall be provided where possible to aid the extinguishing of fires.

15.2.4 An additional extinguisher of a suitable type shall be fitted in any galley space.

15.2.5 Portable Fire Extinguishers shall be of the capacities shown in the following table.

Portable Fire Extinguisher Type	Capacity
Portable carbon dioxide	Not less than 5 kilograms of carbon dioxide
Portable dry powder	Not less than 5 kilograms of dry powder
Portable Foam	Not less than 9 litres of foam

- 15.2.6 Portable fire extinguishers (not listed in the table above) shall, if they are a type discharging fluid, have a capacity of not more than 13.5 litres and not less than 9 litres. Other capacities may be accepted provided such extinguishers are at least as portable as a 13.5 litre extinguisher and have an extinguishing capability at least equivalent to a 9 litre extinguisher.
- 15.2.7 Additionally a portable approved extinguisher (See Annex 5) shall be provided within any manned machinery space which may be used to fight liquid fires.

### **15.3 Fire Fighting Systems for Machinery Spaces, other than those of Category A**

- 15.3.1 All machinery spaces shall be provided with a fixed fire extinguishing system, which may include gas or dry aerosol systems. Any ventilation machinery supplying a machinery space shall be capable of being shut off from a safe location outside the space and ventilation trunks shall be capable of being closed by damper, efficient flaps or other effective means.

#### **(1) Ships of 24m and under**

Where machinery spaces consist of machinery covered by a boxed housing this may comprise of an extinguisher (of a suitable size and type for the space being protected) permanently connected and arranged to discharge into that space. The arrangements shall be to the satisfaction of the surveyor. All other arrangements shall comply with (2)

#### **(2) Ships Over 24m**

A fixed fire fighting system complying with MED shall be provided.

- 15.3.2 Where a gas system is fitted to meet the requirement of 15.3.1 or 15.4.1, bottles shall be stowed in well ventilated spaces away from heat/ignition sources and direct sunlight. Stowage shall also not be in the vicinity of accommodation escape routes or the space the system is protecting. Suitable signage shall be prominently displayed outside the space

containing the bottles.

## **15.4 Fire Fighting Systems for Category A Machinery Spaces**

15.4.1 Category A machinery spaces shall be provided with at least one of the following type approved fixed fire-extinguishing systems –

- (1) a fixed pressure water-spraying system;
- (2) a fixed gas fire-extinguishing system;
- (3) a high expansion foam system;
- (4) a dry aerosol system.

15.4.2 In addition to the requirements of paragraph 15.4.1, any Category A machinery space containing internal combustion type machinery shall carry –

- (1) one foam fire extinguisher of at least 45 litres capacity or a carbon dioxide fire extinguisher of at least 16 kilogrammes capacity; and
- (2) portable fire extinguishers suitable for extinguishing oil fires, so located that an extinguisher is not more than 10 metres walking distance from any point in the space, but in no event less than two such extinguishers.

15.4.3 The requirement of 15.4.2 (1) may be relaxed for ships of less than 24m in length subject to the approval of the surveyor.

## **15.5 Fire Detection in Machinery Spaces**

All machinery spaces located underdeck or remote from the control position shall be fitted with a fire detection system comprising of smoke/heat detectors which will produce an audible alarm at the control position.

## **15.6 Fire Protection of Machinery and Auxiliary Machinery Spaces**

15.6.1 Machinery spaces shall be enclosed by "A" Class divisions insulated to A30 standard or equivalent. As far as practical such spaces shall be gas

tight.

- 15.6.2 Auxiliary machinery spaces shall be enclosed by an A0 standard steel boundary or equivalent.

## **15.7 Fire protection of passenger and crew accommodation**

- 15.7.1 In all enclosed accommodation the bulkheads, linings, ceilings and their associated grounds shall be constructed of non-combustible materials and their exposed surfaces shall have low flame spread.
- 15.7.2 All ships with passenger sleeping accommodation shall be fitted with a fixed fire detection system installed and arranged to detect the presence of fire in such spaces and corridors, stairways and escape routes within accommodation spaces.
- 15.7.3 Passenger sleeping accommodation shall be fitted with an automatic pressurised water sprinkler fixed fire fighting system.

## **15.8 Fire Safety for Galleys and Cooking Facilities**

### **15.8.1 General**

- (1) Ships may be provided with electrical water or food heating appliances such as kettles/microwaves/toasters. Such appliances need not be situated within a galley provided the power of any such appliance does not exceed 5 kW. All electrical appliances shall be electrically tested at least annually and a fire blanket shall be provided in the vicinity of any such equipment.
- (2) Any electrical cooking appliances with a power exceeding 5 kW, deep-fat cooking facilities or liquefied petroleum gas (LPG) installations must be enclosed within a galley and the requirements of section 15.8.3 will apply.
- (3) Any deep-fat cooking facilities shall also comply with the requirements of section 15.8.2.
- (4) Any LPG installations shall also comply with the requirements of Annex 1.

- (5) Ships with cooking facilities on an open deck such as pig roast or barbeque facilities should follow the additional guidance in MGN 406.

#### **15.8.2 Deep-fat cooking equipment**

- (1) Deep fat cooking facilities shall be fitted with:
  - (a) an automatic or manual extinguishing system which complies with the requirements of the MED,
  - (b) a primary and back-up thermostat with an alarm to alert the operator in the event of failure of either thermostat,
  - (c) arrangements for automatically shutting off the electrical power upon activation of the extinguishing system,
  - (d) an alarm for indicating operation of the extinguishing system in the galley where the equipment is installed, and
  - (e) controls for manual operation of the extinguishing system which are clearly labelled for ready use by the crew.

#### **15.8.3 Fire protection of galleys**

- (1) All galleys shall be enclosed by an A0 standard steel boundary or equivalent, with self-closing steel doors. Any serving hatches must be fitted with steel shutters.
- (2) Galleys shall not be sited adjacent to the main escape route as required by Section 13.2 of this Code.
- (3) A readily accessible fire blanket is to be provided in the galley.

### **15.9 Availability of fire-fighting appliances**

All moveable fire appliances shall be stowed where they will be readily accessible from the spaces in which they are intended to be used. Any appliance out of sight shall have inherently luminous signs identifying



locations.

## **16 Safety Management System**

### **16.1 General**

16.1.1 This section applies to all ships except those which comply with the International Safety Management (ISM) Code. All ro-ro ships must comply with ISM.

16.1.2 The 'operator' in this section is defined as the owner or other organisation or person assuming responsibility for operating the ship.

### **16.2 Objectives**

16.2.1 All ships to which this section applies must have a Safety Management System in place to ensure a simple and cost effective means of:

- (1) ensuring safety on board;
- (2) preventing human injury and loss of life;
- (3) complying with applicable regulations and rules.

16.2.2 Safe practices must be developed and implemented which include the following:

- (1) a health and safety protection policy;
- (2) procedures to ensure safe operation of ships in compliance with relevant rules;
- (3) lines of communication between personnel, ashore and afloat with regard to additional requirements and local bye-laws;
- (4) procedures for reporting accidents; and
- (5) procedures for responding to emergency situations.

### **16.3 Health and Safety Protection Policy**

16.3.1 The health and safety protection policy is required to include environmental protection issues only in so far as they relate to the safety of the ship and the health and safety of persons onboard, and to the safety of other ships and the health and safety of persons onboard other

ships and other users of the waterway. Operators shall develop and implement management plans for garbage and oily waste in accordance with the requirements detailed in Sections 18.2 and 18.5 respectively.

16.3.2 The operator shall ensure that a Health and Safety Protection policy is implemented, and that responsibilities of all personnel are understood.

16.3.3 The health and safety protection policy shall:

- (1) Address the issues of health, safety and the environment as they affect the company and its staff, both ashore and afloat.

Such a policy might read along the following lines:

“The policy of (name of Company) is to conduct its activities taking full account of the health and safety of its employees and of all persons using or connected with the Company. In implementing this policy, (name of Company) will ensure that the [ship] is, at all times, properly maintained and operated by qualified personnel in full compliance with relevant legislation. In particular the [Co,] will carry out an assessment of the risks to the health and safety of workers and others affected by [the undertaking], and will take the necessary measures to minimise the risks identified.”

- (2) Include a policy on prevention of alcohol and drug abuse. Where alcohol is served on board, the policy shall also stipulate that no alcohol will be served to persons under 18 years of age.
- (3) Ensure all personnel both ashore and afloat have a duty to take care of themselves and other persons who may be affected by their acts or omissions.

## **16.4 Procedures to Ensure Safe Operation of Ships in Compliance with Relevant Rules**

### **16.4.1 Relevant Rules**

In addition to the rules contained within this Code, procedures must be in place to ensure compliance with the rules relating to the safe navigation and operation of the ship such as:

- (1) Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996
- (2) Merchant Shipping (Categorisation of Waters) Regulations 1992
- (3) Local Port or Navigation Authority Rules
- (4) Local Bye-laws

#### 16.4.2 Personnel & Training

##### (1) General

- (a) The operator shall ensure that all persons employed in the operation of the ships have received appropriate training for the duties they are required to fulfil and that they have an understanding of the relevant regulations and rules. Masters and crew shall hold the appropriate qualifications.
- (b) As a minimum, this means:
  - (i) for the Master, the relevant qualifications;
  - (ii) for the crew, the relevant qualification and training appropriate to their designated duties; refer to the crew qualification and training obligations in section 21.2 and 21.3 respectively.
- (c) Proper instruction in their duties shall be received by personnel before the first occasion of sailing on the ship as a designated crew member, and as necessary thereafter. This instruction shall be recorded.

##### (2) Training Manual

- (a) A training and instruction manual must be available onboard for all crew members.
- (b) It may take the form of instructions from manufacturers of the equipment, where appropriate, but must explain in detail at least the following:

- (i) donning of lifejackets;
- (ii) boarding, launching, and clearing life-saving appliances from the ship.
- (iii) illumination in launching areas;
- (iv) use of all life-saving appliances and equipment.
- (v) recovery of persons from the water
- (vi) general fire safety practice and precautions related to the dangers of smoking, electrical hazards, flammable liquids and similar common shipboard hazards;
- (vii) general instructions on fire-fighting activities and fire-fighting procedures including procedures for notification of a fire and use of manually operated call points;
- (viii) meanings of ship's alarms;
- (ix) operation and use of fire-fighting systems and appliances;
- (x) operation and use of fire doors;
- (xi) operation and use of fire and smoke dampers; and
- (xii) escape systems and appliances.

(3) Training Record

- (a) The operator shall maintain a record of Master and Crew training.

#### 16.4.3 Onboard Procedures

- (1) The operator shall draw up simple procedures to ensure that safe working practices are carried out in the operation of the ship. These may be in the form of checklists which can be followed by all

personnel.

- (2) For some ships, it might be appropriate to have permanently exhibited checklists, e.g. in the wheelhouse for navigational items. Alternatively, in a smaller ship, the record could take any suitable form such as a diary as distinct from a specially printed logbook. Whatever form the record takes, such entries would need to demonstrate compliance with the requirements below.
- (3) There shall be procedures in place for key shipboard operations with regard to safety. The tasks involved in these procedures shall be assigned to designated personnel.
- (4) It is the responsibility of the operator to identify necessary procedures. These may include, but are not limited to, the following:
  - testing of equipment, including steering gear, prior to commencing a passage;
  - navigation and manoeuvring of the ship;
  - maintenance routines;
  - watertight integrity;
  - stability of the ship;
  - conduct of passengers and crew while on board;
  - bunker operations;
  - embarkation/disembarkation of passengers;
  - safe mooring practices;
  - communications with other ships and local port or navigational authority;
  - keeping a navigational lookout; and
  - lock operations (if applicable).

#### **16.4.4 Maintenance of Ship and Equipment**

##### **(1) General**

- (a) The operator shall inspect the ship at frequent intervals to ensure that it is properly maintained and operated in accordance with the relevant rules. Deficiencies shall be corrected, and records of inspections kept.

- (b) Maintenance of the ship and equipment is an essential part of the Safety Management System. The equipment shall be checked and tested daily when in use.
- (c) There shall be procedures for a more detailed inspection and maintenance programme of the ship and equipment.
- (d) The frequency of the inspections shall be determined by the owner/operator, but every event shall be recorded.
- (e) A checklist could be employed as an aide memoir for the inspection of equipment.

(2) Maintenance of Critical Systems

- (a) All critical systems shall be in working order and ready for immediate use before any ship to which this code applies commences a voyage, and at all times during the voyage. Any item of life-saving equipment marked with an expiry date shall be replaced on or before that date.
- (b) All critical systems shall be maintained, inspected, tested and serviced in accordance with the ships onboard procedures and manufacturers' guidance.
- (c) It is the responsibility of the operator to identify the critical systems for safe operation of the ship. These systems may include but are not limited to the following:
  - All life saving appliances and associated equipment;
  - All fire fighting appliances and associated equipment;
  - Public address systems;
  - Main propulsion units;
  - Auxiliary units;
  - Emergency power sources;
  - Emergency lighting;
  - Steering systems;
  - Navigational equipment; and
  - Moorings and anchors.

- (d) An up to date record of all inspections and maintenance is to be kept.

## **16.5 Lines of Communication between Personnel, Ashore and Afloat**

### **16.5.1 Responsibilities**

- (1) The Master's responsibility shall be laid down so that there is no misunderstanding. He has the authority to make decisions regarding the safety of the ship and persons on board. To ensure that there is no ambiguity regarding the authority of the Master, there shall be a simple written statement to this effect. Assistance shall be available ashore from the company at all times.
- (2) Responsibility and authority of each employee shall be clear. This may be best illustrated in a simple diagram, showing who reports to whom.

### **16.5.2 Designated Person**

- (1) A company shall in relation to each ship owned by it or for which it has operational responsibility designate a person who shall be responsible for monitoring the safe operation of the ship and, so far as it may affect safety, the efficient operation of the ship.
- (2) In particular, the designated person shall:
  - (a) Take such steps as are necessary to ensure compliance with the Safety Management System.
  - (b) Ensure that proper provision is made for the ship to be adequately manned, equipped and maintained, relating to safety applicable to the ship.
- (3) The company shall ensure that a designated person -
  - (a) is provided with sufficient authority and resources, and
  - (b) has appropriate knowledge and sufficient experience of the operation of ships,

(c) shall have access to the highest level of management of that company.

(4) The Merchant Shipping and Fishing Vessel (Health and Safety at Work) Regulations specifically require the appointment of one or more competent persons to take responsibility for health and safety. The person(s) shall be identified.

## **16.6 Procedures for Reporting Accidents**

- 16.6.1 All accidents and near accidents shall be recorded and reported to the operator, who shall implement corrective action, with the aim of improving safety. In addition, the Master shall inform the Marine Accident Investigation Branch (MAIB) of all accidents in accordance with The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005. Any incident or defect which affects the safety of the ship is to be reported to the MCA at the earliest opportunity.
- 16.6.2 The company must therefore have a procedure in place to report any accident to the MAIB and to the MCA.

## **16.7 Procedures for Responding to Emergency Situations**

- 16.7.1 Potential emergency situations shall be identified, and exercises carried out to respond to these emergencies and for the evacuation of the ship. Where appropriate, these exercises shall involve all personnel including the personnel ashore. The exercises shall be recorded. The names of those who participated shall also be recorded.
- 16.7.2 The roles and responsibilities of all personnel in an emergency situation shall be developed.
- 16.7.3 There shall be clearly stated procedures for responding to emergency situations. These may include but not be limited to: fire; collision; contact; grounding; violent act; main propulsion or steering failure; and man overboard. Checklists may be useful in this regard.
- 16.7.4 It is essential that, in the event of an emergency, there is the ability to communicate with the emergency services either directly or via a shore base. The shore base may be the company office, the local Coastguard,



Police or Fire Station, or another office as may be agreed between the ship and the shore base.

## **16.8 Safety Plan**

A safety plan in the form of a general arrangement plan of the ship is to be provided showing details of all the positioning of all the life saving appliances and fire fighting appliances carried onboard the ship. It shall also include details of escape routes.

## **16.9 Review of the Safety Management System**

Every company shall undertake a review of the Safety Management System of the ships at least once every three years. Such reviews, any lessons learned and any actions taken shall be documented.

## **17 Access and Mooring**

### **17.1 Means of Access**

#### **17.1.1 General duties concerning access arrangements**

(1) It is the responsibility of the owner/operator and master to ensure a safe means of access between the ship and any quay, pontoon or similar structure or another ship alongside which the ship is secured, and in particular;

(a) any equipment is placed in position promptly after the ships has been secured and remains in position while the ship is so secured.

(b) access equipment is;

(i) properly rigged, secured, deployed, and is safe to use;  
and

(ii) adjusted from time to time as to maintain safety of access.

(c) access equipment and immediate approaches are adequately

illuminated.

- (d) any equipment used for means of access and any safety net is of good construction, of sound material, of adequate strength for the purposes for which it is used, free from patent defect and properly maintained.

- (2) It is the responsibility of the owner/operator and master to provide safe access to shore if the ship is not secured alongside but access between shore and ship is necessary.

#### **17.1.2 Gangways**

Ships of 30 metres or more registered length (or, in the case of an unregistered ship, of 30 metres or more overall length) the owner/operator shall ensure that there is a gangway carried on the ship which is appropriate to the deck layout, size, shape and maximum freeboard of the ship and which complies with the specifications contained in section 6 of The Code of Safe Working Practices for Merchant Seamen. Consideration shall be given to the provision of safety nets where appropriate.

#### **17.1.3 Accommodation Ladders**

Ships of 120 metres or more in registered length (or, in the case of an unregistered ship, of 120 metres or more overall length) the owner/operator shall ensure that there is an accommodation ladder carried on the ship which appropriate to the deck layout, size, shape and maximum freeboard of the ship and which complies to the specifications contained in section 2 of The Merchant Shipping (Means of Access) Regulations and section 6 of The Code of Safe Working Practices for Merchant Seamen.

### **17.2 Guardrails and stanchions**

In every ship bulwarks or guard rails shall be provided on every exposed deck to which any passenger may have access. Such bulwarks or guard rails, together with stanchions supporting the guard rails shall be so placed, designed and constructed as to prevent any passenger from climbing or accidentally falling overboard. Guard rails shall have a

minimum height of 1000mm above the deck.

### **17.3 Anchor handling arrangements**

Ships shall be provided with anchor handling arrangements, together with anchors and chain cables that are sufficient in number, weight and strength, with regard to size and intended service to the ship.

### **17.4 Mooring lines, Bollards/cleats and Mooring Equipment**

Ships shall be provided with mooring lines, bollards/cleats and mooring equipment sufficient in number and strength, having regard to the size and intended service of the ship.

## **18 Pollution Prevention**

### **18.1 General**

It is the responsibility of the owner/operator to ensure the ship is properly equipped and maintained to dispose of all ship generated waste to shore facilities. Such arrangements shall be documented in the Safety Management system.

### **18.2 Garbage**

18.2.1 Garbage shall be discharged to shore facilities. Suitable arrangements for the retention of garbage on board shall be provided. Arrangements shall be varied as necessary to comply with special requirements which may be applied by local authorities for the area of operation as appropriate.

18.2.2 Every ship of 12m or more in length shall display placards informing the crew and passengers of the disposal requirements of garbage.

18.2.3 Every ship certified to carry 15 persons or more shall carry a garbage management plan and maintain a garbage record book. The requirement to complete a garbage record book may be waived for a ship engaged on a voyage of one hour or less. The garbage management plan must:

- (1) Provide procedures for the collection, storage, processing and disposal of garbage, including procedures for the use of equipment onboard.
- (2) Designate the person in charge of carrying out the plan.

### **18.3 Sulphur content of Fuel**

18.3.1 Ships using marine fuel oil, marine diesel, marine gas oil or gas oil must ensure that the fuel complies with the following sulphur content requirements. No restrictions apply to other non-marine fuels such as diesel.

- (1) The sulphur content of any marine fuel oil or marine diesel must not exceed 1.5% m/m.
- (2) The sulphur content of any marine gas oil or gas oil must not exceed 0.1% m/m.

### **18.4 Engine Emissions**

Ships of 400 Gross Tonnage or more with engines capable of a power output of 130kW or more are required to have a United Kingdom Air Pollution Prevention (UKAPP) certificate.

### **18.5 Oil/Oily Waste**

18.5.1 Except in an emergency affecting the safety of the ship and its passengers and crew, no oil or oily waste/bilge mixture water shall be discharged overboard. Means shall be provided to retain all such material onboard to be subsequently discharged to a suitable reception facility ashore. A record of all such discharges shall be kept onboard.

18.5.2 Ships of 400 Gross Tonnage or more are required to hold a United Kingdom Oil Pollution Prevention (UKOPP) certificate.

### **18.6 Use of Antifouling Paints**

18.6.1 The use of environmentally harmful organotin compounds in antifouling paints (such as Tributyl Tin) is prohibited. Details of prohibited

compounds can be found in the European Union Regulation EC 782/2003.

- 18.6.2 Ships of over 400 gross tonnes must be surveyed to verify compliance with the requirements and shall be provided with an International Anti Fouling System Certificate that has been endorsed by the Surveyor. Ships of over 24 metres in length but under 400 gross tonnes shall hold a declaration of compliance endorsed by the ship owner.

## **19 Navigation**

### **19.1 Navigational Equipment**

Some of the navigational equipment specified in sections 19.1.1 to 19.1.3 need not be carried in circumstances where it can be demonstrated by risk assessment that the ship can be safely operated and navigating without that equipment. The risk assessment shall be approved by the Surveyor in such a case and an exemption from the specific requirement will be issued. This concession has been included to recognise that the risks of specific ship operations may vary significantly within water categories and it may not be appropriate to fit all specified equipment on certain ships.

For ships of less than 300GT, the equipment specified in 19.1.1 to 19.1.3 need not be of an approved type.

#### **19.1.1 Ships which may operate in Category A Waters**

A ship shall be provided with the following:-

- (1) Searchlight - Every ship shall carry an efficient fixed or portable searchlight suitable for man-overboard search and rescue operations.
- (2) Navigation Lights and Shapes - When operating at night or in periods of restricted visibility by day navigation lights and shapes complying with either local Bye-Laws or the Col Regs.
- (3) Appropriate navigational charts and publications for the area of operation; where they are not available, other mapping systems

capable of passage planning and displaying the ship's route may be accepted.

- (4) Whistle – Every ship shall carry a whistle capable of conducting sound signals at the frequency and range of audibility to the satisfaction of the surveyor and in order to comply with the Col Regs and local Bye-Laws.

#### **19.1.2 Ships which may operate in Category B Waters**

In addition to the equipment specified in 19.1.1, ships shall also be provided with the following:-

- (1) Signalling Lamp - Every ship shall carry a daylight signalling lamp, or other means to communicate by light during day and night using an energy source of electrical power not solely dependent upon the ship's power supply. The signalling lamp may be the searchlight required by 19.1.1 (1). This requirement may be waived by the MCA or the local authority.
- (2) A properly adjusted standard magnetic compass or other means, independent of any power supply, to determine the ship's heading.
  - (a) In a steel ship, it shall be possible to correct the compass for coefficients B, C and D, and heeling error
  - (b) The magnetic compass or repeater shall be so positioned as to be clearly readable by the helmsman at the main steering position. It shall also be provided with an electric light, the electric power supply of which shall be of the twin wire type.
  - (c) For ships under 300GT the requirements of (2) may be met by the use of a fluxgate compass, provided that a suitable back up power supply is available to power the compass in the event of failure of the main electrical supply. Where such a 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.

- (3) An echo-sounding device, or other electronic means, to measure and display the available depth of water.
- (4) A receiver for a global navigation satellite system or a terrestrial radio navigation system, or other means suitable for use at all times throughout the intended voyage, to establish and update the ship's position by automatic means.

#### 19.1.3 Ships which may operate in Category C and D Waters

In addition to the equipment specified in 19.1.1 and 19.1.2, ships shall also be provided with the following:-

- (1) A speed measuring log.
- (2) A rudder angle indicator.
- (3) A gyro compass or spare magnetic compass bowl (only for ships of 150 gross tonnage or over).

(a) For ships under 300GT the requirements of (3) may be met by the use of a fluxgate compass, provided that a suitable back up power supply is available to power the compass in the event of failure of the main electrical supply. Where such a 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.

- (4) A 9 GHz (3cm) radar, or other means to determine and display the range and bearing of radar transponders and other surface craft, obstructions, buoys, shorelines and navigational marks to assist in navigation and collision avoidance.
- (5) A radar reflector - if less than 150 GT and if practicable, a radar reflector, or other means, to enable detection by ships navigating by radar at both 9 and 3 GHz.
- (6) Means for taking bearings as near as practicable over an arc of the horizon of 360°. This requirement may be met by the fitting of a

pelorus compass, or, on a ship other than a steel ship, with a hand bearing compass.

- (7) Where required by local authority, port authority or other navigation authority bye-laws ships shall be fitted with an approved automatic identification system (AIS) in accordance with SOLAS Chapter V, The AIS shall:

- (a) provide automatically to appropriately equipped shore stations, other ships and aircraft, information including the ships identity, type, position, course, speed, navigational status and other safety related information;
- (b) receive automatically such information from similarly fitted ships
- (c) monitor and track ships; and
- (d) exchange data with shore- based facilities.

- (8) Navigation Lights, Shapes and Sound Signals

- (a) Ships shall as far as practicable comply with the requirements of the International Regulations for Preventing Collisions At Sea, 1972, as amended, or comply with local Bye-Laws.
- (b) All navigation lights shall be provided with main and emergency power supply.
- (c) With due regard to accessibility, the requirement for duplication for navigation lights required to be shown whilst underway may be satisfied by having a spare lamp that can be easily fitted within three minutes.

## **19.2 Bridge Visibility**

### **19.2.1 Definitions**

- (1) **In this Section –**

"visibility" means visibility over a horizontal arc, and "all-round visibility" means visibility over an arc of 360 degrees,

"the permitted limits" are –

- (a) for a ship with a single steering position, up to 1 metre



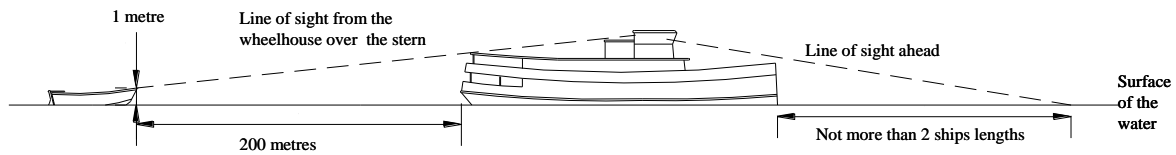
either side of the steering position, or

- (b) for a ship with two steering positions within the wheelhouse (or wings), between these two positions, or
- (c) for a ship with a mobile controller from which an operator is able to steer the ship from any part of the wheelhouse and bridge wings as appropriate ("wandering lead control"), from side to side of the ship, or the maximum reach of the wandering lead if this is a lesser distance.

#### **19.2.2 Visibility from the Bridge**

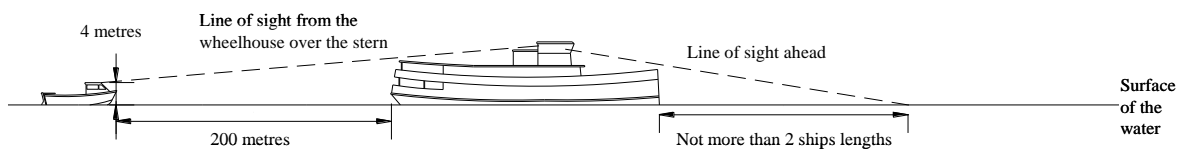
- (1) The steering position of the ship shall be situated above all decked superstructures other than the wheelhouse (if any) in which it is situated.
- (2) The steering position of a ship shall be so sited and any wheelhouse shall be so constructed, without taking any visual aids into account –
  - (a) as to provide the helmsman at the steering position with all round visibility, and
  - (b) that the helmsman at the steering position can, if necessary by moving across a level and unobstructed deck within the permitted limits–
    - (i) see the surface of the water at a distance of not more than 2 ship's lengths from the ship, over the arc from abeam on either side through right ahead, and
    - (ii) (a) for ships less than 24 metres in length, see an object situated 1 metre above the surface of the water at a distance of 200 metres from the stern of the ship, over the arc from abeam on either side through right astern as shown in figure 1.

Figure 1



- (b) For a ship over 24 meters in length, see an object situated 4 metres above the surface of the water at a distance of 200 metres from the stern of the ship, over the arc from abeam on either side through right astern as shown in figure 2.

Figure 2



- (3) For the purposes of paragraph (2) –

the presence of a blind arc of visibility abaft the beam from the steering position shall not prevent visibility from being all round visibility if the helmsman can, by moving horizontally within the permitted limits, obtain visibility over the whole of that blind arc.

- (4) If the requirements of 19.2.2.(2)(a) and 19.2.2.(2)(b) cannot be met, a dedicated lookout must be provided. In Category A & B waters where the requirements cannot be met because of restricted air draught alternative arrangements may be considered by the surveyor.

### 19.2.3 Dedicated lookout

- (1) Any dedicated lookout shall –
  - (a) have the sole duty, while the ship is underway, of maintaining a lookout,
  - (b) be positioned outside the passenger spaces, and
  - (c) be instructed by the master to keep a continuous lookout, and in particular over any or all additional areas where the helmsman cannot see.
- (2) The dedicated lookout may be in the wheelhouse, but if positioned outside the wheelhouse and remote from the helmsman, the lookout shall be provided with a suitable and effective means of communication with the helmsman.

### 19.2.4 Sight lines

- (1) In determining whether the requirements of 19.2.2 are met, the helmsman shall be assumed to have a height of eye of 1650 mm above the deck at the steering position.
- (2) Where a sight line, passes through an after facing window, that window shall be of not less than 450 mm depth (height) centered at 1675 mm above the deck at the steering position.
- (3) No sight line shall pass through any enclosed passenger deck.
- (4) Any sight line which passes over an open passenger deck shall be such that it would pass over the heads of any passengers occupying seats on that deck.
- (5) Should the activities of standing passengers on an open passenger deck cause a serious obstruction to visibility from the steering position, a dedicated lookout must be provided.

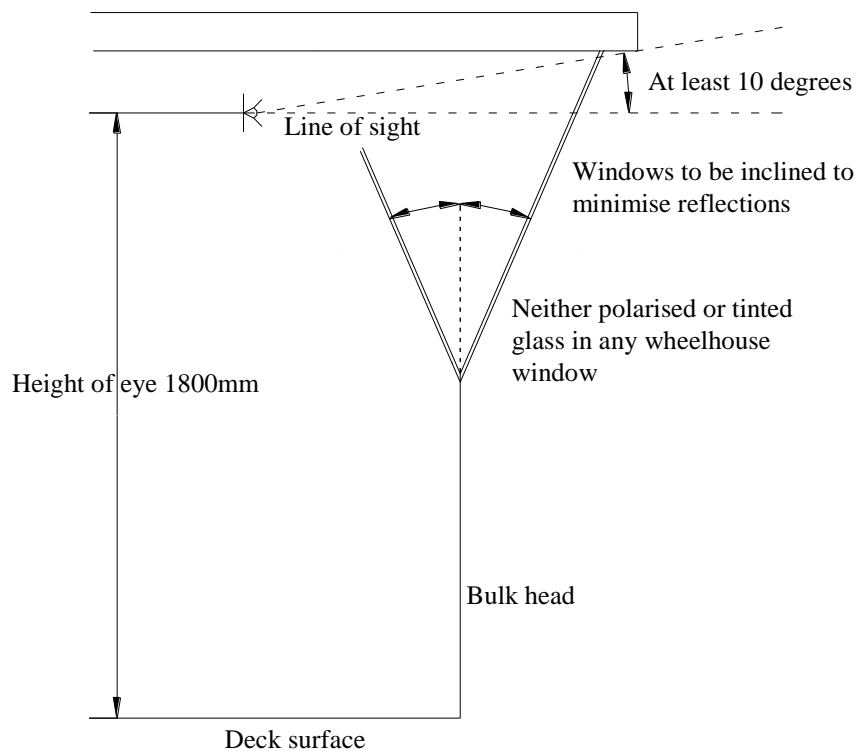
### 19.2.5 Windows

- (1) Vertical framing between all windows in the wheelhouse of a ship

shall be kept to a minimum and shall not be installed immediately forward of the steering position or positions.

- (2) The height of the lower edge of the forward facing windows of the wheelhouse shall be as low as practicable.
- (3) The upper edge of the forward facing windows of the wheelhouse shall be high enough to allow a person at the steering position with height of eye of 1800 mm a clear forward view to at least 10 degrees above the horizontal at height of eye level.
- (4) The wheelhouse windows shall be inclined from the vertical plane to minimise reflections. Where necessary, appropriate measures shall be taken to avoid adverse reflection from within.
- (5) Neither polarised nor tinted glass shall be used in any wheelhouse window.
- (6) There must in all weathers be a suitable means of providing a clear view through the forward facing windows serving the helmsman.
- (7) Adequate ventilation to prevent the build up of condensation must be provided.

Figure 3



## 20 General Safety

### 20.1 Safe Movement of Passengers & Crew

20.1.1 To aid the safe movement of passengers and crew, ships shall;

- (1) Be fitted with slip resistant external decks and stairways.
- (2) Be fitted with an adequate number of handrails and handholds.
- (3) Minimise potential tripping hazards.

### 20.2 First Aid Kits

Ships must carry a standard first aid kit for every 100 passengers or fraction of that number subject to a maximum requirement for 3 kits.

The first aid kit should include the following items, kept in a portable

waterproof container:

- (1) 4 x triangular bandages
- (2) 6 x medium sterile bandages with unmedicated dressings
- (3) 2 x large sterile bandages with unmedicated dressings
- (4) 2 x extra large unmedicated dressings
- (5) 6 medium safety pins, rustless
- (6) 20 assorted elastic adhesive dressings medicated
- (7) 2 x sterile eye pads with attachment
- (8) 2 x packages containing sterile gauze swabs
- (9) 5 pairs large size disposable latex-free examination gloves
- (10) sterile eye wash in eye wash bottle

### **20.3 Carriage of the Code of Safe Working Practices for Merchant Seamen (COSWP)**

- 20.3.1 Every ship shall carry onboard a copy of the COSWP subject to the provisions of 20.3.2.
- 20.3.2 Ships of less than 15 metres in length carrying 5 or less workers are not required to carry a copy onboard provided a copy is freely available to all workers and it is clearly stated in the ships Safety Management System where each copy of the COSWP is kept. A minimum of one copy per 3 ships shall be made available by the operator.

### **20.4 Alcohol Licensing**

- 20.4.1 The Licensing Act 2003 requires passenger ships selling alcohol or providing regulated entertainment in England or Wales to be licensed. Applications for a license shall be made to the Local Authority.
- 20.4.2 The Licensing (Scotland) Bill 2005 applies in Scotland and applications for a licence shall be made to the local licensing board.
- 20.4.3 The Licensing (Northern Ireland) Order 1996 applies in Northern Ireland and applications for a licence shall be made to the local court.

### **20.5 Health and Safety Regulations**

- 20.5.1 The Merchant Shipping and Fishing Vessels (Health and Safety at

Work) Regulations 1997 apply wherever “workers” are employed on ships. Under these regulations all employers have a duty to ensure the health and safety of workers and others, so far as is reasonably practicable. To fulfil this duty, employers are required to carry out “a suitable and sufficient assessment of the risks of the health and safety of workers arising in the normal course of their activities or duties”. The concept of risk assessments is relatively simple, and follows these basic steps:-

- (1) identify the hazards and personnel at risk;
- (2) assess the chances of a hazardous event occurring;
- (3) assess the severity or consequences; and
- (4) if the combined risk and severity is too great, some action must be taken to reduce the risk to as low a level as reasonably practical.

## **20.6 Noise**

20.6.1 The Merchant Shipping and Fishing Vessel (Control of Noise at Work) Regulations 2007 provide health and safety requirements regarding the exposure of workers to the risks arising from occupational noise. The Regulations include provisions for:

- action values and limit values for daily and weekly exposure to noise,
- risk assessment,
- elimination of or, where this is not reasonably practicable, reduction of exposure to noise,
- actions to be taken at action values and limit values,
- prohibition on exceeding limit values,
- provision of individual hearing protection,
- information, instruction and training for noise-exposed workers,
- health surveillance, and
- consultation with workers.

For details of further information and guidance see Annex 6.

## **20.7 Vibration**

20.7.1 The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007 provides minimum health and safety requirements regarding the exposure of workers to the risks arising from vibration. The Regulations impose duties on employers to protect workers who may be exposed to risk from exposure to vibration at work. They make provision for:

- exposure limit values and exposure action values,
- assessment of risks,
- elimination or control of exposure to vibration in the workplace,
- worker information and training,
- health surveillance,
- consultation with workers, and
- persons on whom duties are imposed.

For details of further information and guidance see Annex 6.

## **20.8 Smoking onboard ships covered by this Code**

20.8.1 The Public Health Act 2006 requires enclosed or substantially enclosed public spaces to be smoke free and through the provisions of the 1995 Merchant Shipping Act this requirement applies to all passenger ships.

20.8.2 Operators shall ensure all enclosed or substantially enclosed spaces are smoke free.

## **21 Manning**

### **21.1 Minimum Manning Levels**

21.1.1 A ship shall be safely manned.

21.1.2 The manning matrix at Annex 2 shall be used to determine minimum manning levels in all cases. However, the operator shall consider the specific operation of the ship and provide additional manning as appropriate.

21.1.3 Factors which may merit the need for additional crew might include, but are not limited to, ships carrying a rescue boat, ro-ro operations or ships



transitting locks or tunnels. In considering the need for additional crew, attention shall be made to the ability to safely navigate the ship and deal with emergency situations effectively.

21.1.4 The owner/operator shall submit the proposed crew numbers to the MCA. If acceptable to the MCA an approval will be given in writing, which will specify the date which it takes effect and will include any conditions on which it is given.

21.1.5 The number of crew may vary according to the number of passengers carried at any one time.

## **21.2 Minimum Qualifications.**

### **21.2.1 Minimum Qualifications of the Master**

- (1) A Boatmaster's Licence (BML) with the appropriate passenger endorsement for the appropriate area of operation is required for masters of passenger ships.
- (2) For ships fitted with a VHF installation, a GMDSS Short Range Certificate (SRC) is required.
- (3) Medical Fitness

A valid medical ML5 fitness certificate is required by the Master. (A seafarer's medical certificate, ENG1, is acceptable as an alternative)

### **21.2.2 Minimum Qualifications of the Crew**

- (1) The owner of a ship must give notice in writing to the MCA proposing either that it is appropriate or that it is not appropriate that, when the ship is engaged on a voyage, a member of the crew should be the holder of –

- (a) a boatmaster's licence of any class,
- (b) a boatmaster's certificate of any class, or

- (c) any other qualification which it would be appropriate for a master of the vessel to hold and which is prescribed for that purpose by the Boatmasters' Qualifications Regulations.
- (2) The MCA may approve the ship owner's proposal that –
  - (a) a member of the crew should be the holder of a qualification specified in the notice given under paragraph 21.2.2 (1), or
  - (b) that no crew member need be the holder of any such qualification.

## **21.3 Training**

### **21.3.1 Crew Training**

- (1) The operator is to ensure that every person employed or engaged in any capacity on board the ship has received on-board training in the procedures to be observed in the event of an emergency.
- (2) Training is structured in two levels –
  - (a) Familiarisation training, and
  - (b) Competent crew training.
- (3) Minimum training requirements are provided in Annex 3.

### **21.3.2 Familiarisation Training**

Familiarisation training shall ensure that all crew members know what their duties and responsibilities are in the event of an emergency, and that they are familiar with the location and use of safety equipment at their workstation. Familiarisation training can be carried out by a member of the permanent crew provided the onboard training is documented within the Safety Management System.

### **21.3.3 Competent Crew Training**

- (1) Competent crew training shall ensure that personnel have achieved

a level of knowledge and practical ability such that they may be considered as competent crew for the purpose of the Passenger Ship Safety Certificate.

- (2) Competent crew training may be carried out onboard or in conjunction with a training provider and recorded.

#### **21.3.4 Disability Awareness and Assistance Training**

Written guidance on disability awareness and assistance training shall be provided for staff directly assisting persons with reduced mobility. This shall include the following, as appropriate:

##### **(1) Disability-awareness training**

- (a) Awareness of and appropriate responses to passengers with physical, sensory (hearing and visual), hidden or learning disabilities, including how to distinguish between the different abilities of individuals whose mobility, orientation, or communication may be reduced.
- (b) Barriers faced by persons with reduced mobility, including attitudinal, environmental/physical and organisational barriers.
- (c) Recognised assistance animals, including the role and the needs of an assistance animal.
- (d) Dealing with unexpected occurrences.
- (e) Interpersonal skills and methods of communication with deaf and hearing impaired people, visually impaired people, speech impaired people and people with a learning disability.

##### **(2) Disability-assistance training**

- (a) How to help wheelchair users make transfers into and out of a wheelchair.
- (b) Skills for providing assistance to persons with reduced mobility travelling with a recognised assistance animal, including the role and the needs of those animals.

- (c) Techniques for escorting blind and partially-sighted passengers and for the handling and carriage of recognised assistance animals.
- (d) An understanding of the types of equipment which can assist persons with reduced mobility and a knowledge of how to handle such equipment.
- (e) Sufficient understanding of the need for reliable and professional assistance. Also awareness of the potential of certain disabled passengers to experience feelings of vulnerability during travel because of their dependence on the assistance provides.
- (f) When to recognise that assistance and/or passage cannot be granted for Health and Safety reasons and to handle the matter with sensitivity.

## **21.4 Hours of Work Provisions**

### **21.4.1 Employed Workers**

- (1) The hours of work provisions of the Merchant Shipping (Working Time: Inland Waterways) Regulations SI 2003 No 3049 apply to workers employed on passenger ships.
- (2) The Regulations provide for a maximum of 48 hours working time in any 7 day period, averaged over a reference period that is normally 17 weeks but can be extended under certain conditions (see Sections 14 /15 of the Regulations).
- (3) They also entitle a worker to:
  - (a) adequate rest;
  - (b) at least 4 weeks paid annual leave;
  - (c) require the employer/company to provide an employee with a health assessment when he/she normally works at night;

- (d) maintain adequate records of hours worked and rest time taken.

#### **21.4.2 Self – Employed Boatmasters.**

- (1) There are separate requirements for self employed Boatmasters on inland waterways ships.
  - (a) The Regulations allow for a maximum working day of 16 hours provided the master does not navigate/con the ship for more than 10 hours during that time.
  - (b) A 30 minute break must be taken every 6 hours and at least 8 hours rest between 2 working days.
- (2) If in any particular case, the hours of work requirements are considered inappropriate, an application may be made to the Seafarer Training and Certification Branch of the MCA for an exemption from the requirement(s) concerned. However, such an exemption will not be granted unless the surveyor is satisfied that the safety of the ship will not be impaired by the proposed operational practices.

#### **21.4.3 Records of Hours of Work**

The employer is required to keep records of hours worked by employees but these records do not have to be specially created or dedicated to this purpose – they may be included in personnel records, or records kept for the purposes of determining pay. Nor is there any mandatory format for the records. They must however provide sufficient information to allow the surveyor, or an employment tribunal, to investigate any claim of a breach of the regulations.

### **21.5 Alcohol and Drugs**

- 21.5.1 The Railways and Transport Safety Act 2003 states that any professional master or crew member commits an offence if his ability to carry out his duties is impaired because of drink or drugs.
- 21.5.2 The prescribed limits and enforcement details can be found in Sections 81-86 of the Act.

- 21.5.3 Operators are encouraged to implement an appropriate drink/drugs policy through the Safety Management System

## **22 Passenger Counting and Registration**

22.1 The operator shall ensure that, whenever a ship leaves any landing point there is a system capable of counting all persons on board which shall include -

- (1) All persons boarding such a ship at a landing point at the beginning of a voyage, or just prior to, as the case may be;
- (2) All persons disembarking at subsequent landing points, during the course of a voyage;
- (3) All persons boarding at subsequent landing points, during the course of a voyage, or just prior to, as the case maybe;
- (4) The number of persons remaining on board at each landing point is to be determined and submitted to the Skipper prior to the ships departure. This number is also to be deposited ashore in such a manner to be immediately available to the Emergency Services as stated in the Search and Rescue (SAR) Plan.

22.2 The system maybe manual, electronic or by any other suitable means and must be approved by the MCA.

## **23 Passenger and Crew Accommodation**

### **23.1 Maximum Passenger Numbers**

The number of passengers allowed onboard shall be the minimum passenger number as determined to satisfy the:

- (a) Stability requirements given in section 10
- (b) Clear deck area requirements given in section 23.3
- (c) Seating requirements given in section 23.4

## **23.2 Allowable Passenger Spaces**

23.2.1 Passenger spaces shall be provided on not more than 3 decks including the top of deckhouses.

23.2.2 Only one passenger deck is permitted below the waterline/bulkhead deck. This would normally be a single space but the surveyor may permit two spaces of moderate size to be included.

23.2.3 Passenger spaces do not include:

- (1) Passenger/crew cabins
- (2) Toilets
- (3) Companionways/stairways/means of escape and any passageway less than 750mm wide.
- (4) Areas permanently occupied by safety equipment and other ship related operational equipment.
- (5) Areas designed for the safe operation of the ship i.e.
  - (a) Machinery/navigation/mooring.
  - (b) Enclosed vehicle carrying spaces provided on Ro-Ro ships.
  - (c) Open deck vehicle carrying spaces.

23.2.4 In assessing the clear area for enclosed spaces, the space occupied by tables and permanent fittings shall be deducted.

23.2.5 For open deck spaces the clear area shall be measured between points within which the surveyor considers the area fit for the safe and proper accommodation of passengers.

23.2.6 Clear area means the area which remains after that occupied by all encumbrances, such as hatchways, skylights, companionways, casings, ventilators, navigating space, luggage lockers and lifesaving appliances carried on the open deck or in lockers has been deducted.

## **23.3 Clear Deck Areas**

23.3.1 The number of passengers allowed for a passenger space located below the main deck shall be determined by dividing the clear area in square metres by 0.85.

23.3.2 The number of passengers allowed for a main deck or enclosed deck above shall be determined by dividing the clear area in square metres divided by 0.60.

23.3.3 Where passengers are allowed access to the tops of deckhouses, the number of passengers allowed shall be determined by dividing the clear deck area in square metres by 0.85.

## **23.4 Passenger Seating**

23.4.1 Every passenger shall be provided with a seat, subject to the concessions given in 23.4.2 and 23.4.3.

23.4.2 Ships operating on short voyages of 10 minutes or less need only provide seating for 25% of passengers, provided the motions and accelerations in all normal operation would not make standing difficult.

23.4.3 Ships with open ro-ro decks operating on voyages of 30 minutes or less may permit passengers to remain in their vehicles provided there is sufficient clearance between each vehicle lane and between the outboard lane of vehicles and the ship side to allow passengers to escape in an emergency. Seating does not need to be provided for passengers remaining in their vehicles but seating shall be provided for all foot passengers on such voyages. In accordance with 23.4.2, seating need only be provided for 25% of such foot passengers on voyages of 10 minutes or less provided the motions and accelerations in all normal operation would not make standing difficult.

23.4.4 Where passengers are permitted to remain in their vehicles, notices shall be displayed to the effect:

THIS AREA MUST NOT BE OVERSTOWED BY VEHICLES AS TO  
RESTRICT PASSENGER MOVEMENT BETWEEN ASSEMBLY AREAS  
IN THE EVENT OF AN EMERGENCY.

THERE MUST BE SUFFICIENT CLEARANCE BETWEEN VEHICLES  
OR OTHER OBSTRUCTIONS TO ENSURE THAT OCCUPANTS CAN  
READILY VACATE THEIR VEHICLES IN AN EMERGENCY.

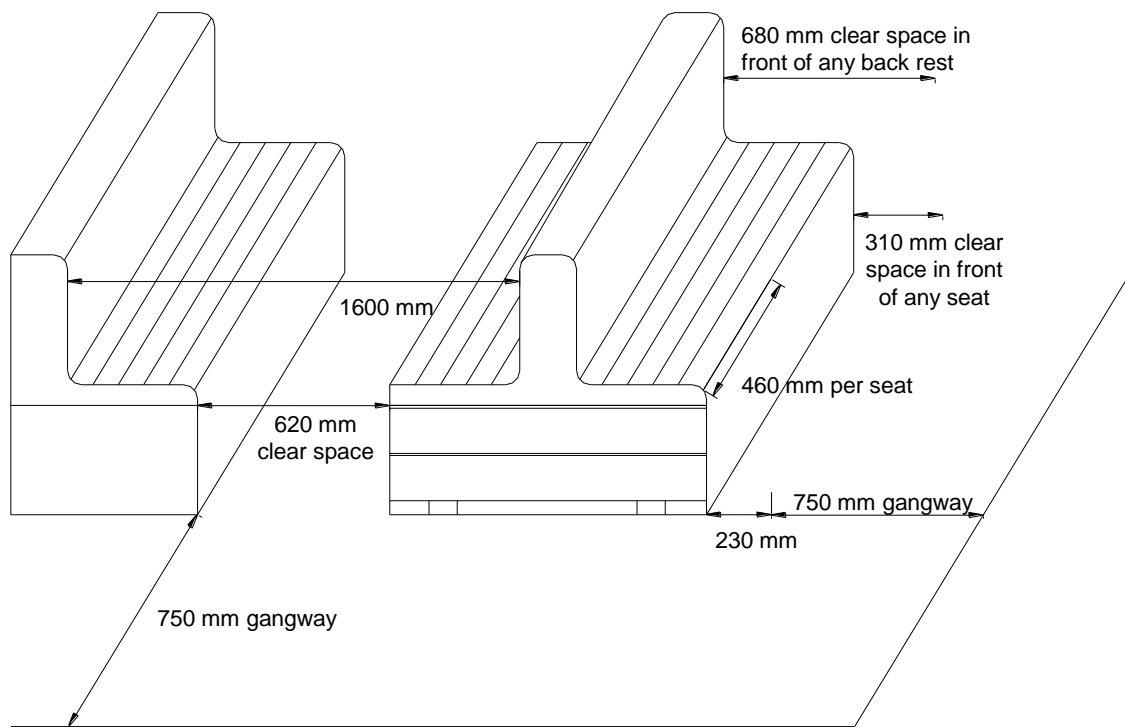


- 23.4.5 All seating and furniture shall normally be fixed. Any moveable furniture may only be permitted provided this would not be a hazard or impede escape in the event of an emergency. Seating may be individual seats or bench type seating.
- 23.4.6 If seating is removed to accommodate a specific operation or function, the number of passengers shall be reduced accordingly.

## **23.5 Minimum seat dimensions**

- 23.5.1 Suitable clear space shall be allowed for access, assembly and escape, with a minimum width of 750mm being provided.
- 23.5.2 A length of 460mm measured horizontally along the front of each seat shall be allowed for the accommodation of seated passengers.
- 23.5.3 When any space in front of a seat is required for access, the space within 230mm of the front of the seat shall not be taken into account when measuring the width of the access.
- 23.5.4 The distance between any part of the back rest of any seat and the back rest of the seat facing it, shall not be less than 1600mm.
- 23.5.5 There shall be a clear space of at least 680mm in front of the backrest of any seat measured from the centre of each seat and a clear space of at least 310mm in front of any part of that seat.
- 23.5.6 There shall be a clear space of at least 620mm between any part of the front of a transverse seat, and any part of any other seat which faces it.
- 23.5.7 The number of passengers accommodated by bench seating is found by dividing the length in metres of each continuous fixed seat by 0.46, the measurements being taken along the inner edge of the seats. Buoyant apparatus may be used for seating provided the seating dimensions specified above are satisfied.

### **Diagram – Minimum seat dimensions**



NOTE: All dimensions stated are minimum requirements

## 23.6 Toilet facilities

23.6.1 Toilet facilities must be provided free of charge for the use of passengers. The number of toilets shall be as follows;

Up to 50 passengers	1 WCs
Up to 100 passengers	2 WCs

For each additional 100 passenger  
or part thereof

2 WCs or 1 WC and 1 urinal

23.6.2 These requirements may be relaxed for open ships and those ships engaged on voyages of less than 30 minutes duration provided WCs are provided in the vicinity of embarkation/disembarkation places.

## 23.7 Crew accommodation

Where the crew accommodation is provided the Merchant Shipping (Crew Accommodation) Regulations 1997 will apply.

## **24 Survey and Certification Requirements**

### **24.1 Initial Survey**

24.1.1 The ship shall be subject to an initial survey before entry into service. This survey will be undertaken by an MCA surveyor who will survey the ship against the requirements of this Code.

24.1.2 Specifically, the surveyor is to satisfy himself that:

- (1) The ship holds a valid Partial Declaration of Survey of a Passenger Ship as required by Section 4 of this Code.
- (2) The ship complies with the mandatory safety requirements identified in Sections 3.1.4 and 3.1.6 of this Code.
- (3) The ship's Safety Management System fully meets the requirements of Section 16.
- (4) There is evidence that an initial survey of the radio installation has been undertaken by an MCA authorised person.
- (5) There is evidence that any LPG installation has been inspected by a GAS SAFE approved technician.

24.1.3 Provided the surveyor is content that the ship complies with all relevant requirements the surveyor will issue a Declaration of Survey to inform the Secretary of State that the ship may be issued a Passenger Ship Safety Certificate.

24.1.4 Any ship holding an ISM certificate will not be surveyed against the Safety Management System requirements of Section 16 of this Code nor subject to the In-service Verification as required by Section 24.2. Such ships will be subject to a mid-term inspection as required by the ISM Code.

### **24.2 In-service Verification of the Safety Management System**

The validity of the Passenger Ship Safety Certificate is subject to a satisfactory in-service verification of the Safety Management System

every year. The in-service verification will be done by the MCA on its own initiative, from time to time as it sees fit, and is expected to be annually. This will normally be when the ship is in service and normally during a busy period. The purpose of the in-service verification is for the MCA to verify that the Safety Management System is being effectively implemented. The Passenger Ship Certificate will be endorsed by the MCA surveyor on satisfactory completion of the in-service verification.

### **24.3 Annual Surveys**

24.3.1 An annual survey must be undertaken within the 3 months preceding the anniversary date (the day and month) of each year corresponding to the date of expiry of the ships full term Passenger Ship Safety Certificate.

24.3.2 At the Annual Survey the surveyor is to satisfy himself that:

- (1) The ship has been issued with a Partial Declaration of Survey of a Passenger Ship as specified in Section 24.4 of this Code.
- (2) The ship complies with the mandatory safety requirements identified in Section 3.1.4 of this Code.
- (3) The ship's Safety Management System fully meets the requirements of Section 16.
- (4) The means of communication has been demonstrated during the annual survey.
- (5) There is evidence that any LPG installation has been inspected by a GAS SAFE approved technician within the 3 months preceding the anniversary date.

24.3.3 Ships holding a valid ISM Certificate would not be subject to survey against the Safety Management System requirements of Section 16, but would be subject to the requirements of the ISM Code.

24.3.4 Where VHF/DSC is provided the means of communication shall be demonstrated by a functional radio check undertaken by the MCA surveyor or by an inspection undertaken by a MCA authorised person. Where the primary means of communication is by mobile phone the

Surveyor will verify that lines of communication are effective.

- 24.3.5 Provided the surveyor is content that the ship complies with all relevant requirements the MCA surveyor may issue or endorse the Passenger Ship Safety Certificate.

#### **24.4 Requirement for a Partial Declaration of Survey of a Passenger Ship**

- 24.4.1 Every ship must be issued with a Partial Declaration of Survey of a Passenger Ship to verify that the condition of the hull, machinery, control systems, electrical arrangements and bilge pumping systems continue to be fit for the purpose intended and continues to comply with the appropriate standards of the Certifying Authority.

- 24.4.2 The Partial Declaration shall be issued by the Certifying Authority within the 3 months preceding the anniversary date of the Passenger Ship Safety Certificate.

- 24.4.3 The Certifying Authority may be any of the Classification Societies stated in Section 4.3 of this Code or the MCA.

- 24.4.4 Where the MCA is acting as the Certifying Authority the MCA surveyor will assess the ship to verify that the ship:

- (1) is fit for the purpose intended;
- (2) continues to be in accordance with the standards to which the ship was constructed;
- (3) complies with the Inspection of the Outside of the Ship's Bottom requirements of Section 24.5 of this Code; and
- (4) Complies with the Survey of Propeller Shaft requirements of Section 24.6;

Provided these requirements are satisfied then the MCA will issue a Partial Declaration in respect of the ship.

#### **24.5 Inspection of the Outside of the Ship's Bottom**

24.5.1 An inspection of the outside of the ship's bottom is required at every Annual and Renewal Survey. This would normally be undertaken with the ship out of the water, but subject to the restrictions given in section 24.5.2, 24.5.3 and 24.5.4, the requirement may be either:

- (1) waived for vessels where an internal examination provides evidence that the ship is in a satisfactory condition and the owner of the ship has provided a written declaration that the ship has not suffered grounding or other damage since the last out of water inspection; or
- (2) replaced by an inspection of the outside of the ship's bottom with the ship in water.

24.5.2 An owner must make an application to the MCA in writing to request an extended period between out of water surveys. The application may be considered provided that out of water inspections are undertaken;

- (1) at least twice in any five year period,
- (2) at intervals not exceeding 36 months, and
- (3) at any other time whenever the surveyor is not satisfied, by thorough examination in the water, that the ship remains in good condition and will remain in good condition for the extended period between out of water surveys.

24.5.3 To assess whether an extended period between out of water surveys is appropriate, the MCA surveyor shall consider the following factors:

- (1) Number, location and quality of any repairs.
- (2) The structural condition of the hull, in particular;
  - (a) For steel ships – results of ultrasonic readings. These must be taken at least once every five years and the thicknesses shall be within the limits detailed in the following table. They shall be expected to remain within the limits stated for the extended period.

#### **Maximum permissible diminution of topside and bottom areas**

		Within L/2 midships	Elsewhere
Plating:	Bottom	15%	30%
	Topsides	15%	30%
Stiffeners	Bottom	20%	30%
	Topsides	20%	30%

(i) Thickness measurements, as required above are to be carried out in accordance with the following requirements:

- The ultrasonic measurements shall be obtained by skilled and experienced operators of the apparatus.
- The calibration of the measuring instrument shall be checked both before and after the thickness readings have been taken.
- The thicknesses to be gauged and the position of the test readings are to be agreed with the Surveyor prior to the measurements being taken.
- In general the minimum number of readings to be taken shall not be less than 3 circumferential bands measured down from the bulkhead deck to the keel port and starboard at amidships and at one quarter of the ship's length from the stem and stern together with readings along the full length of the wind and water strake or strakes port and starboard.
- A signed copy of the results shall be obtained from the operator and placed on the ship's file for record purposes together with the surveyor's report on any action which may have been taken as a result of obtaining the plate thickness readings.

- (b) For wooden ships – There shall not be evidence of significant rot, failure of fastenings, failure of caulking, borers or structural damage.
- (c) For GRP ships – there shall not be evidence of significant operational damage, crazing or osmosis.
- (3) Condition of shafting and bearings – there shall be no evidence of excessive wear or pitting.
- (4) Paintwork shall be in good condition and of a satisfactory specification for the extended survey interval.
- (5) An internal examination of the ship – there should be no sign of damage to the hull which could cause loss of watertight integrity or weakness to the internal structure.

24.5.4 The following ships will not normally be considered for extended periods between out of water survey

- (1) Ships of over 24m in Category D waters

Ships of over 24m in length operating in category D waters may only be considered for extended periods between out of water surveys if inspected by divers to ensure there is no damage to the bottom, propeller or rudder and to confirm sea inlet grids and paintwork are still in good condition. The visibility must be to the satisfaction of the attending surveyor. In addition;

- (a) There shall be in effect an agreed programme of survey on integral tanks covering the entire ship at least once in five years; and
  - (b) There shall be a complete examination of other hull spaces; and
  - (c) There shall be a written confirmation from the owner/skipper that to his knowledge the ship has suffered no hull or grounding damage.
- (2) Ships over 20 years of age



Ships over 20 years of age will not be eligible for extended periods between out of water surveys.

(3) Ro-ro ships

Ships which frequently suffer bottom damage (e.g. ro-ro ships which use a ramp rather than a link-span by being driven hard and repeatedly up on to concrete ramps) are required to undergo an out of water hull survey each year.

- 24.5.4 If the ship satisfies the above requirements the MCA Surveyor will make a formal declaration that they consider the ship is suitable for an extended period between out of water surveys.

## **24.6 Survey of Propeller Shafts**

- 24.6.1 The surveyor shall be satisfied that the stern gear, including the propeller shaft, is in good working order and will continue to be in a serviceable condition for the period covered by the annual survey. If there is any reasonable doubt, the propeller shaft shall be removed and inspected. In any case the propeller shafts shall be removed and inspected at least once in any five year period.

- 24.6.2 In order to assess whether the propeller shafts shall be removed, the Surveyor shall consider:

- (1) The date the propeller shaft was last withdrawn;
- (2) The date the propeller shaft was last replaced or reconditioned;
- (3) Any records of excessive noise/vibration;
- (4) Any indication that the propeller shaft is bent;
- (5) Any evidence of the intermediate bearings (if any) between the engine (or gearbox) and the stern tube running hot;
- (6) Any evidence of oil consumption in oil lubricated stern gear systems;
- (7) Any evidence of water in the oil reservoir;
- (8) Any evidence of oil leakage past an internal seal;
- (9) Evidence, documented or otherwise, of maintenance work carried out on the stern gear;
- (10) Any comments by the owner/skipper regarding the running condition of the stern gear.

Wherever possible, prior to slipping, the surveyor shall see the engine run with the stern gear engaged to assist in assessing its running condition.

- 24.6.3 In the case of other propulsion types, the surveyor shall assess whether maintenance or servicing is required, in any case the advice of the manufacturer shall be followed.

## **24.7 Renewal Surveys**

- 24.7.1 A renewal survey must be undertaken within the 3 months preceding the date of expiry of the ships full term Passenger Ship Safety Certificate.
- 24.7.2 The scope of the renewal survey is as for an Annual survey as required in Section 24.3.
- 24.7.3 Provided the surveyor is content that the ship complies with all relevant requirements the surveyor will issue a Declaration of Survey to inform the Secretary of State that the ship may be issued a new Passenger Ship Safety Certificate.

## **24.8 Additional Surveys**

- 24.8.1 The Secretary of State may require an additional survey of the ship to be undertaken following the report of any incident or defect which affects the safety of the ship or following an accident that has been reported.
- 24.9.2 An additional survey, either general or partial, according to the circumstances, shall be made following an important repair or renewal. The survey shall be such as to ensure that the necessary repairs or renewals have been effectively carried out, that the material and workmanship are in all respects satisfactory, and that the ship complies with the provisions of the relevant regulations.
- 24.9.3 The MCA will provide guidance to determine what constitutes an important repair or renewal on request.
- 24.9.4 On completion of a satisfactory additional survey the MCA will issue a survey report to confirm the condition of the ship is satisfactory.



## **PART B**

### **25 Additional Requirements for Ro-Ro Passenger Ships**

#### **25.1 Definitions**

25.1.1 In this Part the following expressions have the following meanings –

“doors” includes bow visors and appliances described in section 25.4.1(3);

“length” means the ship’s overall length; and

“loading doors” means the doors described in section 25.4.1(1) to 25.4.1(4) inclusive.

25.1.2 A door shall be deemed to be above the bulkhead deck if the sill of the opening with which it is associated is above that deck.

#### **25.2 Loading and stability assessment**

25.2.1 The intact and damage stability of every ro-ro passenger ship shall be re-examined to ensure the requirements of section 10 continue to be met, whenever considered necessary.

25.2.2 The owner shall ensure that the master is provided with information relating to the ship’s stability during the process of loading and unloading. This information shall be included in the ship’s stability information.

25.2.3 Where any alterations are made or changes occur to the ship so as materially to affect information supplied to the master in accordance with sections 25.2.2, amended information shall be provided.

25.2.4 The information provided pursuant to sections 25.2.2 and 25.2.3 shall be kept on board the ship at all times in the custody of the master.

25.2.5 The master shall use the information provided in accordance with paragraph 25.2.2 to 25.2.5 and, when necessary, make calculations or cause calculations to be made in order to ensure that during loading and unloading the ship has adequate stability and the freeboard at any door

giving access to the hull or to an enclosed superstructure is sufficient to prevent the entry of water.

25.2.6 (1) On completion of the loading and before it proceeds on a voyage the master or an officer appointed for the purpose shall ascertain –

- (a) the ship's draught at the bow and at the stern;
- (b) the trim of the ship by the bow or the stern; and
- (c) the vertical distance from the waterline to the appropriate subdivision load line mark on each side of the ship.

(2) The draughts, trim and the vertical distances ascertained in accordance with section 25.2.6(1) shall be recorded in a book retained on board.

(3) Where relevant, these readings shall be taken when the vessel is floating free of any linkspan or other shore infrastructure.

25.2.7 Subject to section 25.2.8, before proceeding on a voyage the master shall –

- (1) cause the maximum permissible vertical position of the ship's centre of gravity relative to its keel (KG) or the minimum permissible transverse metacentric height (GM) whichever is appropriate to the ship, to be determined, recorded and retained on board; and
- (2) ensure that the condition of loading of the ship as recorded in accordance with sub-paragraph 25.2.7(1) is within the permissible standard of stability determined in accordance with sub-paragraph 25.2.6(2) and satisfies all the relevant requirements prescribed in the stability information book.

25.2.8 (1) Where a ship regularly plies to and from the same place in conditions of loading which correspond closely to conditions of loading which are clearly specified in the stability information book and such specified conditions of loading allow a sufficient margin of stability beyond the minimum required for safety purposes to allow for small variations which might occur between a specified

condition of loading and the actual loading of the ship, the MCA may approve the conditions of loading so specified.

(2) When conditions of loading have been approved in accordance with section 25.2.8(1) before the ship proceeds on a voyage the master shall –

(a) ensure that the actual condition of loading of the ship corresponds closely to one of the approved specified conditions of loading; and

(b) record which approved condition of loading the actual condition corresponds to. This record shall be retained on board.

25.2.9 A copy of the information required by section 25.2.8(2)(b) shall be forwarded, as soon as is practicable, to a person nominated by the owner as being responsible and retained in his custody for a period of at least one calendar month.

### **25.3 Watertight integrity from the ro-ro deck (bulkhead deck) to spaces below**

25.3.1 Where vehicle ramps are installed to give access to spaces below the bulkhead deck, their openings shall be able to be closed weathertight to prevent ingress of water below. Such openings shall be alarmed with audible and visual indication to the navigation bridge.

25.3.2 Accesses to spaces below the bulkhead deck are permitted provided they are necessary for the essential working of the ship. Such accesses shall be watertight and alarmed with audible and visual indication to the navigation bridge;

25.3.3 The accesses referred to in paragraphs 25.3.1 and 25.3.2 shall be closed before the ship leaves the berth on any voyage and shall remain closed until the ship is at its next berth.

25.3.4 The master shall ensure that an effective system of supervision and reporting of the closing and opening of such accesses is implemented.

25.3.5 The master shall ensure that the time of the last closing of the accesses

is recorded in the logbook before the ship leaves the berth on any voyage.

## **25.4 Closure of main loading doors**

25.4.1 Except in the cases specified in paragraphs 25.4.2 and 25.4.4 the following loading doors –

- (1) gangway and cargo loading doors fitted in the shell or boundaries or enclosed superstructures;
- (2) bow visors so fitted;
- (3) weathertight ramps so fitted and used instead of doors for closing openings for cargo or vehicle loading; and
- (4) cargo loading doors in the collision bulkhead;

shall be closed and locked before the ship leaves its berth and shall be kept closed and locked until the ship has been secured at its next berth.

25.4.2 Where a bow visor or a weathertight ramp cannot be opened or closed while the ship is secured at its berth, it may so far as necessary and subject to paragraph 25.4.3 be opened or kept open while the ship approaches or draws away from its berth, as the case may be.

25.4.3 In no case shall a loading door be open when the ship is more than one ship's length from the cargo loading or discharging position of its berth.

25.4.4 Section 25.4.1 shall not apply to small doors intended to be used for pilot access, fuelling or other matters necessary for the operation of the ship and not intended to be used by passengers or for loading cargo.

## **25.5 Supervision and reporting of closure**

25.5.1 Before the ship proceeds on a voyage an officer appointed for the purpose by the master shall –

- (1) verify that every loading door has been closed and locked; and

- (2) report the fact that they have been closed and locked to the master or other officer in charge of the bridge.

25.5.2 Save as permitted by regulation 25.4.2 the ship shall not proceed on a voyage until the report referred to in sub-paragraph 25.5.1(2) has been received by the master or other officer in charge of the bridge.

## **25.6 Closure of weathertight doors in bulkheads**

- 25.6.1 Weathertight doors above the bulkhead deck (except doors fitted in collision bulkheads to which regulation 25.4 applies) which are fitted in bulkheads which are required to be watertight or weathertight as the case may be and which separate or form the boundary of cargo spaces shall be closed and locked before the ship leaves its berth and be kept closed and locked until the ship has been secured at its next berth.
- 25.6.2 Weathertight doors above the bulkhead deck fitted in the shell or in bulkheads which are required to be watertight or weathertight, other than those doors described in regulations 25.4.1 and 25.6.1, shall be kept closed whilst the ship is on any voyage except when opened on the express authority of the master.
- 25.6.3 Any weathertight door which may be opened in accordance with the exception to paragraph 25.6.2 shall be kept clear of obstructions which might prevent its rapid closure.

## **25.7 Closure of bulkheads on the ro-ro deck**

- 25.7.1 All transverse and longitudinal bulkheads which are taken into account as effective to confine the seawater accumulated on the ro-ro deck shall be in place and secured before the ship leaves the berth and remain in place and secured until the ship is at its next berth.
- 25.7.2 Notwithstanding the requirements of paragraph 25.7.1, the MCA may permit some accesses within such bulkheads to be opened during the voyage but only for sufficient time to permit through passage and, if required, for the essential working of the ship.



## **25.8 Opening of doors in an emergency**

Notwithstanding the provisions of regulations 25.4.1 and 25.6.1, gangway and cargo loading doors may be opened in an emergency but only when the master considers such opening will not put the safety of the ship at risk.

## **25.9 Entries in a record book**

25.9.1 Entries shall be made in a book retained on board for recording the following -

- (1) the times of the last closing, in accordance with regulations 25.4.1 and 25.6.1, of the weathertight doors referred to in those regulations and of the next opening of such doors; and
- (2) the times of the opening and closing of any weathertight door pursuant to regulations 25.6.2 and 25.8.

## **25.10 Listing of loading and unloading berths**

25.10.1 The owner of the ship shall ensure that the ship is provided with a list (the Berth List) of all loading berths at which it is intended the ship shall load or discharge cargo or vehicles.

25.10.2 The Berth List shall list separately for each port which the ship is intended to visit to load or discharge cargo or vehicles –

- (1) the loading berths at which the ship in question can, when so loading or discharging, comply with the requirements of regulation 25.4.1 without relying on paragraph 25.4.2 of that regulation; and
- (2) where it is intended that the ship shall so load or discharge in the manner permitted by regulation 25.4.2, the loading berths at which it will so load or discharge.

25.10.3 The berths of the type described in sub-paragraph 25.10.2(2) shall be listed separately from those of the type described in sub-paragraph 25.10.2(1).

25.10.4 An up to date copy of the ship's Berth List shall be supplied to the MCA.

25.10.5 No ro-ro passenger ship shall, except in an emergency, load or discharge cargo or vehicles through a loading door at any berth which is not listed in the ship's Berth List (and in the copy thereof supplied to the Maritime and Coastguard Agency).

## **25.11 Written instructions regarding the opening of weathertight doors**

25.11.1 The owner of a ship shall ensure that the ship is provided with written instructions for operating weathertight doors.

25.11.2 Such written instructions shall be approved by the MCA.

## **25.12 Compliance with written instructions**

No door shall be opened or closed except in compliance with the written instructions provided in accordance with regulation 25.11.

## **25.13 Access opening indicator lights**

25.13.1 Indicators shall be provided for all shell doors, loading doors and other closing appliances fitted to openings which if left open or not properly secured could lead to major flooding of a special category space or ro-ro cargo space.

25.13.2 The indicator system shall be a panel at the navigating bridge consisting of a green indicator light and a red indicator light for each access opening connected to suitable switches at the opening so that the green light will be illuminated on the panel for a particular opening only when the door or other closing appliance is both closed and secured.

25.13.3 All switches or relays shall be connected so that if the door or appliance is not fully closed or properly secured the red light on the panel will illuminate.

25.13.4 The power supply for the indicator system shall be independent of the power supply for operating and securing the doors or closing appliances.

## **25.14 Access to ro-ro decks**

25.14.1 The master or the designated officer shall ensure that, without the expressed consent of the master or the designated officer, no passengers are allowed access to an enclosed ro-ro deck when the ship is underway.

25.14.2 At least one of the means of escape from the machinery spaces where the crew is normally employed shall avoid access to any ro-ro cargo spaces.

## **25.15 Supplementary emergency lighting**

25.15.1 All passenger public spaces and alleyways shall be provided with supplementary electric lighting that can operate independently of the main and emergency sources of electric power for at least three hours when the ship is listed up to 90 degrees.

25.15.2 The illumination provided shall be such that the approach to the means of escape from the space can be seen.

25.15.3 The source of electric power for the lighting shall be accumulator batteries located within the lighting unit that are continuously charged,

25.15.4 The lighting shall be of the maintained type so that any failure of the lamp will be immediately apparent.

25.15.5 The accumulator batteries shall be replaced in accordance with the service life established by the manufacturer having regard to the ambient temperature to which they are subject in service.

25.15.6 A portable rechargeable battery-operated hand lamp shall be provided in every crew space alleyway, recreational space and every working space which is normally occupied unless supplementary emergency lighting as required above is provided.

## **25.16 Structural fire protection**

The boundary bulkheads and decks surrounding ro-ro deck spaces shall be insulated to 'A60' class standard. However, where an open deck space, a sanitary or similar space or tank, void or auxiliary machinery

space having little or no fire risk, is on one side of the division this standard may be reduced to 'A-0'.

## **25.17 Fixed Fire-extinguishing system and drainage**

25.17.1 Enclosed ro-ro deck spaces shall be fitted with an approved fixed pressure water-spraying system for manual operation which shall protect all parts of any deck and vehicle platform in such spaces.

25.17.2 In view of serious loss of stability which could arise due to large quantities of water accumulating on the deck or decks consequent on the operation of the fixed pressure water-spraying system, scuppers shall be fitted so as to ensure that such water is rapidly discharged directly overboard.

25.17.3 The drainage from ro-ro and car decks shall be of sufficient capacity on both the starboard and the port side shall be able to cope with a quantity of water originating from the water spraying system and fire pumps, taking into account the ship's conditions of heel and trim.

25.17.4 A water leakage detection system shall be arranged to provide an indication to the navigation bridge of any leakage through inner and outer bow doors, stern doors, or any other shell doors which could lead to the flooding of special category spaces or enclosed ro-ro cargo spaces.

## **25.18 Television surveillance of enclosed spaces**

A television system shall be installed which shall be capable of transmitting reliable information to the navigating bridge on the condition (including position) of bow doors, stern doors or any other cargo or vehicle loading doors which if left open or not properly secured could lead to major flooding of a ro-ro cargo space. Ro-ro cargo spaces shall be continuously patrolled or shall be monitored by a television surveillance system during any voyage so that movement of vehicles in adverse weather or unauthorised entry by passengers can be observed. The system monitors shall be placed at a location that is continuously manned whilst the ship is underway.

## **25.19 Emergency Lockers**

25.19.1 Every ro-ro passenger ship shall be provided with at least one weathertight emergency locker constructed of steel, or glass re-inforced plastic (GRP) or other suitable material, on each side of the ship. Such lockers shall contain the equipment specified below. Such equipment shall be of good quality and shall be regularly maintained.

25.19.2 The lockers shall be clearly marked and so located on an open deck and as high up in the ship and as near the ship's side as possible that in all foreseeable circumstances the locker, or lockers, on at least one side will be accessible.

### **Equipment**

- 1 Fireman's axe (long handled)
- 1 Fireman's axe (short handled)
- 1 Pin maul (7 lb)
- 1 Crowbar
- 4 Hand lamp/torches
- 6 Padded lifting strops (adult), see note (1)
- 2 Padded lifting strops (child), see note (2)
- 3 Hand-powered lifting arrangement, see note (3)
- 1 Lightweight rigid collapsible ladder at least 3 metres long, see note (4)
- 1 Lightweight rope ladder (equal in length to beam of ship or 10 metres whichever is less), see note (4)
- 1 First aid kit
- 6 Blankets (sealed in plastic bags) or thermal protective aids
- 4 Sets waterproof jackets and trousers

(1) In ships under 100 metres in length the number of adult lifting strops and lifting arrangements may be reduced to 4 and 2 respectively.

(2) Not required if the adult lifting strop is also suitable for children.

(3) Lifting arrangements to be capable of being used at angles of up to 20° from the horizontal and to have a SWL of at least 150 kg.  
Rope if used to be of a type which features good grip. One end of rope to be fitted with a snap link suitable for securing to lifting strops.

Tensile strength of rope and snap link to be at least 1 tonne. Length to be suitable for lowering harness a distance equal to at least 2/3 beam of the ship taking into consideration the type of purchase (if any). If wire used in the lifting arrangement tensile strength and length to be of equivalent standard.

- (4) Ladder to be capable of supporting one person weighing up to 150 kg and to be provided with means of support at top end when suspended from side escape when ship is on its beam ends.

25.19.3 The equipment shall be so stowed and secured in the locker that it will not drop out when the door or lid is opened when the ship is heeled at an angle of 90°.

## PART C

### 26 Additional requirements for planing and semi-displacement passenger ships which are not High Speed Craft.

#### 26.1 Design Acceleration Levels

26.1.1 The collision design acceleration  $g_{\text{coll}}$  shall be calculated, as detailed below. If the calculated value of  $g_{\text{coll}}$  is 3 or above, then Chapter 4 of the High Speed Craft Code, as amended, shall be applied in addition to the requirements of this Code. For lesser values of  $g_{\text{coll}}$  the requirements of 26.2 – 26.3 shall be applied in addition to the requirements of this Code.

26.1.2 Collision design acceleration  $g_{\text{coll}}$  (for craft other than amphibious ACVs where  $g_{\text{coll}} = 6$ ) shall be calculated as follows:

$$g_{\text{coll}} = 1.2 \left( \frac{P}{g \cdot \Delta} \right), \text{ but not to be taken greater than } 12,$$

where the load  $P$  shall be taken as the lesser of  $P_1$  and  $P_2$ , where:

$$P_1 = 460 (M \cdot C_L)^{\frac{2}{3}} (E \cdot C_H)^{\frac{1}{2}}$$

$$P_2 = 9000 M \cdot C_L (C_H \cdot D)^{\frac{1}{2}}$$

where the hull material factor  $M$  shall be taken as:

$M = 1.3$  for high tensile steel

$M = 1$  for aluminium alloy

$M = 0.95$  for mild steel

$M = 0.8$  for fibre-reinforced plastics,

$$C_L = \frac{(165 + L)}{245} \left( \frac{L}{80} \right)^{0.4}$$

where the height factor  $C_H = (80 - L)/45$  but not greater than 0.75 or less than 0.3,

where the kinetic energy of the craft at speed  $V_{\text{imp}}$  is:

$$E = 0.5 \Delta \cdot V_{\text{imp}}^2$$

where the main particulars of the craft are:

L = Length means the overall length of the underwater watertight envelop of the rigid hull, excluding appendages, at or below the design waterline in displacement mode with no lift or propulsion machinery active.

D = Depth of the craft from the underside of the keel to the top of the effective hull girder (m)

$\Delta$  = Craft displacement, being the mean of the lightship and the maximum operational weight (t)

$V_{imp}$  = Estimated impact speed (m/s) = two-thirds operational speed, where operational speed is 90% of maximum speed.

## **26.2 Passenger Accommodation**

26.2.1 Seating shall be fixed and forward or aft facing.

26.2.2 Passengers shall be requested to remain seated throughout the voyage in the passenger announcement and suitable signs shall be displayed in the passenger accommodation.

## **26.3 Navigational Equipment**

Operators must ensure that the navigational equipment provided is suitable for the intended craft, speed and operating environment. A maritime radar with Automatic Radar Plotting Aid (ARPA) capability shall be installed if appropriate. The Master shall undertake appropriate training for the specific equipment installed.



## **ANNEX 1**

### **Liquid Petroleum Gas Installation for Domestic Use**

#### **1 Definition**

In this section –

“Room-sealed” means an appliance whose combustion system is sealed from the room in which the appliance is located and which obtains air for combustion from a ventilated uninhabited space within the ship or directly from the open air outside the ship and which vents the products of combustion directly to open air outside the ship.

#### **2 General Information**

- 2.1 All LPG installations must be inspected and approved initially and annually by a GAS SAFE approved technician and a Certificate provided.
- 2.2 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.
- 2.3 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.
- 2.4 Consequently, the siting of gas consuming appliances and storage containers and the provision of adequate ventilation to spaces containing them is most important.
- 2.5 It is dangerous to sleep in spaces where gas-consuming open-flame appliances are left burning, because of the risk of carbon monoxide poisoning.
- 2.6 LPG is of a greater density 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.

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

### **3. Stowage of Gas Cylinders**

- 3.1 LPG cylinders, regulators and safety devices shall be stowed on the open deck (where leakage will not accumulate) or in a compartment that is vapour-tight to the ship’s interior and fitted with a vent and drain, so that gas which may leak can disperse overboard.
- 3.2 The vent and drain shall not be less than 19 mm in diameter, shall run to the outside of the craft and shall terminate 75 mm or more above the ‘at rest’ waterline. The drain and locker ventilation shall be 500 mm or more from any opening to the ship’s interior.
- 3.3 The cylinders and associated fittings shall be positively secured against movement and protected from damage in any foreseeable event.
- 3.4 Any electrical equipment located in cylinder lockers shall be certified safe for use in the potential explosive atmosphere.

### **4. Cylinders and Attachments**

- 4.1 Each system shall be fitted with a readily accessible, manually operated isolating valve in the supply pressure part of the system.
- 4.2 In multiple cylinder installations, in addition to each cylinder shutoff valve there shall be non-return valves near the stop valves. Where there is a change over device (automatic or manual) it shall be provided with non-return valves to isolate any depleted container.
- 4.3 When more than one container can supply a system, the system shall not be used with a container removed unless the unattached pipe is fitted with a suitable gas tight plug arrangement.
- 4.4 Containers not in use or not being fitted into an installation shall have the protecting cap in place over the container valve.

## **5. Fittings and Pipework**

- 5.1 For rigid pipework systems, the pipes shall be made from solid drawn copper alloy or stainless steel tube. Steel tubing or aluminium or any materials having a low melting point shall not be used.
- 5.2 Connections between rigid pipe sections shall be made with hard solder (minimum melting point 450°C). Where a rigid pipe joins a flexible pipe, appropriate compression joints are recommended.
- 5.3 Where a flexible hose is used, its length shall be kept to a minimum, it shall be protected from inadvertent damage where appropriate, it shall meet the requirement of EN 1763 or equivalent and be installed in a manner that gives access for inspection along its whole length.
- 5.4 There shall be no joints in the pipework in the engine spaces.

## **6. Appliances**

- 6.1 All unattended appliances shall be of the room sealed type.
- 6.2 Cookers and hobs are not considered to be unattended appliances.
- 6.3 All gas burners and pilot flames shall 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.
- 6.4 A device shall be fitted in the supply pipe from the gas container to the appliance that will automatically shut off the gas in the event of a loss in pressure in the supply line. Manual resetting of this device must be the only means of restoring the supply.

## **7. Ventilation**

- 7.1 The ventilation requirements of a space containing a LPG appliance shall be assessed against an appropriate standard (e.g. Annex B of ISO 10239) and shall take into account gas burning equipment and persons occupying that space.
- 7.2 Where ventilators required for LPG appliances in intermittent use can be closed, there shall be appropriate signs at the appliance warning of the

need to have those ventilators open before the appliance is used.

## **8 Gas Detection**

- 8.1 Suitable means for detecting the leakage of gas shall 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.
- 8.2 Gas detectors heads shall 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 shall at least be fitted below the lowest point of ignition.
- 8.3 A gas detector system of a suitable type shall, 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 shall incorporate a visible and audible alarm, which can be heard in the space concerned and the control position with the ship in operation.
- 8.4 Gas detection system components (i.e. gas detector head) likely to be in an explosive air/gas atmosphere shall not be capable of igniting that atmosphere.
- 8.5 In all cases, the arrangements shall be such that the detection system can be tested frequently whilst the ship is in service and shall include a test of the detector head operation as well as the alarm circuit, in accordance with the manufacturer's instructions.
- 8.6 The detection equipment shall be maintained in accordance with the manufacturer's requirements.

## **9. Emergency Action**

- 9.1 A suitable notice, detailing the action to be taken when an alarm is given by the gas detection system, shall be displayed prominently in the ship.

The information given shall 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 shall be shut off at the main supply from the container(s). NO SMOKING shall 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 SHALL NEVER BE USED AS A MEANS OF LOCATING GAS LEAKS.

## **10 Owner/Operator Testing**

It is strongly recommended that LPG systems are tested for leakage regularly. All connections shall 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.*

## **ANNEX 2**

### **Manning Matrix**

#### **1 Introduction**

- 1.1 This matrix is designed to calculate the minimum number of crew required to handle a passenger ship effectively and deal with any emergency situation on that ship when operating in UK categorised waters.
- 1.2 Additional staff will be required to ensure the safety of passengers in certain circumstances, including ships holding functions onboard or carrying passengers with special needs. Any event at which passengers are not seated in an orderly fashion may be considered to be a function.
- 1.3 Special consideration shall be given to ships carrying rescue boats or ships passing through lock gates. Additional crew will be required to man rescue boats and operate the lock gates; the additional number of crew shall be ascertained by risk assessment.

#### **2 Contributing Factors**

The matrix considers the following factors when determining the appropriate number of crew for a passenger ship. This is driven primarily by the need to ensure that all passengers can be kept informed and remain under supervision in the event of an emergency.

<b>Passenger numbers</b>	It must be possible to inform, instruct and control all passengers with the crew available.
<b>Survivability standard</b>	In the event of a collision or other failure of the hull structure this will determine the likelihood of having to evacuate the ship.
<b>Nocturnal operation</b>	Communication with passengers over distance will be more difficult at night with greater scope for confusion. The availability of, and response time from, other ships will differ from that during the day.

**Number of passenger****Decks**

This affects the ability of passengers to hear or see instructions and reassurance from crew and rescue services, as well as the ability to ensure the ship is cleared of crew and passengers.

**LSA**

In the event of an evacuation there must be sufficient crew to direct and assist passengers and operate the LSA fitted to the ship in the correct manner.

**Function**

This takes into account the distribution of passengers, and the effects as appropriate of noise and alcohol, which will reduce the ability of crew to attract and keep the attention of passengers.

**Area of operation**

This will affect the availability of rescue services, and the availability of assistance from other ships.

**3 Use of the matrix**

In order to achieve a minimum manning level for a particular ship, the table below needs to be consulted using the following procedure -

- (1) Work down the table, matching each variable to applicable weightings.
- (2) Total up the weightings for each of the variables.
- (3) Use the sum of all the weightings in the index table to achieve the proposed minimum crew numbers required.

Ships which have varying manning modes of operation due to additional risks involved e.g. Day/night or passenger numbers shall be calculated separately for each mode.

**4 Matrix Table**

Variable	Weighting	
Number of Passengers	<u>Passenger Numbers</u> <50	<u>Weighting</u> 8

	51-100	12
	101-150	16
	151-200	24
	201-300	32
	301-400	40
	>401	Refer to MCA
Survivability	<u>Type</u>	<u>Weighting</u>
	2 compartment	8
	1 compartment	16
	Buoyancy test	20
	Heel test	24
Day/night operation	<u>Time</u>	<u>Weighting</u>
	Day	8
	Night	16
Functions		<u>Weighting</u>
	No	0
	Yes	10
LSA	<u>Liferafts</u>	<u>Weighting</u>
	0	0
	1	4
	2	8
	3	12
	4	16
	5	20
	6	24
	>7	Refer to MCA
Number of passenger decks	<u>Decks</u>	<u>Weighting</u>
	1	4
	2	8
	3	12
Area of operation	<u>Category</u>	<u>Weighting</u>
	A	0
	B	8
	C	16
	D	24



The resultant index for individual ships is translated into the number of crew as follows:-

<u>Index</u>	<u>Number of Crew</u>
77 and Under	2
78-98	3
99-110	4
111-130	5
131 and over	6

## **5 Vessels carrying over 400 passengers**

- 5.1 This section aims to explain how crewing levels may be determined for vessels carrying over 400 passengers.
- 5.2 Safe manning of the vessel is the operator's responsibility, based on their assessment of risks and the characteristics of the vessel.
- 5.3 Each of the contributing factors detailed in 1.2 shall be considered when determining the appropriate manning level.
- 5.4 In the light of these factors, the owner must assess the number of crew, in addition to the master, appropriate for that vessel.
- 5.5 The owner must then notify the Marine Office dealing with the passenger certificate. The number of crew must be acceptable to the MCA before the Passenger Ship Safety Certificate is issued. The agreed number of crew will be shown on the certificate and may vary according to the number of passengers carried at any one time. Variations may also be allowed for day time and night time operation. The certificate will specify the date on which it takes effect and will include any conditions on which it is given.
- 5.6 The manning levels may be validated by emergency drills, in addition to the contributing factors.

## ANNEX 3

### Staff Induction and Familiarisation Training

#### 1 Familiarisation Training

Familiarisation training is a requirement for all personnel serving in any capacity onboard these ships. All new personnel shall undergo familiarisation training prior to operating as a crew member onboard the ship.

FAMILIARISATION TRAINING	UK waters Category			
Communicate in English with other persons on board on elementary safety matters	A	B	C	D
Understand safety information symbols, signs and alarms	A	B	C	D
Know how to operate emergency lighting systems and equipment	A	B	C	D
Know how to operate the ship's public address (P.A.) system	A	B	C	D
Know what to do if a person falls overboard	A	B	C	D
Know what to do if fire or smoke is detected	A	B	C	D
Know what to do if the fire or abandon ship alarm is sounded	A	B	C	D
Identify muster points, assembly and embarkation stations	A	B	C	D
Identify emergency exits and escape routes	A	B	C	D
Locate life saving appliances and demonstrate ability to don lifejackets	A	B	C	D
Raise the alarm and have a basic knowledge of the use and types of portable extinguishers	A	B	C	D
Take immediate action upon encountering an accident or other medical emergency, before seeking further medical assistance on board	A	B	C	D
Close and open the fire, weathertight and watertight doors fitted in the particular ship, other than those for hull openings	A	B	C	D
<b>Additional requirements if designated to assist passengers in an emergency</b>				
Awareness of life saving appliances and control plans, including:	A	B	C	D
Knowledge of emergency procedures including chain of command	A	B	C	D
Knowledge of muster lists and emergency instructions	A	B	C	D
Knowledge of emergency exits	A	B	C	D
The ability to assist passengers en route to muster and embarkation stations, including:	A	B	C	D
The ability to give clear reassuring orders in English	A	B	C	D
The control of passengers in corridors, staircases and passageways	A	B	C	D
Maintaining escape routes clear of obstructions	A	B	C	D

Methods available for evacuation of disabled persons or persons needing special assistance	A	B	C	D
Search of accommodation spaces	A	B	C	D
Mustering procedures, including:	A	B	C	D
The importance of keeping order	A	B	C	D
The ability to use procedures for reducing and avoiding panic	A	B	C	D
The ability to carry out, where appropriate, evacuation counts	A	B	C	D
The ability to ensure that passengers are suitably clothed	A	B	C	D
The ability to ensure that passengers have donned their lifejackets correctly			C	D
<b>Crowd Management Training Certificate (STCW Section A-V/3 and V/2)</b>				

## 2 Competent Crew Training

Competent Crew training is the minimum level of training that a person shall receive before being recognised as part of the permanent crew for the purpose of the minimum manning recorded on the passenger certificate

<b>COMPETENT CREW TRAINING</b>				
<b>1. Familiarisation Training Completed</b>				
<b>2. Location and use of Lifesaving Appliances*</b>				
<i>Knowledge of abandon ship procedures</i>	A	B	C	D
<i>The difference between a lifejacket and buoyancy aid</i>		B	C	D
<i>The correct method of fitting a lifejacket and buoyancy aid</i>		B	C	D
<i>Man overboard procedures including deployment of lifebuoy and raising the alarm</i>	A	B	C	D
<i>Demonstrate knowledge of the location and use of lifesaving equipment carried on the ship</i>	A	B	C	D
<i>Identify markings on liferafts (or other survival equipment) with regards to number of occupants</i>			C	D
<b>Personal Survival Techniques Certificate (STCW Table A-VI/1-1)</b>				
<b>3. Location and use of Fire Fighting Appliances*</b>				
<i>Operation of alarm bells</i>	A	B	C	D
<i>Knowledge of ship fire procedures</i>	A	B	C	D
<i>Under supervision, operation of fire pump and hoses</i>	A	B	C	D
<i>Knowledge of the location and use of fire fighting equipment carried on the ship</i>	A	B	C	D
<i>Identify differing types of fire extinguisher and what type of fire each would be used on</i>	A	B	C	D
<i>Use of ancillary equipment as carried (foam applicators etc.)</i>	A	B	C	D
<b>Fire Prevention &amp; Fire Fighting Certificate (STCW Table A-VI/1-2)</b>				

<b>4. Action in event of emergency*</b>				
<i>Means of recovery of person(s) from the water</i>	A	B	C	D
<i>Action in event of collision at operational level</i>	A	B	C	D
<i>Prepare a liferaft or other survival craft for launching</i>		B	C	D
<i>Man overboard procedures including dropping of lifebuoy and raising the alarm</i>	A	B	C	D
<i>Method used to indicate the ship is in need of urgent assistance and to summon help</i>	A	B	C	D
<b>Personal Survival Techniques Certificate (STCW Table A-VI/1-1)</b>				
<b>5. Personal Safety &amp; Social Responsibility</b>				
Observe Safe Working practices	A	B	C	D
Comply with Emergency Procedures	A	B	C	D
Contribute to effective human relations on board	A	B	C	D
Take precautions to prevent pollution of the marine environment	A	B	C	D
Understand orders and be understood in relation to shipboard duties	A	B	C	D
<b>Personal Safety &amp; Social Responsibility Certificate (STCW Table A-VI/1-4)</b>				
<b>6. Seamanship</b>				
<i>A working knowledge of nautical terms</i>	A	B	C	D
<i>Demonstrate knowledge of the general layout of the ship</i>	A	B	C	D
<i>Knowledge of bends and hitches commonly used on board</i>	A	B	C	D
<i>Correct use of ropes and rigging of fenders</i>	A	B	C	D
<i>Handling, care and use of fibre and steel ropes</i>		B	C	D
<i>Handling, care and stowage of chains and anchors</i>			C	D
<i>Handling, care and use of mooring lines</i>	A	B	C	D
<i>Assist in mooring and letting go a ship</i>	A	B	C	D
<i>Assist in opening, closing and securing of doors, ramps and other hatches and access ways</i>	A	B	C	D
<i>Use of Locks and Swing bridges</i>	A	B	C	
<i>Be able to safely rig a gangway, over side ladder and/or accommodation ladder</i>			C	D
<i>Understand helm orders and be able to steer a course under direction</i>		B	C	D
<i>Understand the duties of lookout and the reporting of lights and objects</i>	A	B	C	D
<i>Basic understanding of the collision regulations (carriage of lights, shapes and sound signals)</i>	A	B	C	D
<b>Efficient Deck Hand (EDH) Certificate</b>				
<b>7. Responsibilities and Regulations</b>				
Basic understanding of an employee's obligations	A	B	C	D
Reporting defects and mechanical/electrical faults	A	B	C	D
Understand onboard line of responsibility and communications	A	B	C	D
Requirements for reporting accidents and incidents to the master or responsible person on board	A	B	C	D

<b>8. Code of Safe Working Practices</b>				
Understand the risks of falling into the water	A	B	C	D
Understand the importance of work place cleanliness	A	B	C	D
Demonstrate the use and care of personal protective equipment	A	B	C	D
Understand the principles for protection of the environment from pollution	A	B	C	D
Understand the methods for the prevention of accumulation of rubbish and debris	A	B	C	D
Precautions to be taken when using calor gas installations and use of gas alarms and testing	A	B	C	D
Understand the principles of a confined space and the precautions to be taken prior to entry	A	B	C	D
<b>9. Communications</b>				
Knowledge of external means of communication available on board the ship	A	B	C	D
Knowledge of internal means of communication available on board the ship	A	B	C	D
<b>10. Passenger Care &amp; Control</b>				
Passenger safety briefing	A	B	C	D
Passenger counting and number recording procedures	A	B	C	D
Duties with respect to passenger muster and evacuation at operational level	A	B	C	D
<b>11. Company/Job Specific Training (To Develop at Company Level as required)</b>				

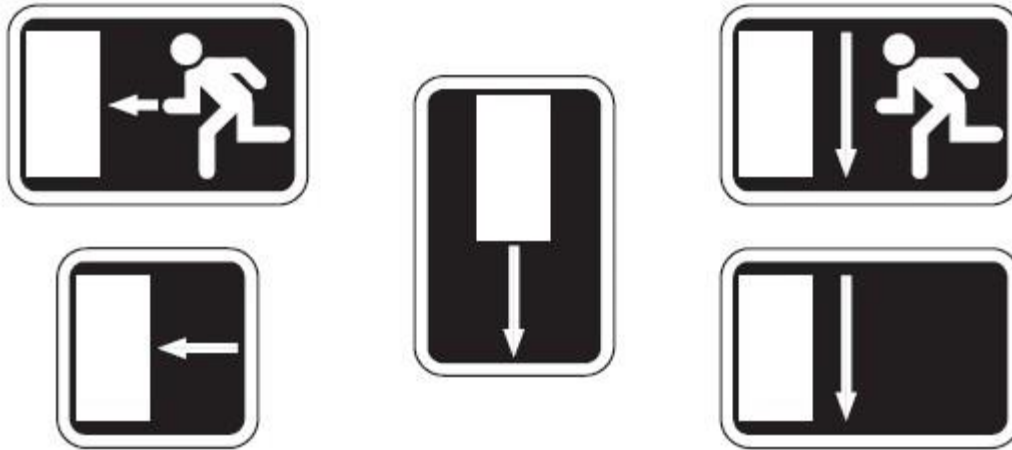
\* Items in *italics* are required prior to operating as a crew member, remainder to be completed within six weeks of being on board.

Where STCW certificates are identified these would provide appropriate training but are not mandatory, provided an equivalent level of training is undertaken.

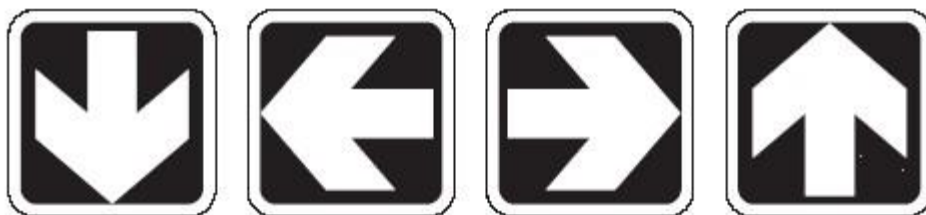
## ANNEX 4

### 1 Safety Signs Onboard

#### 1.1 Exit signs



Emergency exit /escape route

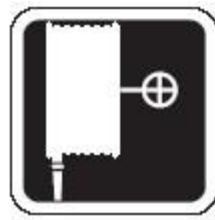


This way  
(supplementary information sign)



First-aid post

## 1.2 Fire fighting signs



Fire Hose



Ladder



Fire  
extinguisher



Emergency fire  
telephone

## 1.3 Symbols related to Life Saving Appliances



LIFEBOAT



RESCUE BOAT



LIFERAFT



DAVIT-LAUNCHED  
LIFERAFT



EMBARKATION  
LADDER



EVACUATION  
SLIDE



EVACUATION  
CHUTE



LIFEBUOY



#### 1.4 Colour of Safety Signs

Colour	Meaning or purpose
Red	Prohibition sign Danger alarm Fire-fighting signs
Green	Emergency escape, first aid signs & signs related to Life Saving Appliances

#### 1.5 Additional Signage

Any additional signage shall:

- Use clear fonts



- Be of an appropriate character size
- Where possible use pictograms rather than text signage.  
Pictograms shall be in accordance with ISO standards or common practice where an appropriate standard does not exist.
- Be in a colour which contrasts with the background against which it is seen, and the characters on the sign shall contrast with the sign board.

## **ANNEX 5**

### **Equipment Standards**

	<b>Standard</b>
<b>Construction &amp; Structural Strength:</b>	
Hull construction	Classification Society Rules and Regulations or relevant Certifying Authority requirements, as appropriate to the design and operation of the ship shall be applied.
Windows and side scuttles	Glass thickness shall be in accordance with classification society rules or in accordance with Lloyds Register Inland Waterway Rules.  Glass must be toughened safety glass.
<b>Machinery:</b>	
Machinery installations	Classification Society Rules and Regulations or relevant Certifying Authority requirements, as appropriate to the design and operation of the ship shall be applied.
Flexible hoses conveying oil or fuel oil: Pipes & fittings, valves and flexible pipe assemblies.	MED approved  ISO 7840 – Small Craft Fire Resistant Fuel Hoses.
<b>Electrical Arrangement:</b>	
Electrical installations	Classification Society Rules and Regulations or relevant Certifying Authority requirements, as appropriate to the design and operation of the ship shall be applied; or individual requirements below.  BS 8450:2006 - Code of practice for installation of electrical and electronic equipment in ships
Daylight signalling lamp	MED approved

Emergency lighting including low location lighting components	MED approved
<b>Lifesaving Appliances:</b>  Liferafts: ORIL's Other types	  MCA approved MED approved
Launching appliances using davits	MED approved
Rescue boat	MED approved
Buoyant apparatus	MCA Approved
Lifebuoys: Lifebuoys with self activating smoke signals Position-indicating lights for life-saving appliances	MED approved MED approved  MED approved
Lifejackets	MCA approved, MED approved or BS EN 394 and 396:1994
Buoyancy Aids	BS EN 395:1994 (CEN 100N Standard) or MCA approved
Child lifejackets	MED approved
Pyrotechnics/Line-throwing appliances	MED approved
MES systems	MED approved
Public address/General alarm system	No detailed testing standards
Means of Recovery of persons from the water	MCA approved
Retro-reflective material	MED approved
<b>Fire Safety:</b>  Fire Safety Systems	  Fire Safety Systems (FSS) Code

Portable fire extinguishers	MED approved or BS EN 3 Part 1 to 6;1996
Fixed fire extinguishing system - sprinkler systems	MED approved
CO2 fire fighting systems	MED approved
Fixed fire detection and fire alarm system components	MED approved
Fire hoses & nozzles	MED approved
Deep fat cooking equipment fire extinguishing systems components (automatic or manual)	MED approved
<b>Miscellaneous Equipment:</b>  Anchors & chain cables	Classification Society Rules and Regulations or relevant Certifying Authority requirements, as appropriate to the design and operation of the ship shall be applied or, where special consideration may be necessary due to the operation of the ship, approval should be sought from the MCA
<b>Radio Equipment:</b>	
Transceiver (Fixed) Facility	MED approved
DSC Facility	MED approved
Watchkeeping facility	MED approved
Survival Craft Two Way VHF	MED approved
<b>Navigation:</b>	
Navigation lights	Local Bye-Laws or the International Regulations for Preventing Collision at Sea, 1972, as amended.
Compass	MED approved

GPS	MED approved
Radar	MED approved
Echo sounder	MED approved
Radar reflector	MED approved
Automatic Identification System (AIS)	SOLAS Chapter V
Universal automatic identification system equipment (AIS)	MED approved
<b>Category A Machinery Spaces - Fire Extinguishing Systems</b>	
Fixed pressure water spraying system	MED approved
Fixed gas fire extinguishing system	MED approved
High expansion foam system	MED approved
<b>Additional requirements for planing and semi-displacement passenger ships:</b>	Chapter 4 of the High Speed Craft Code

## **ANNEX 6**

### **Applicable Legislation and Guidance**

	<b>Guidance</b>
<b>Life-saving Appliances:</b>	
Hydrostatic release units	MGN 343 M+F (2007) - Hydrostatic Release Units (HRU) - Stowage and Float Free Arrangements for Inflatable Liferrafts
Infant & oversized lifejackets	MGN 329 M (2006) - Lifejackets Infant and Oversized Passengers
Retro-reflective material	MGN 105 (M + F ) - Use and Fitting of Retro-Reflective Material on Life-Saving Appliances
<b>Fire Safety:</b>	
Procedure for testing and approval of fire protection media for use with composite and wooden materials	<p>MGN 407 Procedure for Testing and Approval of Fire Protection Media for Use with Composite and Wooden Materials</p> <p>MGN 276 Fire Protection – Maintenance of Portable Fire Extinguishers</p> <p>MGN 354 Fishing and Small Vessels - Safe Operation of Fixed CO2 Gas Fire Extinguishing Systems</p> <p>MGN 389 Operating Instructions and Signage for Fixed Gas Fire-Extinguishing Systems</p>
Use of barbeques & pig roasts	MGN 406 M+F (2010) - Use of barbeques (bbq's) and pig roasts on ships and fishing vessels
<b>Navigation:</b>	
Radar reflectors	MGN 349 (2007) - Carriage and Use of Radar Reflectors on Small Vessels
Boatmasters Licence and Hours of Work	The Merchant Shipping (Inland Waterway and Limited Coastal Operations) (Boatmasters'

	Qualifications and Hours of Work) Regulations 2006, SI 2006 No 3223 MSN 1808 M - The Merchant Shipping (Inland Waterways and Limited Coastal Operations) (Boatmasters' Qualifications and Hours of Work) Regulations 2006 – Structure and Requirements
Crew Regulations	The Merchant Shipping (Local Passenger Vessels) (Crew) Regulations 2006, SI 2006 No. 3224
<b>General Safety:</b> Health & safety at work	MGN 20 M+F (2005) - Implementation of EC Directive 89/391 Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997. SI 1997 No 2962.
Safety Management System	Ships complying with the Safety Management System requirements of Section 16 of the Code may find additional guidance in MGN 158 (M) helpful. Ships complying with the ISM Code may refer to The Merchant Shipping (International Safety Management (ISM) Code) Regulations 1998, SI 1998 No. 1561.
Risk Assessment	Code of Safe Working Practices for Merchant Seamen (COSWP), Chapter 1.
Accident Reporting	The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, SI 2005 No. 881
Meeting the needs of disabled people	Disabled Persons Transport Advisory Committee: The design of large passenger ships and passenger infrastructure: Guidance on meeting the needs of disabled people (2000) - ( <a href="http://www.dptac.gov.uk/pubs/guideship/index.htm">http://www.dptac.gov.uk/pubs/guideship/index.htm</a> )  Marine Guidance Note MGN 306 – Designing and Operating Smaller Passenger Vessels: Guidance on Meeting the Needs of Person with Reduced Mobility
Posters and signage	The Merchant Shipping and Fishing Vessels (Safety Signs and Signals) Regulations 2001

Health and Safety at Work	The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, (SI 1997/2962).
General health and safety regulations	
	<p>The Merchant Shipping (Means of Access) Regulations (SI 1988 No 1637), as amended</p> <p>The Merchant Shipping (Entry into Dangerous Spaces) Regulations (SI 1988 No 1638), as amended</p> <p>The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Employment of Young Persons) Regulations (SI 1998 No 2411) , as amended</p> <p>The Merchant Shipping and Fishing Vessels (Manual Handling Operations) Regulations (SI 1998 No 2857), as amended</p> <p>The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations (SI 1999 No 2205)</p> <p>The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations SI 2006 No 2183)</p> <p>The Merchant Shipping and Fishing Vessels (Lifting Operations and Lifting Equipment) Regulations, SI 2006 No 2184.</p> <p>The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Biological Agents) Regulations 2010, SI 2010 No 323.</p> <p>The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Chemical Agents) Regulations 2010, SI 2010 No 330.</p>



	The Merchant Shipping and Fishing Vessels (Health and Safety at Work) (Work at Height) Regulations 2010, SI 2010 No 332.
Safe Movement of Passengers and Crew	The Merchant Shipping (Safe Movement on Board Ship) Regulations, as amended, SI 1988 No 1641.
Crew accommodation	Merchant Shipping (Crew Accommodation) Regulations 1997
Noise	Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007, SI 2007 No. 3075 Merchant Shipping Notice MSN 1415 – Code of Practice for Noise Levels in Ships.
Vibration	Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007, SI 2007 No. 3077
Smoking	The Public Health Act 2006, 1995 Merchant Shipping Act
First aid kits	Merchant Shipping Notice MSN 1768 - Ship's Medical Stores
Alcohol licensing	The Licensing Act 2003  The Licensing (Scotland) Bill 2005  The Licensing (Northern Ireland) Order 1996
Hours of work provisions	The Merchant Shipping (Working Time: Inland Waterways) Regulations 2003, SI 2003 No 3049. The Merchant Shipping (Inland Waterway and Limited Coastal Operations) (Boatmasters' Qualifications and Hours of Work) Regulations 2006, SI 2006 No 3223  MSN 1778 (M) - Application of the Merchant Shipping (Working Time: Inland Waterways) Regulations 2003
Alcohol and drugs	The Railways and Transport Safety Act 2003, Sections 81 – 86

<b>Pollution Prevention</b>	
Prohibited compounds	European Union Regulation EC 782/2003.
Garbage management	MSN 1807 (M+F) - The Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008, SI 2008 No 3257.
Sulphur content of fuel	Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008, SI 2008 No. 2924.
Engine emissions	Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008, SI 2008 No. 2924.
Oil/Oily waste	Merchant Shipping (Prevention of Oil Pollution) Regulations 1996, SI 1996 No. 2154.
Antifouling paints	European Union Regulation EC 782/2003.
<b>Miscellaneous</b>	
Passenger counting and registration	<p>MSN 1794 (M+F) - Counting and registration of persons on board passenger ships</p> <p>The Merchant Shipping (Counting and Registration of Persons on Board Passenger Ships) Regulations 1999, SI 1999 No. 1869</p>

## **ANNEX 7**

### **The Heeling Test and Freeboard Measurements**

#### **1.0 Condition of Ship:**

The heeling test shall be conducted with fuel and water tanks 95% full. If this is not possible, extra weights shall be added at approximately the same longitudinal centre of gravity to simulate the additional fuel or water required. Any ballast present on the ship shall be recorded for reference at future stability verifications. Photographs of the ship should be taken to aid recording of the condition of the ship during the test. The heel test should be conducted in fresh water, the density of the water shall be measured using a hydrometer and recorded.

#### **2.0 Weights:**

Any form of weights may be used where the mass is known or can be checked using a suitable weighing device. Care shall be taken when using sandbags or similar where moisture ingress may have a significant effect on their weight. The use of people for performing heeling tests is not permitted due to safety and accuracy considerations.

#### **3.0 Movement of weights:**

The total heeling moment of WB/12 shall be imposed in 3 shifts of approximately WB/36, with the angle of heel being recorded at each stage. This staged heeling allows for subsequent analysis in borderline cases, helps avoid experimental errors and reduces the risk of excessive heel angles being achieved on newly considered ships. The process shall be performed for shifts both to port and to starboard. It is not necessary to utilise all the weights on board to produce the required heeling moment; the amount of weight used to provide the heeling moment will depend upon the distance it is able to be shifted. The type of weights, distribution and movement shall be agreed with the owner or representative prior to the test.

#### **4.0 Measurement of Angle of Heel:**

The angle of heel may be measured using battens pre-marked with

freeboard corresponding to 5° and 7° of heel. In most cases, however, it is considered easier to calculate the angle of heel by use of a pendulum, calibrated inclinometer, water tube or by freeboard measurements. The angles of heel shall be measured by two separate methods where practicable to provide a means of verification. For example, this could be two pendulums (forward and aft), a pendulum and freeboard measurements or pendulum and inclinometer. When a pendulum is used to measure the heel angle the pendulum shall ideally be of sufficient length to produce a deflection of 35 mm for each weight shift. The angle of heel shall be recorded in the spaces provided on the pro-forma. Care shall be taken to ensure the ship is floating freely and avoid the influence of wash from passing ships, wind heeling and mooring line tension on heel angle measurements.

## **5.0 Assumed Disposition of Passenger Loading:**

Passenger numbers are allocated on a basis of 0.3 m<sup>2</sup> per passenger for the clear deck area. Clear deck area excludes any permanent fixtures that reduce the deck area available to standing passengers. Where permanently fitted seating is present, the area taken up by the seating is subtracted from the clear deck area, and the number of seats added to the passenger allocation for that deck. If the seating is in the form of benches, the number of passengers is to be calculated by dividing the length of the bench in mm by 460 and rounding to the nearest integer passenger value.

## **6.0 Assumed Centre of Gravity of Passengers:**

The vertical centre of gravity of standing passengers shall be assumed to be 760 mm above the deck. For seated passengers the vertical centre of gravity is taken as 300 mm above the seat base.

## **7.0 Responsibilities:**

7.1 The owner is responsible for the stability of the ship and ensuring the stability information for the ship is both accurate and current. It is the owner's responsibility to retain all of the stability information relating to the ship. All heeling test and lightship check reports shall be kept with the ship's documentation, preferably with a copy onboard if the ship has an enclosed wheelhouse.

7.2 The owner is responsible for preparing the ship for the heeling test. This shall include ensuring that all tanks are filled to the correct level, the ship is in a suitable sheltered location for performing the test, suitable weights with which to conduct the test are supplied, along with the equipment and personnel required to safely position and shift these weights.

7.3 The Master of the ship is responsible for ensuring that the ship is not overloaded and is operated in a safe manner exercising prudence and good seamanship. Masters shall be aware that compliance with stability criteria does not ensure immunity from capsize or absolve the Master from his responsibilities.

## **8.0 Passenger Heeling Moment:**

The two thirds – one third passenger distribution equates to the standard passenger heeling moment of  $WB/12$ . W is the weight of passengers (at 75 kg each) and B is the extreme breadth to the outside of the hull plating (excluding any fendering or rubbing strakes). This heeling moment may be applied using any weight and shift distance combination, provided it produces the required heeling moment (heeling moment = weight x distance moved).

## **9. Freeboard measurements:**

9.1 Loaded freeboard measurements shall be taken at the heeling test with all weights onboard corresponding to the total number of passengers at 75kg each. Freeboard measurements shall be taken at positions forward, aft and amidships; with the location of the measurement points being recorded for future reference. Freeboard measurements shall generally be taken to the deck edge at side; any exception to this shall be noted to avoid any misinterpretation. The minimum freeboard and its location shall also be recorded. The mean loaded freeboard shall not be less than the minimum freeboard permitted for the ship. The minimum freeboard for ships of waterline length 6 m or less is 380mm. The minimum freeboard for ships with a waterline length of 18.3 m or more is 760mm. For intermediate lengths the minimum freeboard shall be calculated by linear interpolation. These minimum freeboards may be subject to concessions given in 9.3, 9.4 and 9.5.

9.2 The mean loaded freeboard measured at the amidships point shall be

the assigned loaded freeboard of the ship and shall be the freeboard to be marked as required by Section 11.3.2. The assigned freeboard shall be the distance between the top edge of the mark and the deck edge at side (or noted alternative reference point). The surveyor shall attend the ship to verify that the marks are in the correct position.

9.3 Ships may take the minimum freeboard to the lowest point of downflooding rather than to the deck edge, providing that the upstands or superstructure raising the point of downflooding above the level of the deck are of a similar standard of watertight structural efficiency to the ship's topsides.

9.4 In the case of ships heeling less than 7° but not meeting the minimum freeboard requirement, a reduced minimum freeboard may be accepted provided that the actual freeboard in the heel test condition is not less than the residual freeboard would have been, had the prescribed minimum freeboard criteria been complied with and the ship had heeled to the full 7°.

9.5 Narrowboats operating on category A waters may be allowed to take the minimum freeboard requirement of 380 mm regardless of the length of the ship provided the minimum residual freeboard in the heeled condition is at least 252mm.

9.6 At the heeling test, freeboard measurements shall also be taken in the 'light' condition with no passenger weight on board. This may be done before or after the heeling test is conducted. The tank states shall be as per the heeling test condition (95% full or compensated using weights). Freeboard measurements shall be taken forward, aft and amidships; with the location of the measurement points being recorded for future reference. Details of any bar stock, changes in normal furniture and equipment, and number of personnel onboard shall also be noted.

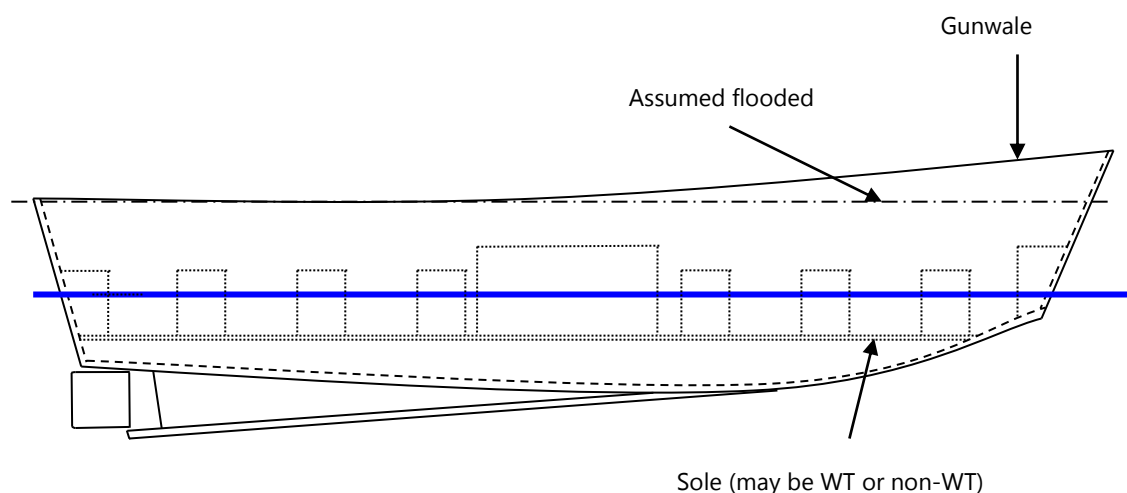
## **10. Subsequent Stability Verifications:**

10.1 The stability of the ship is required to be reconsidered every 5 years either by repeating the heel test or undertaking a lightship survey, provided the lightship survey undertaken at the previous heel test was well documented and the freeboard measurements recorded. The owner must also prepare and sign a declaration to verify no changes have been

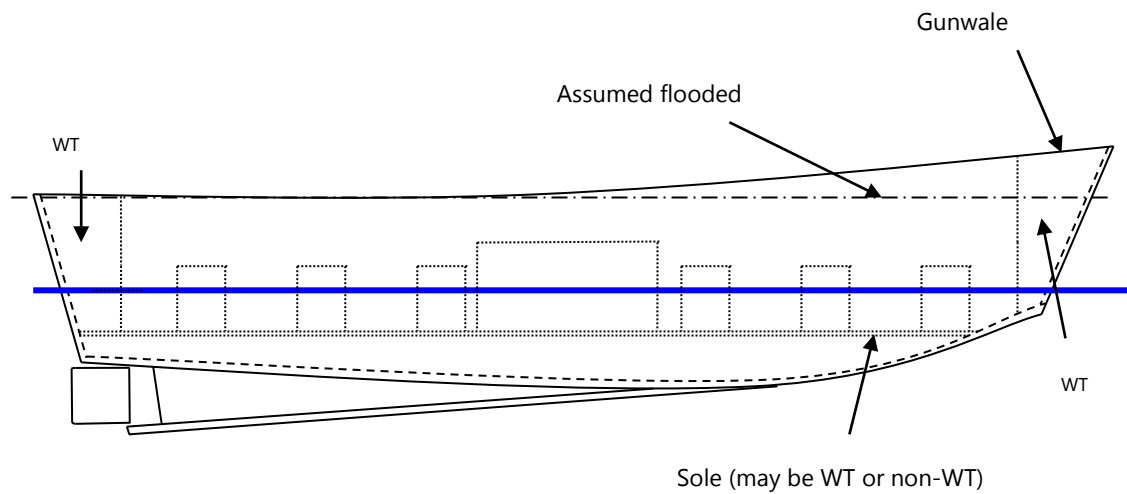
made to the ship in the intervening period.

- 10.2 The ship shall be placed in the same “light” condition as recorded. The upright freeboards shall be re-recorded and compared with the previous values. Should the result be the same then the ship is deemed to be unchanged and the stability is accepted for a further five years. Due to measurement errors freeboards are considered unchanged if within 2 cm of the original figures at the bow and stern and 1 cm at the amidships measuring point. Slightly larger figures may be accepted if reasons for the change can be accounted for. However, if the change in freeboard exceeds these margins and cannot be accounted for (thereby indicating an increase in the lightship displacement) then the heeling test must be undertaken.

#### **OPEN BOAT (see 10.1.1)**



Note: The inherent (built-in) buoyancy of the ship above comprising the buoyancy (below the assumed flooded waterline) of the shell, structure, engine, tanks, seats and their supporting structure, fittings etc., may be taken into account when assessing the required buoyancy.



Note: In the case above, provided the spaces at the forward and after end of the ship are watertight, the part of their volume below the assumed flooded waterline, can also be included in the buoyancy.



## ANNEX 8

### Format of Certificates Associated with the Passenger Ship Safety Certificate

MSF 1255 / REV 1208



## DECLARATION OF SURVEY FOR SHIPS OPERATING SOLELY IN UK CATEGORISED WATERS

<b>1. PARTICULARS OF SHIP</b>		Date(s) of Previous Certificate(s)	
Name of Ship			
IMO Number		Official Number	
Gross Tonnage		Power (Kw)	
Name of			
Address			
Date on which keel was laid or ship was at a similar stage of construction			
<b>2. OPERATIONAL LIMITS</b>			

3. PASSENGER AND CREW NUMBERS						
AREA OF OPERATION						
Mode						
Maximum Number of Passengers						
Minimum Number of Crew						
	Location	Area	Number of Passengers	Number of Seats		
On Deck						
In Cabins						
4. CREW DETAILS						
Minimum Certification Requirements for Master						
Minimum Numbers of holders of Certificates of Proficiency in Survival Craft and Rescue Boats						
Other certification requirements						
5. STABILITY DETAILS						
Subdivision / Loadline marked on ships side at amidships	Survivability Standard	Freeboard / Clear Height at side	Measured from a line.....below main deck level at side	Extreme draft amidships	Remarks with regard to alternative service conditions	
Date of Stability Verification: Inclining / Heel Test / Lightweight						
Date of Stability Book Approval						
Last date of out of water bottom inspection prior to the issue of this Certificate						

7. LIFESAVING APPLIANCES AND EQUIPMENT			
1	Total number of persons for which life-saving appliances are provided		
		Port Side	Starboard Side
2	Total number of lifeboats		
2.1	Total number of persons accommodated by them		
3 ***	Description of lifeboat davits (inc.S.W.L.)		
4	Number of Rescue Boats		
4.1	Number of Rescue Boats (included in in total lifeboats shown above)		
4.2 ***	Description of Rescue Boat davits(inc.S.W.L.)		
5 **	Number and Type of liferafts		
5.1	Total number of persons accommodated by them		
5.2 ***	Description of Liferaft davits(inc.S.W.L.)		
5.3 **	Type / Manufacturer of Marine Evacuation System (if fitted)		
6	Number of Buoyant Apparatus		
6.1	Number of persons capable of being supported		
7	Total number of lifebuoys		
7.1	Number of lifebuoys with lines		
7.2 *	Number of lifebuoys with lights		
7.3 *	Number of lifebuoys smoke signals		
7.4 *	Number of lifebuoys smoke signals and lights		
8.1	Number and type / manufacturer of Lifejackets for persons over 32 kg		
8.2	Number and type / manufacturer of Lifejackets for persons under 32 kg		
8.3 **	Number and type / manufacturer of Inflatable Lifejackets		
8.4	Number and type / manufacturer of Buoyancy Aids for persons over 32 kg		
8.5	Number and type / manufacturer of Buoyancy Aids for persons under 32 kg		
9.1	Number of rocket parachute distress flares		
9.2 *	Number of Hand held flares		
9.3 *	Number of Buoyant Smoke Signals		
10 *	Number of Line Throwing Apparatus		
11	Means of recovering persons from water		
12 *	First Aid Equipment category and number		

\* These items must be kept within valid dates

\*\* These items must have record of service within dates specified by manufacturer

\*\*\* These items to be load tested every 5 years and records kept

**8. DETAILS OF NAVIGATIONAL SYSTEMS AND EQUIPMENT**

1.1	Standard magnetic compass *	
1.2	Spare magnetic compass *	
1.3	Gyro compass *	
1.4	Gyro compass heading repeater *	
1.5	Gyro compass bearing repeater *	
1.6	Heading or track control system *	
1.7	Pelorus or compass bearing device *	
1.8	Pelorus or compass bearing device *	
1.9	Means of correcting heading and bearings *	
1.9	Transmitting heading device (THD) *	
2.1	Nautical charts / Electronic chart display and information system (ECDIS)*	
2.2	Backup up for ECDIS	
2.3	Nautical publications - Description and Area covered	
2.4	Backup up arrangements for electronic nautical publications	
3.1	Receiver for a global navigational satellite system / terrestrial radio-navigational system *	
3.2	9 GHz radar *	
3.3	Automatic radar plotting aid (ARPA) *	
3.4	Automatic tracking aid *	
3.5	Electronic plotting tracking aid *	
4	Automatic Identification System (AIS)	
5	Voyage data recorder (VDR)	
6	Speed and distance measuring device (through the water) *	
7	Echo sounding device *	
8	Rudder, propeller, thrust, pitch and operational mode indicator *	
9	Communications to emergency steering position	
10	Daylight signalling lamp *	
11	Radar reflector *	
12	International Code of Signals	
13	IAMSAR Manual	

\* Alternative means of meeting this requirement are permitted. In case of other means they shall be specified.

**9. DETAILS OF RADIO EQUIPMENT**

1	VHF Radio Installation	Manufacturer	Type
1.1	DSC Encoder		
1.2	DSC Watch Receiver		
1.3	Radiotelephony		
2	Secondary Means of Alerting		
3	NAVTEX receiver		
4 **	EPIRB		
5 *	Number of hand held two-way VHF radiotelephone apparatus		
6	SART		

Other Radio Equipment

**Methods used to ensure availability of Radio Facilities**

1	Duplication of Equipment	
2	Shore-Based maintenance	

\* Batteries of these items must be kept within valid dates

\*\* These items must have record of service within dates specified by manufacture

**10. FIRE PROTECTION AND DETECTION**

Where necessary reference can be made to identified plans

1	Fire extinguishers: Type and Location	
	Fixed fire extinguishing system : Details	
2	Structural Fire Protection: Details	
3	Fire Pumps	

10. FIRE PROTECTION AND DETECTION (Cont.d)			
4	Fire Hoses and Nozzles (include Type)		
5	Fire Blanket		
6	Fire-fighters Protective Equipment )(Clothing, boots, gloves, axe, helmet, safety lamp)		
7	Emergency Lighting		
8	Fire Detection System		
9	Fire Alarm System		
11. MACHINERY			
1	Main Engines		
	Number		
	Manufacturer		
	Type		
	Year		
	Number of Cylinders		
	Diameter of Cylinders		
	Length of Stroke		
2	Shaft and Propeller : Type and Year		
3	Remote Stops / extended spindles		

11. MACHINERY (Cont.d)		
4	Generators	
	Number	
	Type	
	Power	
5	Electrical Equipment	
6	Steering Gear	
7	Bilge Pumps	
8	Machinery operation manuals	
12. EXEMPTIONS FROM STATUTORY REQUIREMENTS		
Regulation	Date of Issue	Comment
13. SURVEYOR COMMENTS		
Coastguard Station at which SAR Plan is held		

**14. APPROVED VARIATIONS OF EQUIPMENT**

Item Number	Details of Equivalence	Conditions

**15. DECLARATION**

This declaration indicates that the condition of the items examined on the day of survey met the requirements of the Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010. . After this date, compliance will be dependent upon the vessel being properly maintained with no unapproved modifications made, and subject to all necessary surveys being carried out at their due time.

The period of validity of the Passenger Certificate should not extend beyond

Completion date of survey and verification on which this Certificate is issued

Has an Exemption Certificate been issued ? YES ☐ NO ☐

Is vessel's bottom inspection on In-Water waiver system? YES ☐ NO ☐

Office



Signature of surveyor

Signature of surveyor

Date



Name of surveyor

Name of surveyor





## PASSENGER SHIP SAFETY CERTIFICATE FOR SHIPS OPERATING SOLELY IN UK CATEGORISED WATERS

This certificate shall be supplemented by a Record of Equipment and Information (MSF 1256) which must be carried on board

### PARTICULARS OF SHIP

Name of Ship	
Official Number	
IMO Number	
Gross Tonnage	
Name of	
Address	

### THIS IS TO CERTIFY THAT:

- 1 The ship has been surveyed and found to comply with The Merchant Shipping (Passenger Ships) (Safety Code for UK Categorised Waters) Regulations 2010
- 2 The ship holds a valid Partial Declaration of Survey of a passenger ship.
- 3 The ship is fit to ply on voyages within the limits stated on the Record of Equipment and Information which supplements this Certificate.
- 4 The ship is fit to carry the numbers of passengers shown below, under the conditions indicated.
- 5 An Exemption Certificate has been issued / has not been issued.

Area of Operation						
Mode						
Maximum Number of Passengers allowed						
Minimum Number of Crew						

### See also Operational Limits and Notes.

This Certificate is valid until  unless previously cancelled, subject to the Annual Surveys and Safety Management In-service verification being completed and endorsed on the Certificate.

Date of Stability Verification: Inclining/Heel Test/lightweight

Date of last 2 of out of water bottom inspections



Anniversary Date

Completion date of survey and verification on which this Certificate is issued

### Safety Management In-Service Verification

In-Service Range Dates  to

### Certificate Issue

Place of Issue	<input style="width: 150px; height: 20px;" type="text"/>
Date of Issue	<input style="width: 150px; height: 20px;" type="text"/>
Name	<input style="width: 150px; height: 20px;" type="text"/>
Signed	<div style="border: 1px dashed black; width: 150px; height: 20px;"></div>

(Signature of Authorised Official Issuing the Certificate)

Place	<input style="width: 150px; height: 20px;" type="text"/>
Date	<input style="width: 150px; height: 20px;" type="text"/>
Name	<input style="width: 150px; height: 20px;" type="text"/>
Signed	<div style="border: 1px dashed black; width: 150px; height: 20px;"></div>

ENDORSEMENT FOR ANNUAL SURVEYS AND SAFETY MANAGEMENT AUDITS WHICH MUST BE COMPLETED EACH YEAR BETWEEN THE RANGE DATES SPECIFIED			
	Record of out-of-water Surveys	Annual Survey Range Dates [ ] and [ ]	Safety Management In-Service Verification In-Service Range Dates [ ] to [ ]  Note: Must be conducted when vessel in service.
1st	Type: waiver / outwater * Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]
2nd	Type: waiver / outwater * Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]
3rd	Type: waiver / outwater * Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]
4th	Type: waiver / outwater * Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]	Signed [ ] Name [ ] Place [ ] Date [ ]  Official Stamp [ ]



**3. PASSENGER AND CREW NUMBERS (Cont.d)**

	Location	Area	Number of Passengers	Number of Seats
On Deck				
In Cabins				

**4. CREW DETAILS**

Minimum Certification Requirements for Master	
Minimum Numbers of holders of Certificates of Proficiency in Survival Craft and Rescue Boats	
Other certification requirements	

**5. STABILITY DETAILS**

Subdivision /marked on ships side at amidships	Survivability Standard	Freeboard / at side	Measured from a line...below main deck level at side	Extreme draft amidships	Remarks with regard to alternative service conditions

7. LIFESAVING APPLIANCES AND EQUIPMENT			
1	Total number of persons for which life-saving appliances are provided		
		Port Side	Starboard Side
2	Total number of lifeboats		
2.1	Total number of persons accommodated by them		
3 ***	Description of lifeboat davits (inc.S.W.L.)		
4	Number of Rescue Boats		
4.1	Number of Rescue Boats (included in total lifeboats shown above)		
4.2 ***	Description of Rescue Boat davits(inc.S.W.L.)		
5 **	Number and Type of liferafts		
5.1	Total number of persons accommodated by them		
5.2 ***	Description of Liferaft davits(inc.S.W.L.)		
5.3 **	Type / Manufacturer of Marine Evacuation System (if fitted)		
6	Number of Buoyant Apparatus		
6.1	Number of persons capable of being supported		
7	Total number of lifebuoys		
7.1	Number of lifebuoys with lines		
7.2 *	Number of lifebuoys with lights		
7.3 *	Number of lifebuoys smoke signals		
7.4 *	Number of lifebuoys smoke signals and lights		
8.1	Number and type / manufacturer of Lifejackets for persons over 32 kg		
8.2	Number and type / manufacturer of Lifejackets for persons under 32 kg		
8.3 **	Number and type / manufacturer of Inflatable Lifejackets		
8.4	Number and type / manufacturer of Buoyancy Aids for persons over 32 kg		
8.5	Number and type / manufacturer of Buoyancy Aids for persons under 32 kg		
9.1	Number of rocket parachute distress flares		
9.2 *	Number of Hand held flares		
9.3 *	Number of Buoyant Smoke Signals		
10 *	Number of Line Throwing Apparatus		
11	Means of recovering persons from water		
12 *	First Aid Equipment category and number		

\* These items must be kept within valid dates  
 \*\* These items must have record of service within dates specified by manufacturer  
 \*\*\* These items to be load tested every 5 years and records kept

Note : See also Section 14 - Approved Variations of Equipment

3/09	Revision Date
------	---------------

8. DETAILS OF NAVIGATIONAL SYSTEMS AND EQUIPMENT		
1.1	Standard magnetic compass *	
1.2	Spare magnetic compass *	
1.3	Gyro compass *	
1.4	Gyro compass heading repeater *	
1.5	Gyro compass bearing repeater *	
1.6	Navigational Lights	
1.7	Heading or track control system *	
1.8	Pelorus or compass bearing device *	
1.9	Means of correcting heading and bearings *	
1.10	Transmitting heading device (THD) *	
2.1	Nautical charts	
2.2	Backup up for ECDIS	
2.3	Nautical publications - Description and Area covered	
2.4	Backup arrangements for electronic nautical publications	
3.1	Receiver for a global navigational satellite system / terrestrial radio-navigational system *	
3.2	9 GHz radar *	
3.3	Automatic radar plotting aid (ARPA) *	
3.4	Automatic tracking aid *	
3.5	Electronic plotting tracking aid *	
4	Automatic Identification System (AIS)	
5	Voyage data recorder (VDR)	
6	Speed and distance measuring device (through the water) *	
7	Echo sounding device *	
8	Rudder, Propeller, thrust, pitch and operational mode indicator *	
9	Communications to emergency steering position	
10	Daylight signalling lamp *	
11	Search Light	
12	Radar reflector *	
13	International Code of Signals	
14	IAMSAR Manual	
* Alternative means of meeting this requirement are permitted. In case of other means they shall be specified.		
4/09		Revision Date

## 9. DETAILS OF RADIO EQUIPMENT

1	VHF Radio Installation	Manufacturer	Type
1.1	DSC Encoder		
1.2	DSC Watch Receiver		
1.3	Radiotelephony		
2	Secondary Means of Alerting		
3	NAVTEX receiver		
4 **	EPIRB		
5 *	Number of hand held two-way VHF radiotelephone apparatus		
6	SART		

Other Radio Equipment

## Methods used to ensure availability of Radio Facilities

1	Duplication of Equipment	
2	Shore-Based maintenance	

\* Batteries of these items must be kept within valid dates

\*\* These items must have record of service within dates specified by manufacture

## 10. FIRE PROTECTION AND DETECTION

Where necessary reference can be made to identified plans

1	Fire extinguishers: Type and Location	
	Fixed fire extinguishing system : Details	
2	Structural Fire Protection: Details	
3	Fire Pumps	

**10. FIRE PROTECTION AND DETECTION (Cont.d)**

4	Fire Hoses and Nozzles (include Type)	
5	Fire Blanket	
6	Fire-fighters Protective Equipment (Clothing, boots, gloves, axe, helmet, safety lamp)	
7	Emergency Lighting	
8	Fire Detection System	
9	Fire Alarm System	

**11. MACHINERY**

1	Main Engines	
	Number	
	Manufacturer	
	Type	
	Year	
	Number of Cylinders	
	Diameter of Cylinders	
	Length of Stroke	
2	Shaft and Propeller : Type and Year	
3	Remote Stops / extended spindles	



11. MACHINERY (Cont.d)		
4	Generators	
	Number	
	Type	
	Power	
5	Electrical Equipment	
6	Steering Gear	
7	Bilge Pumps	
8	Machinery operation manuals	
12. EXEMPTIONS FROM STATUTORY REQUIREMENTS		
Regulation	Date of Issue	Comment
7/09		Revision Date

**13. SURVEYOR REMARKS**

--

Coastguard Station at which SAR Plan is held

**14. APPROVED EQUIVALENT OF EQUIPMENT**

Item Number	Details of Equivalence	Conditions

I certify that this Record is correct in all respects.

Office



Signature of surveyor

Signature of surveyor

Date



Name of surveyor

Name of surveyor

Name of Ship

MSF 1256 / REV 1208

DOCUMENT CONTROL - MSF 1256

Page	Revision Date					
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

**ANNEX 9**

**PARTIAL DECLARATION OF SURVEY OF A  
PASSENGER SHIP OPERATING SOLELY IN UK  
CATEGORISED WATERS  
(HULL AND MACHINERY)**

Name of Ship	Official Number	IMO Number
Name & Address of Owner/Agent	Gross Tonnage	Date Keel Laid
	Area of Operation	

In accordance with the requirements of the Merchant Shipping (Passenger Ship) (Safety Code for UK Categorised Waters) Regulations 2010, the validity of this Partial Declaration shall not extend beyond

\*

\* Anniversary date

This Partial Declaration of Survey of a Passenger Ship is issued by  
.....(certifying authority)  
in respect of an **Initial Survey / Renewal Survey / Annual Survey\*\***.

\*\* Delete as appropriate

**Declaration for an Initial Survey**

The Ship has been constructed in accordance with the construction standards of the certifying authority and that the workmanship of all parts of the ship and its equipment is in all respects satisfactory.

**Declaration for a Renewal / Annual Survey**

The ship fully complies with the construction standards of the certifying authority and is fit for the purpose for which it is intended.

The following items, as appropriate, have been assessed against the standards of the certifying authority.

☐ Hull construction and structure

Date of last examination of the bottom (in accordance with MGN 217(M))	in dry dock	
	in water	

- ☐ Machinery
- ☐ Control systems
- ☐ Bilge pumping arrangements
- ☐ Electrical equipment and installations

Details of any applicable exemptions

Surveyor's comments

Signed by .....

Date

Position

Organisation

## ANNEX 10

### SEARCH AND RESCUE (SAR) CO-OPERATION PLANS as agreed between the Passenger Boat Association and H.M. COASTGUARD



## SAR PLAN

Dated:

>

Name of vessel:

>

Name of Operating Company:

>

**In the event of an Incident on Inland, non-tidal, Waterways  
dial 999 and ask for the **POLICE, AMBULANCE, FIRE****

*The Police can act as the local single-point-of-contact for your vessel,  
and will task any other emergency services required on your behalf.*

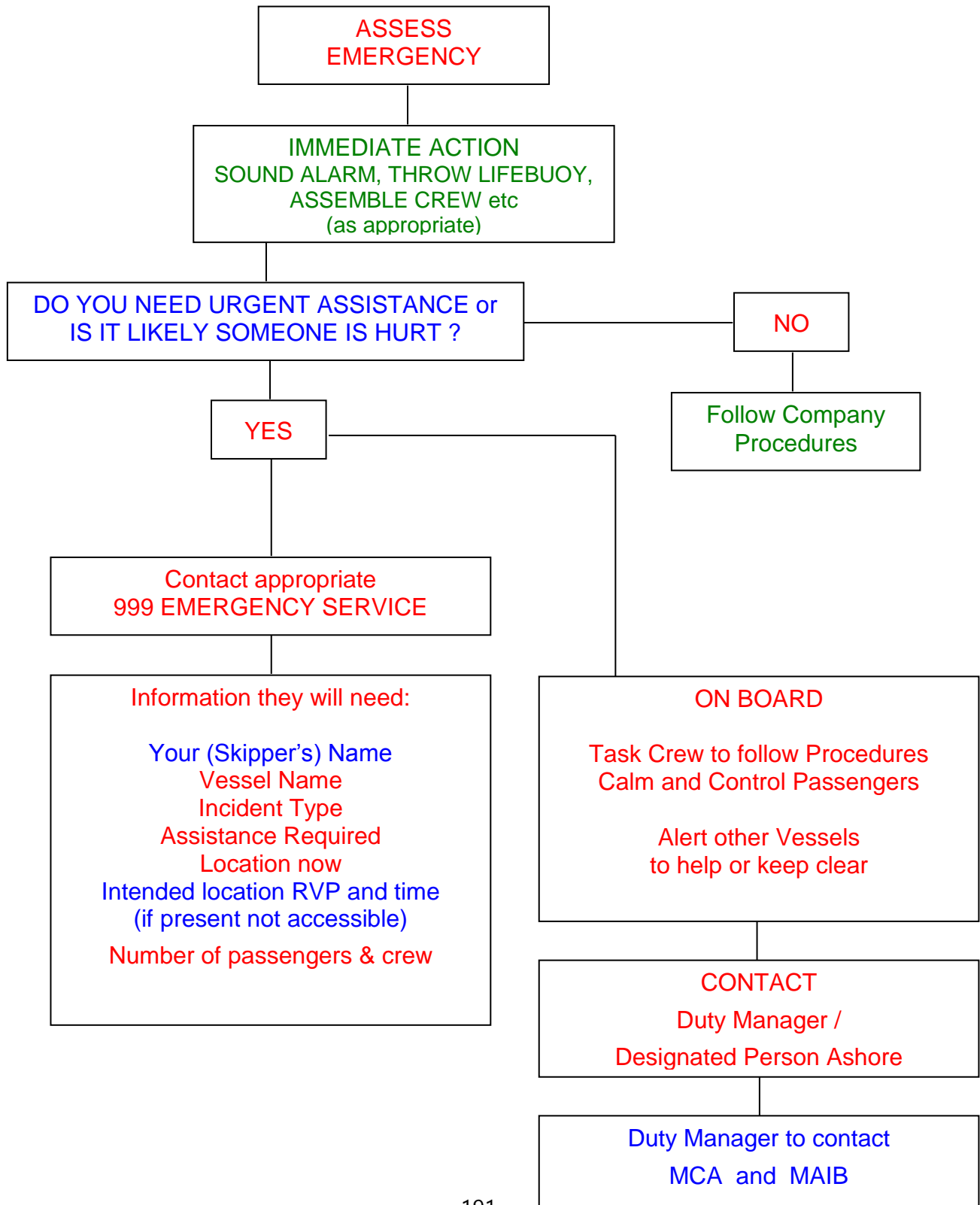
**In the event of an Incident on Tidal Waters:  
Call **H.M. COASTGUARD**, VHF Radio Ch.16,  
or Dial 999 and ask for the **COASTGUARD****

*The Coastguard are the local single-point-of-contact for your vessel,  
and will task any other emergency services required on your behalf.*

**A copy of this plan must be kept on the vessel at all times, clearly marked so that skipper and crew can easily find it in the event of an emergency (and for training and familiarisation) preferably covered with splash-proof material, stored in a dry place, and readily to hand.**

**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

**EMERGENCY ACTION FLOW CHART**



**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

**LIST OF CONTENTS**

<b>PART A</b>	<b>SAR PLAN cover</b>
	<b>EMERGENCY ACTION FLOW CHART</b>
	<b>LIST OF CONTENTS</b>
<b>Section</b>	<b>1.0 DESCRIPTION OF A PLAN OF CO-OPERATION</b>
	<b>2.0 EMERGENCY and OTHER SERVICES</b>
	<b>3.0 PERIODIC EXERCISES</b>
<b>PART B</b>	<b>4.0 THE VESSEL</b>
	<b>5.0 THE PASSENGERS</b>
	<b>6.0 COMMUNICATION EQUIPMENT CARRIED</b>
	<b>7.0 LIFESAVING EQUIPMENT</b>
	<b>8.0 FIRE-FIGHTING EQUIPMENT</b>
	<b>9.0 COLOUR PHOTO OF VESSEL</b>
	<b>10.0 GENERAL PLAN OF DECKS &amp; PROFILE</b>
	<b>11.0 MAP of AREA of OPERATION</b>
	<b>12.0 THE OPERATOR</b>
	<b>13.0 CONTACT LIST</b>
	<b>14.0 OFFICIAL DECLARATION</b>



## **15.0 RECORD of EXERCISES**

<b>Annex A</b>	<b>Confidential Phone List</b>
<b>Annex B</b>	<b>Dealing with the Media</b>
<b>Annex C</b>	<b>Rendezvous Points</b>
<b>Annex D</b>	<b>Specific Local Waterway Information</b>

PART A – Page 3 of 7

## **SEARCH AND RESCUE (SAR) CO-OPERATION PLANS** as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

### **1.0 DESCRIPTION OF A PLAN OF CO-OPERATION**

The intentions of SAR Co-operation (SARCO) Plans are to help ensure that assistance can be provided to persons in distress on the water. SAR Co-operation Plans enhance mutual understanding between ship, company and the Emergency Services; this is best achieved by the prior exchange of information, and by conducting joint exercises.

The objectives of SAR Co-operation planning are:

- To enable, in the event of emergency, the early and efficient establishment of contact between the passenger ship, her operator's shore-based emergency response team, and the Emergency services. The SAR Co-operation Plan should ensure that all relevant contact details are known to each of the three parties beforehand, and that these details are kept up-to-date;
- to provide the Emergency services with easily accessible and up-to-date information about the vessel – in particular her operating area and her communications and emergency response systems; and
- to provide the vessel and her operators with easily accessible information about Search and Rescue and the Emergency services available in the vessel's area of operation, to assist in decision-making and contingency planning.

The Plan is not only of use when a passenger vessel is herself the subject of an emergency. It will also be useful when passenger vessels are assisting others.

### **1.1 COMMUNICATIONS PLAN**

Every vessel legally required to carry a SAR Co-operation Plan must also maintain a

plan of **Communications** in the event of an emergency. This may simply be a list of useful contacts which will include all the priority numbers for your local emergency services and your support team. See Section 13 and Annex A.

You may find it useful to program these numbers into the vessel's mobile phone(s).

PART A –Page 4 of 7

## **SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

### **2.0 EMERGENCY and other SERVICES**

**Incident on Inland, non-tidal, Waterways where there is no Coastguard and RNLI Presence:**

**Dial 999 and ask for the most appropriate Emergency Service**

**Incident on tidal Waters:**

**Call H.M. COASTGUARD, VHF Radio Ch.16, or Dial 999 and ask for the COASTGUARD**

#### **2.0 H.M. COASTGUARD**

H.M. Coastguard is the designated authority for all civil maritime Search and Rescue in the tidal waters of the United Kingdom (and a few, discrete, areas of inland non-tidal water) and undertake the initiation, tasking and co-ordination of all such SAR operations.

#### **2.1 POLICE AUTHORITY**

The local Police Authority is the designated SAR Authority for emergencies arising on passenger vessels operating on inland waterways (other than those above). However, responsibility for administering the SARCO process, has been devolved to HM Coastguard, who should be contacted with any administration enquiry.

#### **2.2 FIRE-FIGHTING**

##### **Inland, non-tidal, Waterways:**

If the Incident involves a Fire, dial 999 for the Fire and Rescue Service who will mobilise their own resources and also advise the other emergency services as they see fit. In

this case, you will need to consider a nearby location where the Fire Brigade will be able to board your vessel. You are the person with the local knowledge, and it may be the Fire Brigade will not know the most suitable Rendezvous Points.

**Incident on tidal Waters:**

Upon being informed of fire on board a vessel, HM Coastguard should be your first call. HM Coastguard will arrange for the tasking of suitable fire-fighting vessels or equipment in addition to lifeboats and other vessels capable of assisting. Co-ordination remains with the Coastguard, who will liaise with shore-based emergency services.

## **2.3 AMBULANCE SERVICE**

**Inland, non-tidal, Waterways:**

If the Incident involves an injured or ill person, dial 999 for the Ambulance Service who will mobilise their own resources and also advise the other emergency services as they see fit. In this case, you will need to consider a nearby location where the Ambulance will be able to board your vessel. You are the person with the local knowledge, and it may be the Ambulance will not know the most suitable Rendezvous Point.

PART A – Page 5 of 7

## **SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

**Incident on tidal Waters:**

Upon being informed of fire on board a vessel, HM Coastguard should be your first call. HM Coastguard will arrange for the tasking of Ambulances in addition to suitable vessels capable of assisting. Co-ordination remains with the Coastguard, who will liaise with shore-based emergency services.

## **2.4 AIRCRAFT**

Search and Rescue Helicopters (with winch-lifting capability) are operated by the RAF, RN and HM Coastguard and may well be able to assist in either searching for casualties or their speedy evacuation to hospital (from remote locations) if ambulances are not available. Most Police authorities operate search-capable helicopters.

## **2.5 PORT AUTHORITY**

The local Port or Navigation Authority may operate a variety of craft in the waterway, and may well be available to assist the casualty vessel.

## **2.6 ENVIRONMENT AGENCY (Inland, non-tidal, Waterways)**

The Environment Agency has a responsibility for some non-tidal rivers and they also have maintenance and patrol craft who may be able to assist. You may wish to liaise with them in advance to determine their capability and contact details. However this should not deter you from contacting the most appropriate emergency authority if you have an emergency on board.

## **2.7 BRITISH WATERWAYS (Inland, non-tidal, Waterways)**

British Waterways has a responsibility for some non-tidal rivers and most (but not all) canals. They also have maintenance and patrol craft who may be able to assist. You may wish to liaise with them in advance to determine their capability and contact details. However this should not deter you from contacting the most appropriate emergency authority if you have an emergency on board.

## **2.8 ASSOCIATION OF INLAND NAVIGATION AUTHORITIES**

AINA collates details of many Independent Navigation Authorities who, through ownership, have jurisdiction over some waterways throughout the UK.

## **2.9 MEDIA RELATIONS**

The Police maintain a 24 hour a day Press Office for handling incidents which have generated significant media interest. If a Press Officer is employed by the operating company, this section should be developed jointly towards a common strategy. See Annex B.

## **2.10 INFORMING NEXT-OF-KIN**

Local Police forces will be responsible for the operation of any casualty bureau, and/or any notifications to family which may become necessary. See Annex B.

PART A – Page 6 of 7

## **SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

## **3.0 EXERCISES**

### **PERIODIC EXERCISES**

**3.1** The regulations call for “periodic exercises” to test the Plan’s effectiveness. For the larger companies it is intended that an overall program of exercises should be worked out by the Company and the relevant Police, Fire or Coastguard Rescue Centre to ensure that, as far as is possible, all staff are able to participate over time.

**3.2** In order for the Plan to remain current and valid, it is important that the operator make contact with their local Emergency Authority, and ensure their participation in such exercises, the frequency of which should be considered jointly.

**3.3** There is a mandatory requirement to record all exercises. (See Section 15).

## PART B

### 4.0 THE VESSEL

Continues in the non-pdf section

PART A – Page 7 of 7

### SEARCH AND RESCUE (SAR) CO-OPERATION PLANS

as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

## PART B

### 4.0 THE VESSEL

When completing this form type to the right of, and do not delete, the yellow > markers

4.1 *Name of Vessel* >

4.2 *VHF Radio Call-sign* >

*(International Radio Callsign as issued on Radio Licence – if fitted)  
(if none, say None)*

4.3	VHF Radio MMSI	>	<i>(Maritime Mobile Service Identity issued to DSC users – if fitted) (if none, say None)</i>
4.4	Type of vessel	>	<i>(e.g. Passenger Ferry, Narrow Boat)</i>
4.5	Gross Tonnage	>	
4.6	Length overall (in metres) Width (beam) overall	> >	
4.7	Maximum permitted draft (in metres)	>	
4.8	Service speed in knots	>	

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**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
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## 5.0 THE PASSENGERS

5.1	<i>Maximum number of PASSENGERS allowed on board</i>		
a)	During daylight hours	:	>
b)	Hours of darkness	:	>

5.2 Number of CREW normally carried on board

a) During daylight hours : >

b) Hours of darkness : >

5.3 Record of persons on Board (PoB)

a) What method is used to count the total number of persons on board before departure from each landing point? :

b) Where is this information recorded on board? >

c) How is this information passed ashore? >

d) Who ashore holds this information? >

d) Contact details of person ashore with PoB totals >

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**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
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**6.0 COMMUNICATION EQUIPMENT CARRIED**

Not all the equipment listed may be applicable.

6.1 VHF Radios, number of VHF radios >  
VHF frequencies monitored >

(if none, say None)

6.2 On-Board Mobile phones numbers (Especially important for smaller vessels with no radio)

> belonging to >  
> belonging to >  
> belonging to >  
> belonging to >

## 7.0 LIFESAVING EQUIPMENT

Not all the equipment listed may be applicable.

7.1 Life-jackets, number and colour

>  
>

7.2 Lifebelts, number, colour and markings

>  
>

7.3 Liferafts or other Buoyant Apparatus or ORIL, number, type, size, colour and serial numbers

>  
>

(if none, say None)

7.4 Apparatus intended to be used to rescue people from the water

>  
>



## 8.0 FIRE-FIGHTING EQUIPMENT

Not all the equipment listed may be applicable. However, all vessels are required to carry fire extinguishers, and these should be detailed below.

### 8.1 Extinguishers and their locations

>

>

>

>

>

>

>

>

(ALL vessels must complete). A simple plan may be attached to show types and locations.

### 8.2 Pumps

>

>

### 8.3 Mains and risers

>

(if none, say None)

### 8.4 Personnel Smoke Hoods and Breathing Apparatus

>

(if none, say None)

### 8.5 Gaseous discharge systems

>

(if none, say None)

**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

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**9.0 COLOUR PHOTOGRAPH OF VESSEL:** (please compress digital photos)

Please attach a recent colour photo which portrays the whole of the vessel

**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
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**10.0 GENERAL PLAN OF DECKS AND PROFILE OF THE VESSEL**

Please attach drawings which show the deck(s) layout and profile of the vessel

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**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

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**11.0 MAP**

Please attach a general map of your operating area and refer to any RVP list  
See Annex C.

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## 12.0 THE OPERATOR

12.1 Operating **Company's** Name



12.2 Operating **Company's** Address



12.3 Operating **Company's** Contact Details



Telephone Number(s)



Pagers



Fax Number



Email Address

>

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## SEARCH AND RESCUE (SAR) CO-OPERATION PLANS

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### 13.0 CONTACT LIST

*(Do not insert company address – this is confidential, for emergency out-of-hours contact)*

13.1 Name

>

Position in Company

>

Home address

>

>

>

>

Home telephone number

>

Mobile Phone Numbers

>

>

13.2 Name

>

Position in Company

>

Home address

>

>

>

>

Home telephone number	>	
Mobile Phone Numbers	>	>

13.3 Name	>	
Position in Company	>	
Home address	>	
	>	
	>	
Home telephone number	>	
Mobile Phone Numbers	>	>

**Add as many additional Emergency Contact persons as necessary to ensure contact can be made at any time of day or night, and therefore separate householders are preferable.**

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### **SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

**THE COMPLETED SAR CO-OPERATION PLAN SHOULD NOW BE SUBMITTED FOR APPROVAL OF THE SECRETARY OF STATE (H.M. COASTGUARD).**

**Electronically by email to :** The relevant MCA Coastguard Rescue Centre.  
The e-mail address of the person responsible can be found referring to the link below:

In which case, please ensure photos and plans are compressed.

**With a signed copy sent to :** District Passenger Vessel Liaison Officer  
**HM COASTGUARD RESCUE CENTRE**  
Whose address can be found at:

<http://www.mcga.gov.uk/c4mca/mcga07-home/aboutus/contact07.htm>

- **A COPY OF THE APPROVED PLAN MUST BE KEPT ON THE VESSEL AT ALL TIMES.**
- **THE PLAN MUST BE KEPT UPDATED**

- **AMENDED PLANS MUST BE SUBMITTED TO H.M. COASTGUARD.**
- **REGULAR EXERCISES MUST BE HELD WITH THE RELEVANT EMERGENCY AUTHORITY**

***EXERCISES WHICH DO NOT INCLUDE THE EMERGENCY SERVICES or  
SAR AUTHORITY CANNOT BE COUNTED TOWARDS THIS LEGAL REQUIREMENT***

**DECLARATION**

*The information provided in this plan is correct to the best of my knowledge. I understand that there is a duty on the part of we the Operators to notify H.M. Coastguard and any other relevant SAR Authority of any changes to this plan.*

Signed:	Position in Company:	Date:

***It is a requirement, and in your best interests, to discuss this Plan further with your local:  
Police Emergency Control Centre.  
Fire Brigade and Ambulance Control Centres.  
Council Emergency Planning Department.***



**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
as agreed between the **Passenger Boat Association** and **H.M. COASTGUARD**

*There is a legal requirement to conduct regular exercises with the local Emergency Authority.  
This applies to ALL vessels, including those operating on inland waterways.*

**15.0 RECORD OF EXERCISES**

**NAME OF VESSEL:** >

DATE	TYPE OF EXERCISE <i>e.g. Fire, Man Overboard</i>	SAR AUTHORITY	SAR UNITS AND OTHER VESSELS	COMMENTS	CERTIFIED BY :
>					Signed >
					Print Name >
>					Signed >
					Print Name >
>					Signed >
					Print Name >
>					Signed >
					Print Name >



**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
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**ANNEX A. CONFIDENTIAL LIST OF CONTACT NUMBERS:**

[illegible]

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**ANNEX B    DEALING WITH THE MEDIA**

Operators are best advised to let the Police Press and Public Liaison Officers take the lead.

However, in the case of a major incident or event, especially when casualties are expected, the media will be very fast to approach the vessel for comments and pictures. While it is recognised that this can be daunting for the crew who will be under stress and are not media trained, it is often better to say a few factual words instead of a “no comment” response. A holding response could cover the following information:

**An incident (fire, bridge strike, crash, etc) has happened on the boat called (boat name), at (location and time). Emergency services have been called/are currently on the scene. It is not known at this stage if any one is injured and the rescue operation is underway. Media are urged to contact the emergency services for more details or the boat company”.**

On no account should any member of the crew give names and numbers of possible fatalities, injured or missing persons. Also, do not speculate on the reason for the accident/incident, as that is part of the investigation.

**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**  
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**ANNEX C    RENDEZVOUS POINTS**

Rendezvous Points (RVPs) are a table of information identifying and categorising places on the navigation (canal or river) where a vessel in distress can identify its location in a manner that is easily understood by Emergency Services personnel with no maritime knowledge or background and where Emergency Responders can gain reasonable access. A list of RVPs within the vessel's operational area are compiled by the vessel operator and consist of a Serial (identification) Number, ordinate survey (OS) six-figure map reference, brief description, telephone number if applicable (e.g. a lock) and any supporting information such as the quality of access or which bank of the waterway (in the case of a wide water).

The RVP list should be reviewed and validated with the Emergency Services and Navigation Authority. Thereafter, it is shared between the three organisations as an established basis for rescue and assistance.

The RVP list takes a little effort to compile and administer, but once established it can save lives by enabling a speedy and accurate response to any incident. Operators may consider sharing their RVP list, not least to provide some conformity for the Emergency Services.

Operators to add if they think appropriate

**An Example of an RVP document can be found at:**

[http://www.visitthames.co.uk/poi/2693/emergency\\_rendezvous\\_points.html](http://www.visitthames.co.uk/poi/2693/emergency_rendezvous_points.html)

**SEARCH AND RESCUE (SAR) CO-OPERATION PLANS**

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**ANNEX D    SPECIFIC LOCAL WATERWAY INFORMATION**

Some waterways have features and constraints that might effect how a rescue is approached. For example, in many cases locks have anti-vandal keys and locks. Without prior knowledge this could hamper or frustrate a rescue. Similarly there may be a tunnel or other navigation feature which could come as a surprise to potential Emergency Responders. This section allows you to pre-empt problems such as these examples.

Operators to add if they think appropriate

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