



Maritime &  
Coastguard  
Agency

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## **The Workboat Code Edition 3**

# **The Safety of Small Workboats and Pilot Boats – A Code of Practice**

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**Ship Standards  
Maritime and Coastguard Agency  
Bay 2/23  
Spring Place  
105 Commercial Road  
Southampton  
SO15 1EG**

Tel : +44 (0) 203 8172000  
e-mail: [codes@mcga.gov.uk](mailto:codes@mcga.gov.uk)

General Enquiries: [info@mcga.gov.uk](mailto:info@mcga.gov.uk)

Website Address: [www.gov.uk/government/organisations/maritime-and-coastguard-agency](http://www.gov.uk/government/organisations/maritime-and-coastguard-agency)

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***Safer Lives, Safer Ships, Cleaner Seas***

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# 1 Foreword

## Introduction

- 1.1 This **Code** contains mandatory requirements that apply to **workboats, including remotely operated unmanned vessels (ROUVs)**, that operate **to sea**, and to all **dedicated pilot boats**, carrying **cargo** and/or not more than 12 **passengers**, which includes any **industrial personnel**. The **Code** applies to **United Kingdom (UK) vessels** wherever they may be. It also applies to non-United Kingdom workboats in UK waters that operate from UK ports. The Code, including the appendices and annexes to which it refers, are given statutory authority by the Merchant Shipping (Small Workboats and Pilot Boats) Regulations 2023 (“the 2023 Regulations”) where a vessel is certified under those Regulations as meeting the requirements of the **Code**.
- 1.2 This **Code** applies to **workboats**, including **ROUVs**, and **dedicated pilot boats** when they are **in commercial use**. It may also be used for barges, pontoons, and similar **small vessels** when under tow, as specified in [section 26](#). It does not apply when such vessels are in use for recreational, sport or pleasure use, for which there are more appropriate codes.
- 1.3 The **ROUVs** to which the Code applies are vessels with no persons on board, where the vessel is operated from a **Remote Operation Centre**. Such vessels are treated, by both UK and international law, as a type of cargo vessel and the level of safety and protection provided for in the Code for those persons coming into contact with such vessels and/or operating the **vessel** remotely, is considered to be commensurate with the current expectations of the general public for these types of **vessel**.
- 1.4 Sections 1 to 4 of the **Code** outlines the application and interpretation and provides a detailed explanation on how the certification requirements in the 2023 Regulations are intended to be applied. The requirements in sections 5 to 31 of the **Code**, the appendices and annexes to which they refer, are mandatory requirements for **workboats, pilot boats and remotely operated unmanned vessels** which are certified under the 2023 Regulations.
- 1.5 This Code does not apply to a vessel where bulk **cargo** is loaded into and carried in the vessel’s hold or tanks. Such vessels are treated as small tankers or bulk carriers for the purposes of this Code and therefore cannot be certified under the provisions of this Code and the 2023 Regulations.
- 1.6 Independent rescue boats, when engaged in commercial use, may use the Rescue Boat Code instead of this Code, in accordance with [MGN 466\(M\)](#).
- 1.7 Police boats operating **to sea** shall meet the requirements of this **Code** in addition to the requirements set out in Annex XX.
- 1.8 **Vessels** intending to operate as **Remotely Operated Unmanned Vessels** are required to meet the requirements set out in section 2 to 8 of Annex 2 in addition to the relevant sections of the **Code** that are not disapplied under section 1.2 of Annex 2.

- 1.9 A **vessel** which does not carry out any of its operation on the water's surface (i.e., operates underwater) is outside of the scope of this **Code**.
- 1.10 The 2023 Regulations set out the legal framework for the certification and continued compliance of vessels with this **Code**. The **Code** contains the technical requirements for the equipment, and practices and procedures to be followed, in relation to such vessels. The 2023 Regulations and this **Code** therefore provide a complete compliance regime for **workboats**, including **remotely operated unmanned vessels and pilot boats** which is enforceable under the 2023 Regulations. Compliance with the 2023 Regulations and this Code is not mandatory; it is an alternative regulatory regime and vessels may instead continue to comply with standards in all merchant shipping legislation that would otherwise apply to them, for example, the Merchant Shipping (Load Line) Regulations 1998 (SI 1998/2241). However, the **Maritime and Coastguard Agency** advise that it will be easier to understand, apply and comply with the 2023 Regulations and this Code of Practice rather than the many separate Regulations that otherwise must be complied with.
- 1.11 This is the third edition of the **Code**. It replaces [The Workboat Code Edition 2, as amended](#) which was introduced in December 2018 and also the original Code titled, ["The Safety of Small Workboats and Pilot Boats – A Code of Practice"](#) that was introduced in 1998. This Code applies to **workboats, pilot boats and remotely operated unmanned vessels**, the keels of which are laid, or are at a **similar stage of construction**, on or after the date the 2023 Regulations come into force, subject to the transitional arrangements contained in those Regulations., From the same date, this **Code** supersedes the original Code, Workboat Code Edition 2, as amended, and also **Marine Guidance Note [MGN 280\(M\) "Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot Boats – Alternative Construction Standards"](#)** as applicable to **small workboats** and **pilot boats**.
- 1.12 Compliance with the **Code** in no way removes the need for **vessels** and/or **Masters** to comply with relevant bylaws made by either the local/navigation authority or the port/harbour authority for the area in which the vessel operates. Local authorities may, for instance, have powers to require **vessels** to have **passenger** liability and third-party insurance cover, and to set the level of that cover. Additionally, recognising that some **vessels** operate both **at sea** and on inland waterways, attention is drawn to the common approach to **vessel** safety adopted by the major UK Inland Navigation Authorities. Owners/operators of such **vessels** shall also comply with any applicable requirements of any relevant authority for the **area category of operation**. It should also be noted that local authorities may also have powers over the use of the foreshore and landing places, and to issue licenses for their use.
- 1.13 The following organisations participated in the Industry Working Group that reviewed and contributed to the drafting of this **Code**:
- Artemis Technologies  
British Marine  
International Institute of Marine Surveying  
Lloyd's Register  
**Maritime and Coastguard Agency**  
Mecal  
Royal Yachting Association

- 1.14 This **Code** aims to provide all the information needed for the design, construction, engineering, electrical systems, hull systems, fire protection, and provision of firefighting, lifesaving, navigation and radio equipment to ensure the safety and protection of the **crew**, personnel, **passengers** and other marine users, and to maintain environmental standards. It also deals with the equally important subject of manning and of the qualifications needed for the **crew**.
- 1.15 Designers, builders, owners and repairers of vessels, should pay special attention as regards the intended **area category of operation** and the weather and working conditions which a **vessel** will be subjected to when developing the design and selecting the materials and equipment to be used in its construction and maintenance.
- 1.16 Whilst all reasonable measures have been taken to develop standards which will result in the production of safe and seaworthy **vessels**, total safety **at sea** can never be guaranteed. Owners/operators of a **vessel** are encouraged to take out a policy of insurance for all persons who are part of the **vessel's** complement. It is advised such insurance provide cover against any foreseeable claims that may arise. It is advised that, if a policy of insurance is in force, a copy of the Certificate of Insurance be either displayed or available for inspection by persons on board the **vessel**.
- 1.17 The **Workboat Certificate, Light Duty Workboat Certificate, Pilot Boat Certificate** or **Workboat Certificate** with a **Pilot Boat** Endorsement are UK issued certificates.
- 1.18 Non-UK Maritime Administrations or Port State Authorities are under no obligation to accept UK certificates for vessels in their waters, although some Maritime Administrations or Port State Authorities may accept UK certificates as an equivalent standard to their own. United Kingdom registered **vessels** to which this **Code** applies may be subject to additional requirements of the port state or overseas administration when operating outside of United Kingdom waters, over and above the requirements of this **Code**. **Vessel** owners/operators shall contact the administration controlling those waters for further information.
- 1.19 Guidance for **vessel** owners/operators wishing to operate their **vessels** outside the UK is contained in [MGN 416 \(M\)](#).
- 1.20 This **Code** may be applied voluntarily by operators of non-UK **vessels** based abroad. Such **vessels** may be issued with documents indicating compliance with the standards of the **Code** but shall not be issued UK certificates.

## How to Use This Code

- 1.21 The **Code** consolidates all applicable requirements for **workboats**, including **ROUVs, and pilot boats** into a single document. Some of these requirements are made mandatory by the 2023 Regulations. The **Code** also refers to certain requirements that are contained in other regulations.

- 1.22 This **Code** provides information on many of the requirements that are applied by those other regulations, but this information may not be definitive. Additional references and information are provided in **MIN XXX**. The **vessel** owners/operators may need to consult those regulations and the associated guidance to ensure they are compliant. This **Code** does not provide information on Statutory Instruments coming into force after the date of its publication which are required to be complied with. Statutory Instruments, **Merchant Shipping Notices**, **Marine Guidance Notes** and **Marine Information Notes** can be found on the **MCA** website.

## **Authorisation of Survey and Certification to Certifying Authorities**

- 1.23 The 2023 Regulations provide that the Secretary of State or a person authorised by the Secretary of State may be a **Certifying Authority** for the purposes of the examination (survey) and certification of vessels to which this **Code** applies. In practice, the **MCA**, as an executive agency of the Department for Transport, acts on behalf of the Secretary of State, and has responsibility and accountability for UK merchant shipping regulations and the enforcement of them. **Certifying Authorities** authorised by the **MCA** have a written agreement which defines their relationship. As well as being an active **Certifying Authority** itself, the **MCA**, retains the responsibility for enforcing the **Code** and for auditing the other **Certifying Authorities**
- 1.24 The authorisation of **Certifying Authorities** has been influenced by the requirement to have a local capability for the efficient handling of the needs of owners/operators of **vessels**. Authorised **Certifying Authorities** are permitted to charge for undertaking Code of Practice examination and certification processes in accordance with the terms of their authorisation. Arrangements for payment of any charges will be made directly between the **Certifying Authority** (or a **Certifying Authority's** authorised person) and the party requesting such services.

## **Health and Safety Regulations**

- 1.25 The **owner** or **master** of a **vessel** and in the case of **pilot boats**, a **competent harbour authority** as well, is responsible for the health and safety of workers and others on the **vessel**. [The Merchant Shipping and Fishing Vessel \(Health and Safety at Work\) Regulations \(SI 1997 No. 2962\)](#) and [the Code of Safe Working Practice for Merchant Seafarers](#) apply where persons are employed on board a **vessel**, see [section 22](#) of this **Code**.
- 1.26 Where a **Remote Operation Centre** is located on board a manned vessel the health and safety of all persons on board is the responsibility of the **vessel's Master**.
- 1.27 On-shore **Remote Operation Centres** shall follow all applicable local HSE Regulations.
- 1.28 Every employer is to be aware of any risks affecting workers and ensure that appropriate measures are taken to minimise them through improving procedures or equipment where necessary. Employers must instruct those affected about the risks and how to ensure their own health and safety and the health and safety of others.

## 2

## Definitions

In this **Code**, where a term is printed in **bold**, it shall be used as defined in this section. Where a term is not printed in bold and that term is defined within this section, it shall be used in its defined sense. The use of a term in its defined sense may also be used in other forms of the word and shall refer to the original defined term. All other terms and words are used in the sense ordinarily understood in nautical or general use in English.

References in this **Code** to provisions in the Merchant Shipping Act, the Merchant Shipping Order, the Merchant Shipping Regulations and Merchant Shipping Rules include references to those provisions as amended or replaced by subsequent provisions.

“A” class” divisions are those divisions formed by bulkheads and decks which comply with the criteria described in **SOLAS** Chapter II-2 Regulation 3;

“Accommodation space” means any space, excluding **machinery space**, which is enclosed on all sides by solid divisions, provided for the use of persons on-board;

“Administration” means the Government of the State whose flag the ship is entitled to fly;

“Annual examination” means a general or partial examination of the **vessel**, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it had been satisfactorily maintained as required by the **Code** and that the arrangements, fittings and equipment provided are as documented in the **SWB2**. The hull, shell fittings, external steering and propulsion components of the vessel should be examined out of the water at intervals not exceeding 3 years. The **Certifying Authority** may stipulate a lesser interval in consideration of hull construction material or the age or the type and service of the **vessel**;

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

“Area category of operation” means the limit of operation of a **vessel** based on its **certificate**. The categories and their limitations are as per Section 3.2 of the Code;

“As amended” refers to any other document that replaces, revokes or amends the document that the term “**as amended**” follows;

“Authorised person” means a person who by reason of relevant professional qualifications, practical experience or expertise is authorised by the **Certifying Authority** chosen by the **owner/managing agent** to carry out examinations required under [section 4](#) of the **Code**;

“B” class” divisions are those divisions formed by bulkheads, decks, ceilings or linings which comply with the criteria described in **SOLAS** Chapter II-2 Regulation 3;

“Battery box” means a dedicated box of **steel or other equivalent material**, in which a battery is located;

“Battery-electric” means a **vessel** with a propulsion motor powered exclusively by **lithium-ion batteries**.

“Battery-hybrid” means, in the context of this **Code**, a vessel with a **propulsion system** that can be powered by both **diesel** fuel and **lithium-ion batteries**.

“Battery Management System” or “BMS” means an electronic device which performs the role of maintaining the safe charging and discharging of a battery. A **Battery Management System** calculates **SOC** and **SOH** and communicates this to the **Power Management System**;

“Battery room” means a dedicated room of **steel or other equivalent material** with A0 fire integrity in which a battery is located;

“Bare-boat charter” means a **charter** for which the **charterer** provides the **Master** and the **crew**;

“Blank” means a device or means of sealing skylights, windows and portlights (collectively referred to in this **code** as windows) in the event of breakage of the glazing. **Blanks** shall be capable of being **efficiently** secured in position to prevent the ingress of water and shall be of a suitable material and equivalent in strength, with regard to design pressure, to that required for the structure to which it is attached, to the satisfaction of the **Certifying Authority**.

“Boat fitted with a buoyant collar” means a vessel of similar form to a **rigid inflatable boat**, where the inflatable tubes are replaced by solid, or hollow, buoyant sections.

“Bulk cargo” has the same meaning as it has in The Merchant Shipping (Carriage of Cargoes) Regulations 1999 (SI 1999/336), **as amended**.

“Cargo” means all items which are transported by the **vessel** except:

- fuel for the **vessel**,
- ballast (either solid or liquid),
- consumables to be used on board,
- permanent outfit and equipment of the **vessel**,
- ships stores** and spare gear for the vessel,
- crew** and their personal baggage,
- passengers** and their personal baggage,
- industrial personnel** and their equipment and personal baggage;

“Category C waters” means waters designated **category C waters** in the Merchant Shipping (Categorisation of Waters) Regulations 1992, (SI 1992 No. 2356), **as amended**, and **MSN 1837(M) Amendment 2 – Categorisation of Waters, as amended**;

“Category D waters” means waters designated **category D waters** in the Merchant Shipping (Categorisation of Waters) Regulations 1992, (SI 1992 No. 2356), **as amended**, and **MSN 1837(M) Amendment 2 – Categorisation of Waters, as amended**;

“Cell” means a single electrochemical unit in its simplest form, typically packaged in metal cylinders; or flat, rectangular metal or **plastic** cases (prismatic **cells**), or heat-sealed foil pouches;

“Charging point” means the location on a **vessel** where charging cables can be connected to charge batteries using shore-side power, a mother vessel or platform-based facility;

“Certificate” means a certificate issued in accordance with section 4.3 of the **Code**);

“Certificate of Competency” means a certificate issued and endorsed by the **Administration** for **masters**, officers and GMDSS radio operators in accordance with the provisions of Chapters II, III, IV or VII of the International Convention on Standards of Training, Certification and Watchkeeping for **Seafarers** (STCW), entitling the lawful holder thereof to serve in the capacity and perform the functions involved at the level of responsibility specified therein.

“Certifying Authority” means either the Secretary of State, including the **MCA** acting on behalf of the Secretary of State, or anyone else authorised by the Secretary of State or the **MCA** acting on behalf of the Secretary of State (see list of organisations so authorised in **MIN XXX**), for the purposes of:

1. appointing persons to carry out examinations of **vessels** and issuing and signing Declarations of Examinations; and
2. issuing **Certificates**.

“Charter” means an agreement between the **owner/managing agent** and another party which allows that other party to operate the **vessel**, and the “**Charterer**” is that other party;

“Cockpit” means a semi-enclosed, **recessed** area that is lower than the surrounding decks which may retain water, however briefly.

“Code” means this edition of the Code of Practice unless another Code is specified;

“COLREGS” means the Convention on the International Regulations for Preventing Collisions at Sea 1972, **as amended**;

“Compartment” means all living and working spaces within the **watertight** or fire-resisting boundaries on any one level which have inter-communicating access;

“Competent harbour authority” has the same meaning as it has in the Pilotage Act 1987;

“Competent Authority” in respect of manning qualifications (Appendix 5) means either the **MCA** or an organisation that issues **Certificates of Competence** which has applied for and been granted recognition by the **MCA** as having the appropriate technical and administrative expertise;

“Competent Person” means:

- .1 in respect of fire extinguisher servicing ([section 16](#)) has the same meaning as it does in BS 5306: Part 3; 2003 which is a person with the necessary training, experience, with access to the relevant tools, equipment and information, manuals and knowledge of any special procedures recommended by the manufacturer of the portable fire extinguisher, to carry out the relevant maintenance procedures;



- .2 with respect to LOLER and PUWER Regulations ([section 25](#)) is intended to mean a person possessing the knowledge or experience necessary for the performance of the duties under the LOLER and PUWER Regulations;
- .3 with respect to [section 12](#) of this **Code** means a person, appointed by the **Certifying Authority**, who by reason of relevant professional qualifications may produce stability information booklet and/or carry out assessment of the **vessel's** stability information.
- .4 with respect to all other sections of this **Code** means a person appointed by the **Certifying Authority** who has the necessary training and experience, or by reason of relevant professional qualifications, and with access to the relevant tools, equipment and information, is deemed competent to undertake the specific task.

“Compliance examination” means an examination of the **vessel**, its machinery, fittings and equipment, by an **authorised person**, to ascertain that the **vessel's** structure, construction, fire protection, stability, machinery, fittings and equipment comply with the requirements of the **Code**. Part of the examination should be conducted when the vessel is out of the water. Part of the examination should be conducted when the vessel is in the water;

“Control position” means a conning position which is manned whilst the vessel is **underway**;

“Cooker” means a galley stove designed for cooking that makes use of burners, an oven, a broiler or any combination of these items;

“Crew” means a person employed or engaged in any capacity on-board a vessel on the business of the **vessel**;

“Critical Downflooding” is deemed to occur when openings having an aggregate area, in square metres, greater than:

$$\frac{\text{vessel's displacement in tonnes}}{1500}$$

are immersed. Moreover, it is the angle at which the lower edge of the actual opening which results in critical flooding becomes immersed. All openings regularly used for **crew** access and for ventilation should be considered when determining the downflooding angle. Air pipes to tanks can, however, be disregarded. Where an appropriate ISO standard is used, the definition should be taken from those **standards** as applicable;

“Critical equipment” means any equipment or system which, if it fails, would result in the unsafe operation of the **vessel**, and compromise the safety of other water users, and the safety of the marine environment;

“Daylight” means one hour before sunrise until one hour after sunset. In tropical waters this is to be from sunrise to sunset;

“Decked vessel” means a vessel with a continuous **watertight weather deck** which extends from stem to stern and has positive **freeboard** throughout, in any condition of loading of the vessel. Where an appropriate ISO standard is used, the definition should be taken from those **standards** as applicable;

“Deckhouse means” a permanent **substantial enclosure** located on the **weather deck**;

“Dangerous goods” means **cargoes** classified in the International Maritime **Dangerous Goods** (IMDG) Code which is given force of law through [the Merchant Shipping \(Dangerous Goods and Marine Pollutants\) Regulations 1997 \(SI 1997 No. 2367\)](#), **as amended** and includes any specialist equipment which may be classified as dangerous **cargoes** when carried by **crew, passengers** or **industrial personnel**;

“Dedicated pilot boat” means a **pilot boat** of whatever size which is solely employed in pilotage services;

“Design Category” means a description of the wind and sea conditions for which a **vessel** is considered suitable under the Recreational Craft Regulations 2017 (SI 2017/737), **as amended**. See table below;

Design category	Wind force (Beaufort scale)	Significant wave height (H 1/3, metres)
A	Exceeding 8	Exceeding 4
B	Up to, and including, 8	Up to, and including 4
C	Up to, and including, 6	Up to, and including, 2
D	Up to, and including, 4	Up to, and including, 0.5

“DfT” means the UK Government’s Department for Transport;

“Diesel” means Marine Gas Oil and refers to gas oil, **diesel** fuel and heating oil, light which are categorised under UN1202;

“Efficient” in relation to a fitting, piece of equipment or material means that all reasonable and practicable measures have been taken to ensure that it is suitable for the purpose for which it is intended;

“Emergency examination” means a similar examination to the **Compliance examination** to be undertaken after the **vessel** has been involved in an incident. The **Certifying Authority** may exercise discretion in conducting the **emergency examinations** while the **vessel** is out of the water depending on the nature of the incident;

“Engine space” and “engine box” means any space which contains internal combustion engine(s) or propulsion motor(s);

“Energy Management System” (EMS) means an electronic system which coordinates battery systems and communicates **SOC, SOH** and power capability to the **PMS**. The EMS may exist either as a separate control system or be synonymous with the **PMS**;

“EPIRB” means an Emergency Position Indicating Radio Beacon

“Existing vessel” means a **vessel** which is not a **new vessel**;

“Favourable weather” with respect to a **small vessel** means conditions existing throughout a voyage or excursion in which the effects either individually or in

combination of swell, height of waves, strength of wind and visibility cause no hazard to the safety of the **vessel**, including handling ability.

In making a judgement on **favourable weather**, the **Master** should have due regard to official weather forecasts for the **area category of operation** of the **vessel** or to weather information for the area which may be available from the Coastguard or similar coastal safety organisation;

“Float-free” launching is that method of launching a liferaft or **EPIRB** whereby the raft or **EPIRB** is automatically released from a sinking ship and is ready for use.

- .1 for the purpose of this definition, “automatically released” means release from the liferaft / **EPIRB** stowage location and release of the painter line through use of a weak link or similar.
- .2 for the purpose of this definition, “ready for use” means: in the case of a liferaft, the raft is inflated and ready for embarkation.

“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;

“FTP Code” means the International Code for Application of Fire Test Procedures (Resolution MSC.307(88))<sup>1</sup> including fire test procedures referred to in and relevant to the **FTP Code**, published by the International Maritime Organization;

“GNSS” means global navigation satellite systems, including GLONAS, GPS and Galileo systems;

“Grab Bag” means an easily accessible, transportable and watertight bag or other portable container containing emergency supplies and equipment to aid survival in the event of an emergency evacuation of the **vessel**.

“Hazardous space” means a space or **compartment** where combustible or explosive gases or vapours are liable to accumulate in dangerous concentrations, and are divided into three zones (refer to IEC 60079-10-1:2020 for details):

- .1 Zone 0 – a space where an explosive atmosphere is present frequently or for long continuous periods;
- .2 Zone 1 – a space where an explosive atmosphere is present occasionally during normal operation; or
- .3 Zone 2 – a space where an explosive atmosphere is present rarely, and only occurs for short periods, during normal operations;

“Heater” and “Heating appliance” means an appliance designed to heat air or water or a solid medium by means of combusting **liquid fuel**;

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<sup>1</sup> The International Code for Application of Fire Test Procedures:

[https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MSCResolutions/MSC.307\(88\).pdf](https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MSCResolutions/MSC.307(88).pdf)

“Height of Side” with respect to an **open boat** means the distance between the waterline and the lowest point of the gunwale. The clear height should be measured to the top of the gunwale or capping or to the top of the wash strake if one is fitted above the capping;

“High Holding Power (HHP) Anchor” means an anchor that can be shown to have holding powers of at least twice those of a standard stockless anchor of the same mass;

“High Speed” means an operating speed of 20 knots or more;

“High voltage” means an electrical system with an output of 60V or more;

“**High voltage** interlock loop” (HVIL) means a system which performs the role of checking all **high-voltage** connections are safely in place before allowing the contactors, or other key parts of a high-voltage system, to be engaged. A HVIL also checks that the battery is disconnected from the main electrical system before charging is initiated;

“IMDG Code” means the International Maritime **Dangerous Goods** Code, **as amended**, published by the International Maritime Organization;

“Immersion Suit” means a protective suit which reduces the body heat-loss of a person wearing it in cold water and complies with the requirements of the Merchant Shipping (Marine Equipment) Regulations 2016 (as amended);

“IMO” means the International Maritime Organization;.

“Industrial Personnel” means all persons other than the **crew** or **passengers** or children of under one year of age which are transported or accommodated on board for the purpose of **offshore industrial activities**;

“Inflatable Boat” means a **vessel** which attains its form through inflatable tubes only, which are not attached to a solid hull;

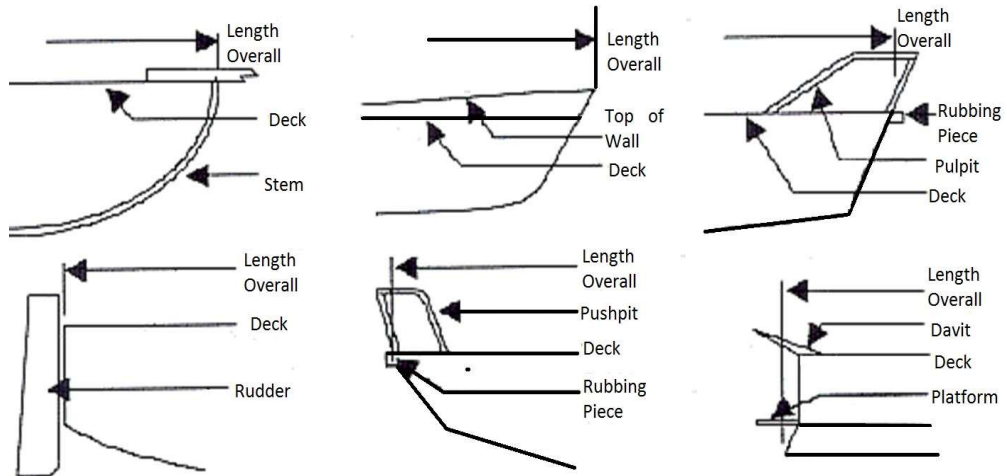
“Intermediate Examination” means the same as an **Annual Examination**

“Land” means the seashore above the line of mean high water mark;

“Latency” means the time interval between a signal being sent from the **ROUV** and being displayed to the **remote operator** at the **ROC**, and comprises the time taken to process the data and transmit a signal, and for the signal to be received and processed;

“LEL” means lower explosive limit, which is the lowest concentration required of a gas or vapour from which ignition or an explosion can occur;

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



“Lifting device” means a device used for lifting or lowering loads, and includes its attachments used for anchoring, fixing, supporting the device and connections between device and load;

“Light Duty **Workboat**” - means a **vessel** that is certificated under the Small Commercial Vessel codes or complying with another acceptable standard described in section [3.9](#), which may also be issued with a “**Light Duty Workboat**” certificate under the conditions stated in section [3.9](#);

“Liquid fuel” means fuel that is liquid at atmospheric pressure and used for heating or for a **cooker**;

“Lithium-ion battery” means a rechargeable battery containing lithium in any chemical form;

“Load Line Assigning Authority” means an Authorised Organisation listed in [MSN 1672 \(M+F\) Amendment 4 Ship Inspection and Survey Organisations](#), as amended.

“Load line length” in relation to a ship means the greater of the following distances:

- (a) 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or
- (b) the length from the fore-side of the stem to the axis of the rudder stock on that waterline.

Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively shall be taken at the vertical projection to that waterline of the aftermost point of the stem contour (above that waterline). In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline;

“Load-bearing division” is a deck or bulkhead including stiffeners, pillars, stanchions and other structural members which, if eliminated, would adversely affect the designated structural strength of the ship;

“Long international voyage” means any voyage where a **vessel** is more than 200 **miles** from a **safe haven**, or the length of the voyage from departure to arrival more than 600 **miles**;

“Low flash point fuel” means gaseous or **liquid fuel** having a flashpoint lower than 60°C;

“Machinery space” means any space which contains propelling machinery, propulsion motors, boilers, oil fuel units, steam, internal combustion engines, generators and **liquid fuelled heating appliances**. Spaces containing machinery of a unique or novel design may be subject to special consideration by the **Administration**;

“Making way” means a **vessel** which is moving through the water;

“Managing agent” means a person appointed to act on behalf of the **vessel owner/operator**;

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

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

“Maritime and Coastguard Agency” or “MCA” means the **Maritime and Coastguard Agency**, an executive agency of the Department for Transport, and any superseding and preceding organisation;

“Maritime Labour Convention” or “MLC” means the **Maritime Labour Convention** 2006 which came into force for the United Kingdom on 7 August 2014, setting out the minimum working and living rights for **seafarers**;

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

“MASS” means Maritime Autonomous Surface Ship and includes every description of **vessel** or craft used in navigation that can for any part of its voyage, fully or in part navigate or operate autonomously or through remote operations;

“Master” has the same meaning as “master” provided by section 313 of the **Merchant Shipping Act** 1995 (Ch. 21)<sup>2</sup>;

“Maximum permissible weight” means the maximum total permissible weight of persons and their effects, **cargo**, and activity related equipment, i.e. diving equipment;

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<sup>2</sup> Section 313 of the **Merchant Shipping Act** 1995 provides that “master” includes every person (except a pilot) having command or charge of a ship and, in relation to a fishing vessel, means the skipper.

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

“Mile” means a nautical mile of 1852 metres;

“Modification” means any change to the **vessel** or its equipment that would affect the **vessel**’s compliance with statutory requirements, or that would require an amendment to its statutory certification, including the **SWB2**;

“Motor vessel” means a power-driven **vessel** which is not a sailing vessel;

“Multihull vessel” means any **vessel** which in any normally achievable operating angle of trim or heel, has a rigid hull structure which penetrates the surface of the sea over more than one separate or discrete area;

“New vessel” means a **vessel**, the keel of which was laid, or the construction or lay-up was started, on or after the first day on which this **Code** came into force, or any **vessel** where there has not been a valid **certificate** for the previous five years;

“Officer”, in relation to a body corporate, means:

- (a) a director, manager, secretary or other similar officer of the body corporate, or a person purporting to act in any such capacity; or
- (b) an individual in accordance with whose directions or instructions the directors of that body corporate, or of any other body corporate which is its controller, are accustomed to act;

“Offshore industrial activities” means the construction, maintenance, decommissioning, operation or servicing of offshore facilities related to the exploration and exploitation of resources by the renewable or hydrocarbon energy sectors, aquaculture, ocean mining or similar activities;

“Open boat” means a **vessel** which within its **length** is:

- .1 not fitted with a **watertight weather deck**; or
- .2 is fitted with a **watertight weather deck** over part of its **length**; or
- .3 is fitted with a **watertight weather deck** over the whole of its **length** but the **freeboard** does not meet the minimum requirement ([section 12](#)).

“Owner/operator” means the **vessel** owner, **managing agent** or person who operates the **vessel**;

“Passenger” means any person carried on a ship except:

- (a) a person employed or engaged in any capacity on the business of the **vessel**,
- (b) a person on board the **vessel** 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

“Pilot boat” means a **vessel** employed or intended to be employed in pilotage services which may also undertake other occasional services, such as the carriage of personnel, mail, and/or small quantities of stores to or from **vessels** in the pilotage district; (see also **Dedicated pilot boat**);

“Plastic(s)” means both thermoplastic and thermosetting plastic materials, with or without reinforcement, such as uPVC and fibre reinforced plastics (FRP). The definition includes synthetic rubber and materials of similar thermo/mechanical properties;

“Pleasure vessel” has the same meaning as it has in the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 20xx (SI 20xx No. XXXX), **as amended**;

“Power Management System” (PMS) means an electronic device which performs the role of converting information on power availability into human-readable formats;

“Propulsion system” means all components that convert power into movement:

- .1 for **diesel** or petrol fuel powered vessels the **propulsion system** is the internal combustion engine including the fuel tank, fuel, motor, driveshaft and propeller,
- .2 for **battery-electric** powered vessels the **propulsion system** comprises the charger, battery, electric circuit, protection device(s), controller motor, driveshaft and propeller; and
- .3 for a **battery-hybrid** powered vessels the **propulsion system** includes both .1 and .2;

“Protected Waters” means waters not categorised in [Merchant Shipping \(Categorisation of Waters\) Regulations 1992 \(SI 1992/2356\)](#), **as amended**, and **MSN 1837(M)**, **as amended**, but the location of which are explicitly defined and accepted as protected by the **Administration**, having regard for the safety of the **small vessels** which operate in those waters;

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

“Remote Operation Centre (ROC)” means either a shore-based location which is permanent or mobile or a manned vessel from which a **ROUV** is operated;

“Remote Operator” means any person, including the **Master**, with recognised or certifiable experience who is engaged in the remote operation of a **ROUV**;

“Remotely Operated Unmanned Vessel (ROUV)” means a **vessel** with no persons on board, that is operated from a location remote to the **vessel**;



“Renewal examination” means a similar examination to the **Compliance examination**. For **vessels** of a design with no through hull fittings below the water line, the **Certifying Authority** may exercise discretion by conducting the compliance and **renewal examinations** while the **vessel** is out of the water;

“Rigid inflatable boat” means a **vessel** with inflatable tubes, attached to a solid hull. The tubes are inflated during normal craft operation;

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

“Safe state” means the set minimum risk condition(s) defined by the **vessel owner/operator** to minimise risks to people, environment(s) and asset(s);

“Seafarer” means any person, including the **Master**, who is employed or engaged or works in any capacity on board a ship on the business of the ship and whose normal place of work is on a ship;

“Ships stores” means materials which are on board a ship for the upkeep, maintenance, safety, operation or navigation of the ship (except for fuel and compressed air used for the ship’s primary propulsion machinery or fixed auxiliary equipment) or for the safety or comfort of the ship’s **passengers** or **crew**. Materials intended for use in commercial operations by a ship are not considered as ships’ stores<sup>3</sup>;

“Shore charging” means where charging cables are connected to a **vessel’s charging point** to charge batteries using shore-side power;

“Similar stage of construction” means a stage at which:

- (a) construction identifiable with a specific vessel begins; and
- (b) assembly of that vessel, comprising at least 1% of the estimated mass of all structural material, has commenced;

“Single handed operation” is considered to be taking place when either:

- .1 there is only one person on board the **vessel**; or
- .2 there is a **Master** on board with **passengers** or **industrial personnel**, and there is no one else on board capable of assisting the **Master** in an emergency;

“Small vessel” means a **vessel** of less than 24 metres in **load line length**, or in the case of a **vessel** the keel of which was laid or which was at a **similar stage of construction** before 21<sup>st</sup> July 1968, less than 150 tons and in this definition – “tons” means gross tons, measured in accordance with the regulations for measuring tonnage in force on 20<sup>th</sup> July 1968;

“SOC” means battery state of charge which refers to the percentage of overall battery capacity remaining before the battery is exhausted;

“SOH” means battery state of health which refers to the percentage of original battery capacity stored when an aged battery is fully charged;

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<sup>3</sup> E.g. materials used for diving, surveying and salvage operations such as **IMDG Code** classified dangerous goods - for example Class 1 – Explosives and the other eight classes of dangerous good.

“SOLAS” means the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988, **as amended**,

“Special area” means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required, as defined in **MARPOL** Annex I;

“Standards” means those recognised standards such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardization, CEN), IEC (International Electrotechnical Commission) and ISO (International Organization for Standardization) and includes any standards which amend or replace them;

“Steel or other equivalent material” means any non-combustible material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable exposure to the standard fire test<sup>4</sup>;

“Substantial enclosure” means an area of the **vessel** which is enclosed on all sides by solid divisions in line with a definition of an **accommodation space** and provides protection of persons on board;

“To sea” and “at sea” means beyond the extent of **Category D waters**, or **Category C waters** if there are no **Category D waters**, as defined in [MSN 1837 \(M\) Amendment 2 – “Categorisation of Waters”](#), **as amended**;

“Towing” means the act of towage of one vessel or floating object by another vessel where the two are connected:

- .1 by a towline about which the **towing** vessel is free to manoeuvre such that there is a risk of girting, where if the towline is attached towards amidships, it could adopt an angle to the **towing** vessel and provide a capsizing moment.
- .2 side by side with the **towing** vessel firmly attached alongside the towed vessel or floating object, so as to be able to manoeuvre as if one vessel,
- .3 fore and aft with the bow of the **towing** vessel firmly attached to the stern of the towed vessel or floating object, so as to be able to push, pull or manoeuvre as if one vessel,

“SWB1” means the Small Workboat 1 form for an Application for Examination of a **vessel**;

“SWB2” means the Small Workboat 2 report form for a **Compliance Examination** and Declaration;

“Thermal runaway” means where a battery **cell** undergoes an exothermic reaction, where the heat generated is greater than the heat dissipated;

“Totally independent system” means a system which has 100% redundancy, and of which any part does not rely on another system;

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<sup>4</sup> E.g, aluminium alloy with appropriate insulation being such that the temperature of the core does not rise more than 200°C above the ambient temperature in 30 minutes or 60 minutes as determined by the fire endurance.

“UKCA” means UK Conformity Assessed. **UKCA** marking is a certification mark that indicates conformity with the applicable requirements for products sold within Great Britain;

“Underway” has the same meaning as in Rule 3(i) of **COLREGS**;

“United Kingdom ship” has the same meaning as in section 85(2)<sup>5</sup> of the **Merchant Shipping Act** 1995 (Ch.21). “United Kingdom vessel” has the same meaning;

“up to” means up to but not including the maximum value, e.g. up to 20 **miles** means to just less than 20 **miles**;

“vessel” means any ship<sup>6</sup> to which this **Code** and the Merchant Shipping (Small Workboats and Pilot Boats) Regulations 2022 (SI 2023 No.XXXX) applies;

“vessel in commercial use” means any **vessel**, but also includes any **pleasure vessel** while it is in possession of a broker, ship repairer or other such person for the purposes of their business;

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

“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 **vessel** when subjected to a hose test;

“Wheelhouse” means a **substantial enclosure** incorporating the **control position**;

“Workboat” means a **small vessel in commercial use** for purposes other than sport or pleasure, including a **dedicated pilot boat**.

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<sup>5</sup> Section 85(2) of the **Merchant Shipping Act** 1995 provides that in section 85(1) of the **Merchant Shipping Act** 1995 “**United Kingdom ship**” means a ship which—

- (a) is registered in the United Kingdom; or
- (b) is not registered under the law of any country but is wholly owned by persons each of whom is—

- (i) a British citizen, a British Dependent Territories citizen or a British Overseas citizen, or

- (ii) a body corporate which is established under the law of a part of the United Kingdom and has its principal place of business in the United Kingdom.

<sup>6</sup> “The definition of “ship” provided in section 313 of the **Merchant Shipping Act** 1995 is – “Ship” includes every description of vessel used in navigation.

### 3 Application, Interpretation and Certification

This section sets out the application of this **Code** to **workboats** and **dedicated pilot boats**, and provides further details of the process for certification of these **vessels**, set out in regulations [3 to 7 of the 2023 Regulations].

#### 3.1 Application

3.1.1 This Code applies to **workboats** that operate **to sea**, and to all **dedicated pilot boats**, carrying **cargo** and/or not more than an aggregate 12 **passengers** and **industrial personnel**. It applies to **United Kingdom (UK) vessels** wherever they may be, and to non-United Kingdom vessels in UK waters or operating from UK ports.

3.1.2 The **Code** does not apply to any vessels that operate underwater, hovercraft or those in use for sport or pleasure.

3.1.3 **New vessels** shall comply with the applicable requirements set out in this **Code**. **Existing vessels** with a valid **Workboat Certificate**, issued under the previous versions of the Code named in section 1.11, may be treated as if they were compliant with this **Code** until the date or examination shown in [Appendix 9 Saving and Transitional Arrangements for Existing Vessels](#), after which they shall comply with the requirements set out in this **Code**.

3.1.4 For a **vessel** that has been previously certificated in accordance with the Codes of Practice (see section 1.4), but where valid certification has not been in place for not more than 5 years, certification may be re-issued provided it complies with the standards under which it was originally examined. Documentary evidence of the previous certification shall be presented and any **modifications** during the uncertified period shall be declared. An examination will be required, the level of which will be determined by the **Certifying Authority**, taking into account the condition of the **vessel**, and the period for which the **vessel** has not had valid certification.

3.1.5 A vessel to which this **Code** applies, but which exceeds the speed/displacement ratio as defined within [the Merchant Shipping \(High Speed Craft\) Regulations 2004, \(SI 2004 No. 302\)](#), need not be considered under those **High Speed** Craft Regulations, if certificated to the requirements of this **Code**, provided that it carries not more than 12 **passengers** or **industrial personnel**.

#### 3.2 Limitations

3.2.1 The **Code** sets out the requirements for safety of a **vessel** and any persons on board. Operational activities (e.g. commercial diving) are not considered under the **Code**.

#### 3.3 Interpretations of the Code

3.3.1 Where a question of application of the **Code** arises, the **vessel owner/operator** shall in the first instance seek clarification from the **Certifying Authority**.

3.3.2 In situations where clarification is not possible, the **Certifying Authority** shall request in writing an interpretation from the **Administration** who may consult with others as deemed appropriate.

### 3.4 **Equivalent Standards**

3.4.1 Where the **Code** requires that a particular fitting, material, appliance or apparatus must be provided or carried on a **vessel**, or that any particular provision shall be made, to a specified **standard**, the **Administration** may permit any other fitting, material, appliance or apparatus to be provided or carried, or any other provision to be made, provided the **Administration** is satisfied by trials or otherwise that the alternative is at least as effective as that required by the **Code**.

3.4.2 Where the **vessel owner/operator** wishes to use an equivalent means of compliance to the **Code**, the **Certifying Authority** shall, on behalf of the **vessel owner/operator**, submit a request for equivalence to the **Administration** who may consult with others as deemed appropriate.

3.4.3 Any equivalences agreed for the **vessel** by the **Administration** shall be recorded on the **SWB2** and a copy of the equivalence shall be kept by the **Certifying Authority** on the **vessel's** file.

### 3.5 **Maintaining and Operating the Vessel**

3.5.1 It is a requirement of the **vessel owner/operator** to ensure that a **vessel** is properly maintained, examined, certified and manned in accordance with the Code, the arrangements as documented in the **SWB2** and any conditions stated on the **vessel's Certificate**.

3.5.2 It is the responsibility of the **vessel owner/operator** to ensure that the **vessel** is maintained in accordance with manufacturer's recommendations or best engineering practice.

3.5.3 A **vessel**, its machinery, equipment and fittings shall be designed to be **efficient** for its intended purpose, use and be suitable for the intended **area category of operation** of the **vessel**. This shall include an ongoing maintenance and inspection regime that ensures the continued effective operation. See also [section 31](#).

3.5.4 In determining whether an item is **efficient**, the **Certifying Authority** may rely on compliance with International **Standards** or equivalent as recognized by the **Administration**. Where a **Certifying Authority** does not rely on an International **Standard**, it shall clearly document the approval process used and the rationale and justification for not using the International **Standard**.

3.5.5 Where an **existing vessel** has new equipment installed, or undergoes **modification**, the requirements of this **Code** relevant to the change, shall be applied as far as is practicable.

3.5.6 A **vessel** certificated under sections [3.1.3](#) or [3.1.4](#) above, that changes to a more onerous operational type or **area category of operation**, must comply with the section(s) of this **Code** applicable to that change of operation or **area category of operation**.

3.5.7 The **vessel's Certifying Authority** may examine, and the **Administration**<sup>7</sup> may inspect<sup>8</sup>, a certificated **vessel** at any time.

3.5.8 If for any reason the **vessel** does not continue to comply with any of these requirements, the **vessel owner/operator** shall notify the **Certifying Authority** immediately. See section [4.10](#).

3.5.9 The **vessel owner/operator** shall notify and seek approval from the **Certifying Authority** prior to implementing any change or **modification** to the **vessel** or its equipment which is covered by the requirements of the **Code**.

### 3.6 Accident Reporting

3.6.1 The **vessel owner/operator** has a statutory requirement to report accidents. The statutory requirements are given in [the Merchant Shipping \(Accident Reporting and Investigation\) Regulations 2012 \(SI 2012 No.1743\), as amended](#). See **MIN XXX**.

3.6.2 Where a **vessel** experiences an incident resulting in damage affecting the safety of that **vessel**, the **vessel owner/operator** shall notify the **Certifying Authority** immediately, explaining the circumstances by which the **vessel** became damaged. The **Certifying Authority** may take action as deemed appropriate, which may include a full or partial examination of the **vessel**. See [section 4.7](#).

### 3.7 Unique Identification Number

3.7.1 When a **vessel** is certificated under this **Code** for the first time, it shall be assigned a Unique Identification Number by the **Certifying Authority**, in accordance with the standard format set out below.

3.7.2 The Unique Identification Number is formed of 12 digits, with each digit given a specific role:

The first (alpha) digit relates to the identity of the initial **Certifying Authority**.

Digit	Identity	Digit	Identity
B	Bureau Veritas	N	DNV - Maritime
C	International Institute of Marine Surveying	P	Burness Corlett Three Quays (Southampton) Ltd.
D	Maritime & Coastguard Agency	R	Royal Yachting Association
I	RINA Services S.p.A.	S	Society of Consulting Marine Engineers and Ship Surveyors
L	Lloyd's Register EMEA	Y	Yacht Designers and Surveyors Association
M	MECAL Ltd		

The second and third (numeric) digits give the last two digits of the year of **Certifying Authority** receipt of the completed **SWB1**.

<sup>7</sup>Merchant Shipping Act 1995 (Ch. 21), section 258.

<sup>8</sup>Merchant Shipping Act 1995 (Ch. 21), section 258.

The fourth and fifth (alpha) digits denote the **vessel** type.

Digits	Vessel Type	Digits	Vessel Type
WB	Workboat	PO	Police Boat
PB	Pilot Boat		

The sixth, seventh and eighth (numeric) digits relate to the **length** of the **vessel** rounded down to the nearest metre, i.e. 7.95 metres would be '007'.

The ninth to twelfth (numeric) digits are a unique sequential identifier, applicable within the year of initial certification denoted by the second and third digits. The sequential number should lie within a band of 0001-9999.

3.7.3 An example Unique Identification Number is:

D22WB0090001

which denotes that this is the first **vessel** surveyed and certificated by the **Maritime and Coastguard Agency** in the year 2022, that it is a **workboat**, and it is between 9 and 10 metres in **length**.

3.7.4 A **vessel** shall continue with the Unique Identification Number assigned to it at initial certification for the lifetime of the **vessel**, regardless of any subsequent transfer of **Certifying Authority**, unless it has:

- .1 been modified so that its **length** has changed;
- .2 changes use, i.e. from MV to WB.

In such cases only the relevant part of the Unique Identification Number shall change.

### 3.8 Certification

3.8.1 To be issued with a **Certificate** for a particular **Area Category of Operation**, a **vessel** shall comply with all of the requirements of the **Code** for that **Area Category of Operation** to the satisfaction of the **Certifying Authority**.

3.8.2 The validity of a **Certificate** is dependent upon the **vessel** being maintained, equipped and operated in accordance with the documented arrangements contained in the **SWB2**. Proposals to change any of the arrangements shall therefore be agreed in writing with the **Certifying Authority** before a change is implemented. A copy of the written agreement detailing changes(s) shall be appended to the **SWB2**.

3.8.3 The **Certificate** will cease to be valid if the **intermediate** or **annual examination** as appropriate, including examination of the **vessel** out of the water, are not completed within the periods specified in the **Code**. Where an examination has been requested more than one month after the required specified period, the **vessel owner/operator** shall refer to the **Certifying Authority** to arrange an appropriate examination type.

- 3.8.4 Where a **vessel** is sold, the **Certificate** issued by the **Certifying Authority** on the basis of the **compliance examination**, any **annual examination** reports and owner's declarations documented in the **SWB2** is cancelled automatically.
- 3.8.5 A new **Certificate** shall be issued to the **new vessel owner/operator** on receipt of an appropriate application form. The **Certifying Authority** shall decide the extent of any examination of the **vessel** required before a new **Certificate** is issued.
- 3.8.6 The **Administration** shall be informed by the **Certifying Authority** when a **Certificate** is issued, renewed, cancelled or modified. When a **Certificate** is cancelled the circumstances shall be reported for action to be taken as deemed necessary.
- 3.8.7 The **vessel owner/operator** may transfer to another **Certifying Authority** at any time. The Unique Identification Number allocated by the first **Certifying Authority** is not to be changed.
- 3.8.8 On transfer of a **vessel**, the present **Certifying Authority** shall provide information to the new **Certifying Authority** of the status of declarations, examinations and inspections; particularly with regard to any areas where the **vessel** may be deficient or a dispute exists. The extent of any examination required upon transfer, when the **vessel** is between examinations, in the examination regime in [section 4.8](#). is to be decided by the new **Certifying Authority**.
- 3.8.9 It is for the present **Certifying Authority** to decide if it should refund any portion of the fees already paid.
- 3.8.10 For **vessels** of non-conventional ship form (including pontoon barges) or working under specified restricted **area categories of operation**, any service restriction placed by the certification standard's reduction shall be noted on the **Workboat Certificate**.

### 3.9 Light Duty Workboat Certificates

Section 3.9 may apply to vessels certificated under the Small Commercial Vessel Codes of Practice other than the **Workboat** Code which intend to carry out occasional **workboat** duties, subject to approval by the **Certifying Authority**.

- 3.9.1 A vessel certified under a Small Commercial Vessel Code other than the **Workboat** Code may be issued with a **Light Duty Workboat Certificate** (see [Appendix 10](#)), for the **Area Category of Operation** for which the vessel is certified under that Code. This is subject to approval by the Certifying Authority and the continued validity of the vessel's existing certification.
- 3.9.2 A vessel shall not be issued with a **Light Duty Workboat Certificate** if it undertakes **workboat** duties as its primary operation or falls outside of the limitations set out in [3.9.4](#). In such cases a vessel is required to obtain a **Workboat Certificate**.
- 3.9.3 A **vessel** issued with a **Light Duty Workboat Certificate** shall meet the requirements of the **Workboat** Code.
- 3.9.4 A vessel issued with a **Light Duty Workboat Certificate** shall not:



- .1 carry **cargo** greater than 1,000 kg;
- .2 be fitted with a **lifting device**;
- .3 carry out **towing** duties other than as detailed in sections [26.1.1.2](#);
- .4 carry out duties that impose severe local structural loadings e.g., static pushing operations;
- .5 carry **dangerous goods**.

These limitations apply to **vessels** certified under a Small Commercial Vessel Code other than the Workboat **Code** regardless of whether or not they hold a Stability Information Booklet.

3.9.5 Vessels issued with a **Light Duty Workboat Certificate** that intend to engage in **towing** as permitted by [3.9.4.3](#) shall demonstrate to the satisfaction of the **Certifying Authority** they:

- .1 comply with the requirements of sections [26.1](#) – [26.4](#) and
- .2 meet the stability requirements of section [12A.4](#); and
- .3 are restricted to **towing** in harbour or inshore areas only.

### 3.10 **Area Categories of Operation**

3.10.1 The **Certifying Authority** may issue a **Certificate** which permits a **vessel** to operate in one of the following areas:

Area Category 6 - within 3 **miles** of land and not more than 3 **miles** radius from either the point of departure **to sea** or the seaward boundary of **protected waters**, in **favourable weather** and **daylight**;

Area Category 5 - within 3 **miles** of land and not more than 3 **miles** radius from either the point of departure **to sea** or the seaward boundary of **protected waters** in **favourable weather**;

Area Category 4 - **Up to 20 miles** from a **safe haven**, in **favourable weather** and in **daylight**;

Area Category 3 - **Up to 20 miles** from a **safe haven**;

Area Category 2 - **Up to 60 miles** from a **safe haven**;

Area Category 1 - **Up to 150 miles** from a **safe haven**;

Area Category 0 – Unrestricted service.

3.10.2 **The Area Categories of Operation** may be aligned with the Recreational Craft Regulations (RCR) **Design Categories**, and wind force and significant wave height operating limitations, as outlined in [table 3.10.2](#).

Table 3.10.2 – Area Categories of Operation, RCR categories and operating conditions

Area Category of Operation	RCR Design Cat (minimum)	Wind force (Beaufort scale)	Significant wave height ( $H_{1/3}$ metres)
0	A	Exceeding 8	Exceeding 4
1	A	Exceeding 8	Exceeding 4
2	B	Up to, and including, 8	Up to, and including 4
3	B	Up to, and including, 8	Up to, and including 4
4	C	Up to, and including, 6	Up to, and including, 2
5	C	Up to, and including, 6	Up to, and including, 2
6	C	Up to, and including, 6	Up to, and including, 2

3.10.3 **Vessels** operating in **Area Category of Operation** 3, 4, 5 or 6 may, depending on the nature of the **vessel** and its use, be restricted to less than the above specified limits. Such a restriction shall be recorded on the **vessel's Certificate**. See also [3.8.10](#).

3.10.4 A **vessel** engaged in pilotage services shall have either a valid **Pilot Boat Certificate** or a valid **Workboat Certificate** with **Pilot Boat** Endorsement allowing it to operate in the area(s) in which it provides a pilotage service, including areas which are not **to sea**.

### 3.11 **Vessels Operating in Protected Waters and/or a Restricted Service - Alternative Safety Standards**

3.11.1 Where the **owner/operator** of a **vessel** which operates in **protected waters** and/or a restricted service (according to [3.10.3](#)) considers that full application of the **Code** would be inappropriate because other safety provisions have been made, they may request the **Certifying Authority** submit an application to the **Administration** to consider certification of the **vessel** in compliance with alternative safety standards. See [Appendix 1](#).

### 3.12 **Official Log Book**

3.12.1 All **vessels** of 25 GT and greater shall carry and complete an Official Log Book<sup>9</sup>. See **MIN XXX**.

### 3.13 **Carriage of Equipment**

3.13.1 Equipment placed on board a UK **vessel** that is approved under the terms of the Marine Equipment Directive (MED) may remain on board for the duration of its operational life. Equipment replaced after 1st January 2023 must be

<sup>9</sup> Official Log Book may be obtained free from charge from the **Administration**

replaced with UK approved marine equipment in accordance with [MSN 1874](#), as amended.

- 3.13.2 Equipment on board which is additional to the minimum requirements of the **Code** and which is expected to be relied on in situations affecting safety or pollution prevention must be in an operational condition. If such equipment is inoperative, it shall either be repaired, removed or if removal is not practicable, clearly marked as inoperative and secured<sup>10</sup>.

### 3.14 Risk Assessment of Operations

- 3.14.1 A risk assessment appropriate to the intended operation shall be carried out by the **vessel owner/operator** to ensure that any circumstances, local conditions or equipment not covered by the provisions of the **Code** are adequately considered and that all known risks are mitigated. This shall be presented to the **Certifying Authority** as part of the examinations prior to issuing or renewing of the **Certificate**. See also [section 31](#).

- 3.14.2 A new risk assessment required by [3.14.1](#) shall be conducted if a **vessel's** certificated **area category of operation** changes, the **vessel** is converted for a change in operational use or has an additional piece of equipment fitted. The risk assessment shall include the assessment of any previously accepted equivalent arrangements to ensure that they will continue to provide an equivalent level of safety in the new circumstance.

- 3.14.3 A risk assessment of all persons on board shall be carried out by the **vessel owner/operator** considering the intended operation of the **vessel** and whether or not there may be persons on board which may be more susceptible to injury as a result of that intended operation.

- 3.14.4 A risk assessment shall be conducted for a **Remotely Operated Unmanned Vessel** in their intended **Area Category of Operation**, particularly where operating within congested areas.

### 3.15 Updating of the Code

- 3.15.1 A formal review of the **Code** shall be conducted in line with Regulation 26 of the 2023 Regulations. The **Code** requirements will be reviewed by an Industry Working Group, comprising representatives from the organisations listed in section 1 and any other members as deemed appropriate.

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

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<sup>10</sup> Further guidance can be found in [MGN 79 \(M+F\) "Safety Equipment and Pollution Prevention Equipment Carried in Excess of Statutory Requirements"](#).

3.15.3

The enabling regulations provide for, from time to time, any document amending the **Code** which is considered relevant to be specified by the Secretary of State in a **Merchant Shipping Notice**.

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## 4 Certification and Examinations

This section provides details of the application and effect of the requirements for certification of a **vessel** and the related examination regime set out in regulations [6 to 14 of the 2023 Regulations].

### 4.1 General

4.1.1 The **vessel owner/operator** shall:

- .1 choose a **Certifying Authority**; and
- .2 obtain a copy of a **SWB1**, complete the **SWB1** and return it to the **Certifying Authority**; and
- .3 arrange with the **Certifying Authority** for the **vessel** to be examined by an **authorised person**; and
- .4 be in receipt of a **Certificate** for the **vessel** prior to entering into service.

4.1.2 The **Certifying Authority**:

- .1 shall appoint an **authorised person** to examine the vessel; and
- .2 shall be satisfied that the **vessel** has been designed and built to the appropriate standard as detailed in [section 5](#); and
- .3 shall accurately document the age, type and history of the **vessel**; and
- .4 shall be satisfied that the **vessel** meets all the applicable requirements of the **code**; and
- .5 shall retain a copy of the **SWB2** and issue the **vessel owner/operator** of a compliant **vessel** with the **SWB2** and **Certificate**; or
- .6 may decline the application.

4.1.3 The following certification documents shall be retained on board the **vessel**, or where this is not practicable, retained ashore, and shall be made available upon request:

- .1 the valid **Certificate**; and
- .2 An up-to-date copy of the completed **SWB2**, signed by the **Certifying Authority**.

4.1.4 Where survey, examination of repairs, replacements or **modifications** are undertaken, the **authorised person** shall record this on the **SWB2**.

4.1.5 The **Certifying Authority** may decide the extent of the examination based on the type, age and history of the **vessel** and shall consider any recent examination of the **vessel** by a **competent person**, for which a report is available.

## 4.2 Compliance Examinations

4.2.1 A **compliance examination** of the **vessel** is conducted in two parts, in and out of the water, and shall be undertaken by an **authorised person** as directed by the **Certifying Authority**.

4.2.2 The arrangements, fittings and equipment provided on board the **vessel** and any equivalent provisions **approved** by the **Administration** shall be documented on the **SWB2**.

4.2.3 Upon satisfactory completion and documentation of the **compliance examination**, and the required declarations, a copy of the report form **SWB2**, signed by the **authorised person** and **vessel owner/operator**, shall be forwarded to the **Certifying Authority**.

## 4.3 Issue of a Certificate under the Code

4.3.1 The **Certifying Authority** may issue the **Certificate**<sup>11</sup> if the following information and requirements are met:

- .1 the **Certifying Authority** is provided with a copy of the signed **SWB2** as per 4.2.3; and
- .2 the **Certifying Authority** is provided with a copy of either the Stability Information Booklet or the required stability information; and
- .3 the **Certifying Authority** has received the required fee payments as appropriate.

4.3.2 A **Certificate** or **Certificate** with a **Pilot Boat** Endorsement shall be valid for not more than five years from the date of examination of the **vessel** by the **authorised person**. The **Certificate** may be valid for a lesser period of time as determined by the **Certifying Authority**.

4.3.3 For a **vessel** built under full construction survey, the **Certificate** may be issued following the satisfactory completion of the final in-water **compliance examination**.

4.3.4 The **Certifying Authority** shall annually issue an identification disc. The disc shall act as an indication to vessel users and inspectors that the named **vessel** has been examined and issued with a **Certificate** valid for the period of time stated on the disc. The disc shall be prominently displayed and visible from outside the **vessel**.

4.3.5 A copy of the **Pilot Boat Certificate** or **Certificate** with **Pilot Boat** Endorsement shall be retained by the **competent harbour authority**, and, where appropriate, by the **vessel owner/operator**.

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<sup>11</sup> An example of the format of the **Workboat** and **Pilot Boat Certificates** can be found in [Appendix 10](#).

## **4.4 Annual Examinations**

### **4.4.1 Annual Examination by an Authorised Person**

4.4.1.1 The **vessel owner/operator** shall arrange for an **annual examination** of a **workboat** to be carried out by an **authorised person**, on behalf of the **Certifying Authority**, within 3 months either side of the anniversary date of the **compliance/renewal examination**, at intervals not exceeding 15 months.

4.4.1.2 The **Authorised Person** shall confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the **SWB2**, and that the **vessel**, including any buoyant collar where present, its machinery, fittings and equipment are in a sound and well-maintained condition, and where necessary serviced at the required period.

4.4.1.3 On satisfactory completion of the examination, a copy of the **SWB2**, signed by the **authorised person** and **vessel owner/operator**, shall be forwarded to the **Certifying Authority**.

4.4.1.4 A **dedicated pilot boat** issued with a **Pilot Boat Certificate**, or a **workboat** issued with **Workboat Certificate** with **Pilot Boat** Endorsement shall be additionally examined out of the water in accordance with [4.5.1](#).

### **4.4.2 Annual Examination of Dedicated Pilot Boats by the Vessel Owner/Operator**

4.4.2.1 The **vessel owner/operator** shall carry out an **annual examination** of a **vessel** within 3 months either side of the anniversary date of the **compliance/renewal examination**, at intervals not exceeding 15 months.

4.4.2.2 The **vessel owner/operator** shall confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the **SWB2**, and that the **vessel**, its machinery, fittings and equipment are in a sound and well maintained condition, and where necessary serviced at the required period.

4.4.2.3 Where the examination reveals that the **vessel** and its equipment has not been maintained and serviced in accordance with [section 3.5](#), the **vessel owner/operator** shall not complete the **SWB2** and shall report these defects immediately to the **Certifying Authority** for action as necessary.

4.4.2.4 On satisfactory completion of the examination, a copy of the **SWB2**, signed by the **vessel owner/operator**, shall be forwarded to the **Certifying Authority**.

4.4.2.5 A **dedicated pilot boat** issued with a **Pilot Boat Certificate** or a **workboat** issued with **Workboat Certificate** with **Pilot Boat** Endorsement shall be additionally examined out of the water in accordance with [4.5.1](#).

## **4.5 Intermediate Examinations**

### **4.5.1 Out of the Water Intermediate Examinations**

4.5.1.1 The **vessel owner/operator** shall arrange for an **intermediate examination** to be carried out by an **authorised person** from the chosen **Certifying Authority** at least once during the life of the **Certificate**, in order that the

interval between successive out of water examinations by an **authorised person** does not exceed three years.

4.5.1.2 An **intermediate examination** of the **vessel** shall be conducted in two parts; in the water and out of the water.

4.5.1.3 On satisfactory completion of the examination, a copy of the **SWB2**, signed by the **authorised person** and **vessel owner/operator**, shall be forwarded to the **Certifying Authority**.

#### **4.5.2 In-water Intermediate Examinations**

4.5.2.1 In exceptional circumstances where a **vessel** cannot be presented for the out of the water element of the **intermediate examination** by the due date, a divers/in-water examination may be accepted in lieu at the discretion of the **Certifying Authority**. For **vessels** which are more than 15 years of age an in-water examination may be considered upon submission of a report from the **authorised person** which details the condition of the **vessel's** hull.

4.5.2.2 The in-water examination shall be carried out:

- .1 by a certified diving company which holds a valid certificate issued by a Classification Society which is a United Kingdom Recognised Organisation. See **MIN XXX**; and
- .2 by certified diving operatives; and
- .3 when the **authorised person** overseeing and attending the survey has appropriate experience or specific training in conducting surveys to recognised Classification Society **standards** and scope.

4.5.2.3 The diving company shall present findings to the satisfaction of the **authorised person** during or on completion of the survey. The diving company shall submit a written report of their findings.

4.5.2.4 Where the requirements of [4.5.2.2](#) cannot be met, the in-water examination may alternatively be completed via a ROV survey connected by a video link to the surface, provided the required scope of survey can be achieved and the **authorised person** overseeing and attending the survey has appropriate experience or specific training in conducting surveys to recognised Classification Society standards and scope.

4.5.2.5 Upon satisfactory completion of the in-water examination, the **Certifying Authority** shall confirm to the **vessel owner/operator** the latest date by which the **vessel** must be examined out of the water. See **MIN XXX**.

#### **4.6 Renewal Examinations**

4.6.1 The **vessel owner/operator** shall arrange for a **renewal examination** to be carried out by an **authorised person** from the chosen **Certifying Authority** prior to the expiration of the existing **Certificate**.

4.6.2 During the **renewal examination** the **vessel** shall be examined out of the water.



4.6.3 Upon satisfactory completion and verification that the arrangements, fittings and equipment documented in the **SWB2** remains in compliance with the **Code**, and that the **vessel** and its machinery are in a sound and well-maintained condition, a copy of the report form **SWB2**, signed by the **authorised person** and **vessel owner/operator**, shall be forwarded to the **Certifying Authority** who shall renew the **vessel's Certificate**.

4.6.4 The **Certificate** shall be valid for not more than five years from the expiration of the existing **Certificate**, so long as the **renewal examination** was completed within three months prior to the expiration of the existing **Certificate**. If the **renewal examination** is conducted more than three months prior to the expiration of the existing **Certificate**, the **Certificate** shall be valid for not more than five years from the completion date of the **renewal examination**.

4.6.5 Where a **renewal examination** is completed after the expiration of the existing **Certificate**, the new **Certificate** shall be valid for not more than five years from the expiration of the existing **Certificate**.

4.4.6 The **Certifying Authority** shall issue a new **SWB2** for the **vessel** following satisfactory completion of the **renewal examination**.

#### 4.7 Emergency Examinations

4.7.1 Where a **vessel owner/operator** becomes aware that an unintentional incident affecting the safety of that **vessel** has taken place, this shall be reported to the **Certifying Authority** at the first opportunity and in any event before the **vessel** undertakes any further voyage.

4.7.2 Where a report has been made under [4.7.1](#) a **Certifying Authority** shall:

- .1 at the first opportunity, decide whether the **vessel** shall be subjected to an **emergency examination**; and
- .2 communicate that decision to the person making the report referred to in [4.7.1](#).

4.7.3 If the incident is not of a type included in [4.7.4](#), the **vessel owner/operator** may report it to the **Certifying Authority** for advice on any remedial action that needs to be taken.

4.7.4 For the purposes of this section, an "incident" includes:

- .1 any collision;
- .2 any grounding;
- .3 any fire;
- .4 any event involving:
  - .1 the hull;
  - .2 the keel and keel attachments;
  - .3 the rudder;
  - .4 any other fitting that is below the waterline;
  - .5 the **propulsion system**;

- .6 the steering equipment;
- .7 the machinery; or
- .8 any **critical equipment**.

#### 4.8 Examination Regime

4.8.1 Where it is deemed necessary by the **Certifying Authority**, the **vessel** may need to be examined more often than required by the examination regimes set out in sections [4.8.2](#) and [4.8.3](#). This may require additional examinations out of the water at intervals of less than three years in accordance with an out of the water **intermediate examination** (see [4.5.1](#)).

#### 4.8.2 Examination Regime for all Workboats and Workboats with a Pilot Boat Endorsement

4.8.2.1 **Compliance examinations, renewal examinations, intermediate examinations and annual examinations** shall be conducted by an **authorised person**.

#### 4.8.3 Examination Regime for Dedicated Pilot Boats

4.8.3.1 **Compliance examinations, renewal examinations, intermediate examinations** shall be conducted by an **authorised person**.

4.8.3.2 **Annual examinations** may be conducted by the **vessel owner/operator**. Such self-surveys shall only be undertaken with the authorisation of the **Certifying Authority**, where it is impracticable to undertake examination by an **authorised person**.

#### 4.9 Additional Requirements for Inflatable Boats and Rigid Inflatable Boats

4.9.1 For **inflatable boats** and **rigid inflatable boats** the following shall be applied during the life of the **Certificate** in addition to the examination regime detailed in [4.8](#):

- .1 Annually (by the **vessel owner/operator**) – An airtightness test as follows:
  - .1 Inflate each **compartment** of the boat individually to 120% of the safe working pressure;
  - .2 Check Integrity of tubes and seams for each **compartment** with soapy water and, in the case of a **rigid inflatable boat**, the integrity of the joints between the tubes and the hull;
  - .3 Check that after 30 minutes the pressure is still at 120%;
  - .4 Inflate all **compartments** to the safe working pressure, and record the ambient temperature. After 24 hours in this condition, pressures shall be rechecked and the ambient temperature retaken and then check that the pressure is not less than 100% of working pressure;

- .5 A declaration shall be sent to the **Certifying Authority** on completion.
- .2 At the **renewal examination**, an airtightness test shall be conducted by a **competent person** in accordance with the manufacturer's recommendations to the satisfaction of the **Certifying Authority**.

#### **4.10 Additional Requirements for Pilot Boats**

- 4.10.1 Propeller shaft(s) (other than shaft(s) running in oil) shall be drawn for examination at **compliance examination** and at **intermediate examinations**, at intervals not exceeding three years. A **compliance examination** carried out on a **vessel** more than three years old shall also include an examination of the propeller shaft.
- 4.10.2 Propeller shafts running in oil shall be withdrawn for examination at intervals not exceeding 10 years, provided that an **intermediate examination** shows that wear has been insignificant.
- 4.10.3 Alternatively to the requirements of [4.10.1](#) and [4.10.2](#), the condition of the propeller shafts of **pilot boats** may be monitored without the need to withdraw, by means of oil analysis or similar testing, at each **annual examination**.

#### **4.11 Deficiencies of Machinery or Safety Equipment**

- 4.11.1 Where an **authorised person** determines that the condition of a **vessel**, its machinery or equipment does not correspond with the requirements in the **Code**, or is such that the **vessel** is not fit for service, they shall advise the **Certifying Authority** or **competent harbour authority** as appropriate and inform the **vessel owner/operator** of the corrective action which is required.
- 4.11.2 If any corrective action deemed to be required is not undertaken within a specified period, the **Certifying Authority** shall suspend the validity of the **Certificate** for the **vessel**.
- 4.11.3 If the **Administration** has reasonable grounds to believe that a **vessel** issued with a **Certificate** by a **Certifying Authority** no longer fulfils the requirements of this **Code**, they may require the **Certifying Authority** that issued the **Certificate** to suspend or cancel the **Certificate**.
- 4.11.4 For a **pilot boat** or **workboat** with a **pilot boat** endorsement the **competent harbour authority** shall be notified of the suspension in writing.
- 4.11.5 When satisfied that corrective action has been taken, the **Certifying Authority** shall restore the validity of the **Certificate**.

#### **4.12 Appeal Against the Findings of an Examination**

- 4.12.1 Where a **vessel owner/operator** is dissatisfied with the findings of an examination and agreement cannot be reached with the **authorised person** who carried out the examination, the **vessel owner/operator** may appeal to the **Certifying Authority** to review the findings.

4.12.2 At this review, the **vessel owner/operator** may call a representative or professional advisor to give opinions in support of the argument against the findings of the examination.

4.12.3 Should the above procedures fail to resolve the disagreement, the **vessel owner/operator** shall refer the disagreement to **the Administration**.

#### **4.13 Interim Certificates**

4.13.1 Upon satisfactory completion of the **compliance examination** an interim certificate may be issued by a **Certifying Authority** whilst the full **Certificate** is being prepared and may be valid for **up to** five months from the date of issue.

4.13.2 An interim certificate may be issued to a **vessel** pending the approval of its stability information booklet, provided that:

- .1 the **vessel** meets the **freeboard** and stability requirements for vessels not requiring a stability information booklet (see [Section 12A](#)); and
- .2 the **vessel** does not undertake activities that would otherwise require a stability information booklet (see [section 12.1.1.2](#))

4.13.3 An interim certificate may only be replaced by the full **Certificate**, subject to all outstanding exceptions from the **compliance examination** being completed to the satisfaction of the **Certifying Authority**.

4.13.4 No additional or subsequent interim certificates may be issued until after the next **renewal examination**.

#### **4.14 Vessels Other than UK<sup>12</sup> Vessels Operating in UK Waters**

4.14.1 This **Code** also applies to non-UK vessels operating from UK ports whilst in UK waters. Where **Certificates** are issued to such vessels, it shall be clearly stated on the **Certificate** that “this **Certificate** is applicable within UK territorial waters only”.

#### **4.15 Letters/Statements of Compliance for Non-UK vessels**

4.15.1 This **Code** does not apply to non-UK vessels while they are not operating from UK ports or in UK waters. Such vessels shall not be issued with a **Certificate**.

4.15.2 If the **owner/operator** of such a **vessel** requires confirmation of compliance with the requirements of this **Code** they may be issued with a Letter/Statement of Compliance that clearly states that it is not a trading **Certificate** for the purposes of this **Code**, and that has no reference to authorisation by **the Administration**.

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<sup>12</sup>UK does not include the UK's Overseas Territories and Crown Dependencies which are: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Guernsey, Isle of Man, Jersey, Montserrat, St. Helena and Turks and Caicos Islands.

## 5 Construction and Structural Strength

The purpose of this section is to provide requirements for construction and structural strength of the hull to ensure sufficient strength to withstand all the loads that may be imposed on it during its life by operation at its service draught and maximum service speed, and by any sea or weather conditions likely to be encountered in the **vessel's intended areas category of operation**.

### 5.1 General Requirements

- 5.1.1 The design and construction of the hull structure shall provide strength for the safe operation of the **vessel**, at its service draught and maximum service speed, to withstand the sea and weather conditions likely to be encountered in the **intended area category of operation**.
- 5.1.2 A **vessel** which operates in **area category of operation** 0, 1, or 2 shall be fitted with a **watertight weather deck** over the **length** of the **vessel** and shall have a permanent **accommodation space**.
- 5.1.3 A **vessel** which is not fitted with a **watertight weather deck** over the **length** of the **vessel** shall be restricted to **area category of operation** 3, 4, 5 or 6.
- 5.1.4 A **vessel** may be further restricted to **area category of operation** 4 and 6 only if not fitted with a **substantial enclosure**, however compliance with the guidance in [5.9.2.6](#) and [5.9.3.4](#) may allow operation in **area category of operation** 3 or 5.
- 5.1.5 An **open boat, inflatable boat, rigid inflatable boat** or **boat with buoyant collar** may be permitted to carry **cargo** in excess of 1000 kilogrammes (kg), be fitted with a **lifting device** or be engaged in **towing** operations, subject to approval of the **Certifying Authority**.
- 5.1.6 All vessels which are not fitted with a **watertight weather deck** over the **length** of the **vessel** shall be provided with adequate reserves of buoyancy and stability for the **vessel** to survive the consequences of swamping when loaded with all the **vessel's** equipment, fuel, **cargo**, activity related equipment (e.g. diving equipment) and the number of persons for which it is to be certificated (see [section 12A.3](#)).
- 5.1.7 A **vessel** which is fitted with a **watertight weather deck** over the **length** of the **vessel**, has a permanent and enclosed **accommodation space** and a steering position for the **vessel** within the enclosed space, but does not meet the **freeboard** requirements of section [13.1](#), shall possess adequate reserves of buoyancy (>10%) above the **weather deck** and may be considered for the operations defined in section [5.1.5](#) above, provided the following conditions are satisfied:
- .1 **Freeboard** to the gunwale edge shall meet that required by section [13.1.1](#). **Freeboard** to the **weather deck** shall be positive in all loading conditions; and
  - .2 The **recess** bounded by the reserve buoyancy and gunwales shall meet the **standard** for quick-draining **cockpits** for Category A vessels, within

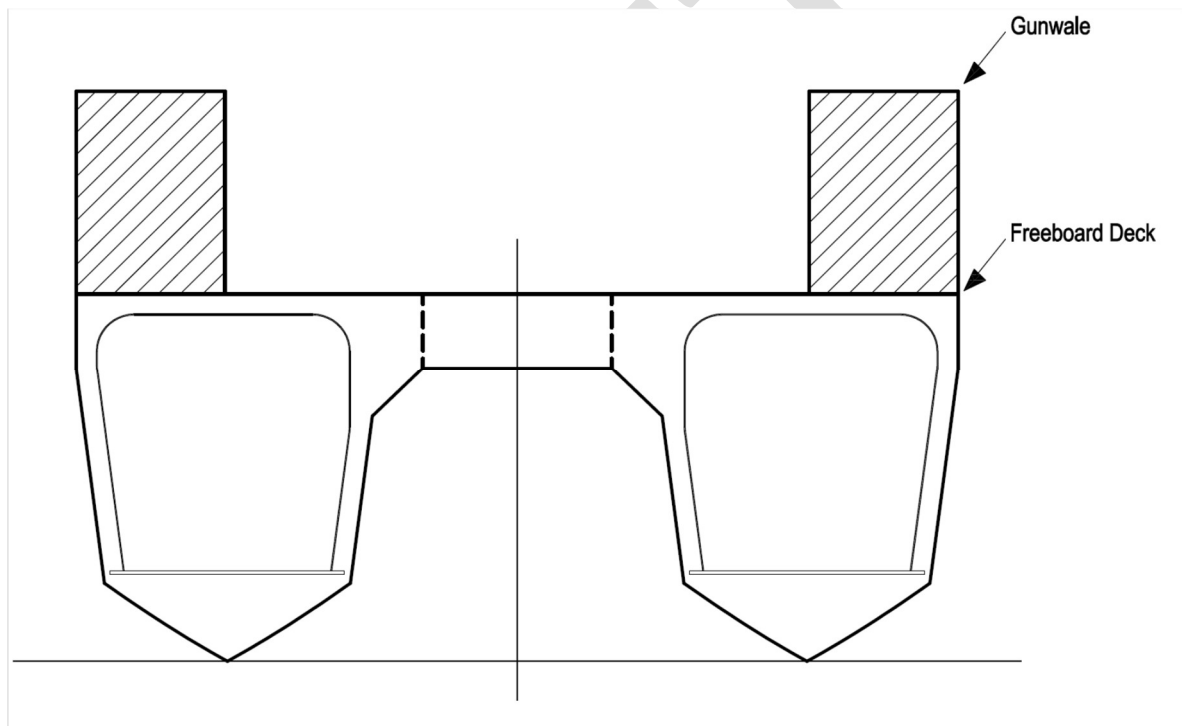
ISO 11812 – ‘Small Craft – **Watertight Cockpits** and Quick- draining **Cockpits**’, or equivalent; and

.3 The vessel shall comply with the relevant intact stability criteria (see [section 12](#)).

5.1.8 Figure 5.1.8 shows a suitable type of arrangement for the purposes of 5.1.7. Shaded areas show buoyancy above the **watertight** deck, in this case at the **vessel** sides, but which may equally be fore and aft.

5.1.9 A **Remotely Operated Unmanned Vessel** is not required to have a permanent shelter installed.

Figure 5.1.8



## 5.2 Structural Strength

Section 5.2 covers vessels which are not **boats with a buoyant collar, inflatable boats or rigid inflatable boats** – these vessel types are covered by 5.9.

5.2.1 All vessels in **area category of operation** 0, 1 or 2 shall be designed and built in accordance with the hull construction standards of a Recognised Organisation or equivalent standard or to first principles.

5.2.2 All **vessels** in **area category of operation** 3 - 6 shall be designed and built to a recognised **standard**<sup>13</sup> **approved** by the **Administration** for their intended use or comply with higher standards listed in 5.2.1.

<sup>13</sup> ISO 12215-5 should be used with caution where the **vessel's** hull or superstructure is fabricated of fibre reinforced **plastic**, or where the **vessel** is subject to impact loading from contact with fixed structures such as offshore wind farm turbine towers, or the **vessel** is a **multihull**, until such time that it is updated with respect to commercial vessels.

### 5.3 Certificate of Construction

- 5.3.1 The hull of a **vessel** which has been surveyed and certificated by an UK **Load Line Assigning Authority**<sup>14</sup> shall be acceptable, subject to the presentation of a valid certificate of construction to the **Certifying Authority**.
- 5.3.2 Where a certificate of construction as issued under either [5.2.1](#) or [5.2.2](#) has a wind or wave height restriction or limitation, then the **area category of operation** for the **vessel** shall be limited to those wave heights or wind restrictions as defined within [3.10.3](#).
- 5.3.3 A **vessel** which has not been built under the survey of an UK **Load Line Assigning Authority** will be considered to be of adequate strength after a conformity examination by an **authorised person** and if it has a certificate of construction issued:
- .1 in accordance with the hull certification standards for **small vessels**, recognised by one of the UK **Load Line Assigning Authorities**; or
  - .2 in accordance with the hull certification standards for small craft as provided in MIN XXX and as verified by a Notified Body in compliance with RCR Module B (EU type-examination) together with either Modules C, D or F, Module G (conformity based on unit verification) or Module H (conformity based on full quality assurance). A Post Construction Assessment as defined in the RCR carried out by a Notified Body may also be accepted.
  - .2 in accordance with the hull certification standards for small craft as provided in MIN XXX with verification of structural strength and build by a **Load Line Assigning Authority, Certifying Authority** or Notified Body. A post construction assessment can be accepted subject to [5.3.3.2](#), supported by a structural survey
- 5.3.4 A **vessel** not built in accordance with either section [5.2.1](#) or [5.2.2](#) may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the **Certifying Authority**.
- 5.3.5 A vessel with an existing certificate issued under one of the Codes of Practice as per [1.11](#) at the date of coming into force of the **Code**, or in possession of a valid Load Line Certificate or Load Line Exemption Certificate appropriate to the sea and weather conditions for the **vessel's** intended **area category of operation** shall continue to be considered of adequate strength for its existing **area category of operation**.

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<sup>14</sup> UK **Load Line Assigning Authorities**, in addition to the **MCA**, are American Bureau of Shipping, Bureau Veritas, DNV GL, Lloyd's Register, Nippon Kaiji Kyokai and Registro Italiano Navale.

## 5.4 Construction Materials

- 5.4.1 A vessel's hull and superstructure may be constructed of wood, fibre reinforced **plastic** (FRP), aluminium alloy, steel or combinations of such materials.
- 5.4.2 Proposals to use any other material shall be submitted to the **Certifying Authority** for approval. The **Administration** shall be notified with regards to the procedures that the **Certifying Authority** intends to adopt for the assessment of a material not listed in [5.4.1](#).

## 5.5 Decks

### 5.5.1 Weather Deck

- 5.5.1.1 Where a **vessel** is required to have or a **vessel** is fitted with a **watertight weather deck**, it shall extend from stem to stern over the **length** of the **vessel** and have positive **freeboard** throughout, in any condition of loading of the **vessel**. (Minimum requirements for **freeboard** are given in section [13.1](#)).

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

### 5.5.2 Recesses<sup>15</sup>

- 5.5.2.1 A **recess** in a **vessel** with a **weather deck** complying with section [5.5.1.1](#), shall be **watertight** to the interior of the **vessel** and shall have means of drainage overboard capable of **efficient** operation when the **vessel** is heeled to angle of 10 degrees (°). Such drainage is to have an effective area, excluding grills and baffles, of at least 20 square centimetres (cm<sup>2</sup>) per cubic metre of volume of the **recess**.

- 5.5.2.2 Alternative arrangements for the size and drainage of a **recess** may be accepted by the **Certifying Authority** provided it can be physically demonstrated that, with the **vessel** upright and at its deepest draught, the **recess** drains overboard from a swamped condition within 3 minutes; or the **cockpit** or **recess** should comply with ISO 11812 (Small Craft – **Watertight** and Quick Draining **Cockpits**) for the relevant **design category**. See **MIN XXX**.

- 5.5.2.3 If a **recess** is provided with a locker which gives direct access to the interior of the hull, the **vessel** shall no longer be considered a vessel with a **watertight weather deck** (See [5.1.3](#)). Any such locker shall be fitted with **weathertight** cover(s) and in addition, the cover(s) to the locker shall be permanently attached to the **vessel's** structure and fitted with **efficient** locking devices to secure the cover(s) in the closed position.

## 5.6 Watertight Bulkheads

- 5.6.1 The strength of a **watertight** bulkhead shall be adequate for the intended purpose and shall be approved by the **Certifying Authority**.
- 5.6.2 Where pipes, cables, etc. penetrate **watertight** bulkheads, they shall be provided with valves and/or **watertight** glands, as appropriate.

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<sup>15</sup> For water freeing arrangements, see [section 6](#) and, for **freeboard** requirements, see [section 13](#).



5.6.3 A door in a **watertight** bulkhead shall be fitted in such a way that the bulkhead, when the door is closed, retains its **watertightness**. The door shall be kept closed at sea, unless opened for access only, at the discretion of the **Master**. A notice shall be fitted to both sides of the door "To be kept closed at sea, open for access only". Any **watertight** door shall be provided with a suitable safety provision to avoid injury to personnel by closure of the door.

5.6.4 For vessels greater than 15 m waterline length and operating in **area category of operation** 0, 1, or 2, a **watertight** collision bulkhead shall be fitted. The collision bulkhead shall be positioned in accordance with the requirements of the Recognised Organisation or the equivalent standard as used for the design of the vessel's structure.

## 5.7 Offshore Energy Service Vessels

5.7.1 The hull and attached structures of Offshore Energy Service Vessels shall be designed and constructed to withstand imposed static and dynamic loads. The structure shall be robust with scantlings in excess of those typically required from a recognised Classification Society.

## 5.8 Lifting and Towing

5.8.1 Where a **vessel** is intended to be engaged in **towing** or is fitted with a **lifting device**, then the structure of the **vessel** and any associated fittings used in the activity of **towing** or lifting shall be independently verified for strength and suitability for the intended use. See also Sections [25](#) and [26](#) for additional requirements for **towing** and/or **lifting devices**.

5.8.2 The breaking strength or maximum working loads of any item of equipment or of the hull structure itself shall be provided to the **vessel owner/operator**. The breaking strength of lines/chains shall in general not exceed 80 % of the breaking strength of the respective strong point.

5.8.3 The structure of the **vessel** and the equipment fitted to the **vessel's** structure shall be verified by the **Certifying Authority** as being of suitable strength to withstand the loads that are likely to be imposed when operating at the maximum capacity of any **lifting device**. See also [Section 25](#).

Any **modifications** that are undertaken shall be verified by the **Certifying Authority**. See **MIN XXX**<sup>16</sup>.

5.8.4 Equipment manufacturer's instructions on installation, operation and maintenance shall be followed as required by LOLER and PUWER Regulations. Where equipment **standards** are not specified in the **Code** the **Certifying Authority** shall agree an appropriate equivalent standard.

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<sup>16</sup> The relevant chapters of the CoSWP are Chapter 18, 19 and 26.

## **5.9 Boats with a Buoyant Collar, Inflatable Boats and Rigid Inflatable Boats**

### **5.9.1 General**

5.9.1.1 The following requirements shall apply to a **boat with a buoyant collar**, an **inflatable boat** or **rigid inflatable boat**, other than a tender (dinghy) covered by [section 24](#).

5.9.1.2 The requirements of [5.3 - 5.6](#) also apply to a **boat with a buoyant collar**, an **inflatable boat** or **rigid inflatable boat**, as appropriate.

### **5.9.2 Boats with a Buoyant Collar and Rigid Inflatable Boats in Area Category of Operation 2 or 3**

5.9.2.1 A **boat with a buoyant collar** or a **rigid inflatable boat** which is intended to operate as an independent vessel in **area category of operation 2** or **3** (and is not a tender operating from a vessel) shall be of a design and construction which would meet the requirements of Chapter III of the 1974 **SOLAS** Convention, **as amended**, and the parts of the Annex to **IMO** Resolution MSC.48(66) – “International Life-Saving Appliance Code”, **as amended**, and MSC.81(70) – “Testing and Evaluation of Life-Saving Appliances”, **as amended** – which are appropriate to the type of boat and subject to the variations which are given in the **Code**.

Alternatively, a **boat with a buoyant collar** or a **rigid inflatable boat** which is intended to operate as an independent vessel in **area category of operation 2** or **3** (and is not a tender operating from a vessel) shall be of a design and construction which would meet the requirements of ISO 12215 and ISO 6185.

5.9.2.2 A **boat with a buoyant collar** or a **rigid inflatable boat** which is intended to operate as in independent vessel in **area category of operation 3** may be accepted if built to RCD **Design Category B**.

5.9.2.3 **Inflatable boats** are not considered appropriate for operation in **area category of operation 2** and **3**.

5.9.2.4 A **boat with a buoyant collar** or a **rigid inflatable boat** may only be considered for operations in **area category of operation 2**, if it has a permanent and enclosed **accommodation space** for all persons on board and the **vessel** has a steering position for the **vessel** within the enclosed space.

5.9.2.5 A **boat with a buoyant collar** or a **rigid inflatable boat** may only be considered for **area category of operation 3** (night-time operations), if fitted with a **substantial enclosure** for the protection of persons on board, subject to approval by the **Certifying Authority**.

5.9.2.6 For **area category of operation 3** only, alternative operating procedures for night time operations without a **substantial enclosure** to that in [5.9.2.5](#) may be considered, with operational/seasonal limitations. Such cases shall be subject to approval by the **Certifying Authority** using the provisions of [Appendix 1](#).

### 5.9.3 Boats with a Buoyant Collar, Inflatable Boats and Rigid Inflatable Boats in Area Categories 4, 5 and 6

5.9.3.1 A **boat with a buoyant collar**, an **inflatable boat** or a **rigid inflatable boat** which is intended to operate as an independent vessel in **area category of operation** 4, 5 or 6 shall be designed and built to a recognised **standard**, as detailed in the **MIN XXX**, **approved** by the **Administration** for their intended use.

5.9.3.2 The structure of the rigid hull of a **rigid inflatable boat** and a **boat with a buoyant collar** may alternatively be assessed in accordance with section [5.3](#) Certificate of Construction.

5.9.3.3 A **boat with a buoyant collar** or a **rigid inflatable boat** may only be considered for **area category of operation** 5 (night time operations), if fitted with a **substantial enclosure** for the protection of persons on board, subject to approval by the **Certifying Authority**. A **substantial enclosure** can be a permanently secured solid structure, or one that can be removed in harbour, provided when in place it is through bolted to the deck and adequately constructed to meet the designed **vessel** limitations. Portable canopies that are secured by lines or by fabric hook and loop fastening are not acceptable.

5.9.3.4 For **area category of operation** 5 only, alternative operating procedures for night time operations without a **substantial enclosure** to that in [5.9.3.3](#) may be considered, with operational/seasonal limitations. Such cases should be subject to approval by the **Certifying Authority** using the provisions of [Appendix 1](#).

5.9.3.5 An **inflatable boat** may only be considered for **area categories of operation** 4 and 6.

### 5.9.4 Construction and Materials

5.9.4.1 For **vessels** complying with section [5.9.2.4](#), materials shall satisfy the requirements of Chapter III of the 1974 **SOLAS** Convention, **as amended**, (including ISO 15372:2000 Ships and marine technology. Inflatable rescue boats. Coated fabrics for inflatable chambers), except that fire-retarding characteristics are not required for the hull material.

5.9.4.2 For all vessels, materials shall satisfy the requirements of the **standards** recognised by the **Administration**, against which they have been assessed.

5.9.4.3 A **new vessel** of a type certified as a rescue boat under [the Merchant Shipping \(Marine Equipment\) Regulations 1999 \(SI 1999 No. 1957\)](#), **as amended**, or provided with a letter of compliance for use as a fast rescue boat for offshore stand-by vessels, or any equivalent certification or compliance, shall be accepted as complying with the construction requirements of the **Code**.

5.9.4.4 A new **boat with a buoyant collar**, **inflatable boat** or **rigid inflatable boat** which is not built in accordance with either section [5.9.2.4](#), [5.9.2.5](#), [5.9.2.6](#) or [5.9.3.4](#) may be specially considered, provided that full information (including calculations, drawings, details of materials and construction) is presented to and approved by the **Certifying Authority**.

## 6 Weathertight Integrity

The purpose of this section is to set requirements to ensure that any water from sea conditions likely to be encountered in the intended **area category of operation** will not penetrate into a **vessel**.

Sections [6.2](#) and [6.3](#) apply to accessways (doorways, hatchways and companion hatch openings) and windows (skylights, windows and portlights) which are collectively referred to in ISO 12216 as closing appliances.

Section [6.4](#) applies to valves, piping, ventilators, exhausts, sea inlets and discharges which are collectively referred to in ISO 12216 as external appliances.

### 6.1 General

6.1.1 A **vessel** shall be designed and constructed in a manner which will prevent the ingress of water, i.e. **weathertight**. For strength and **watertightness** of accessways and windows the requirements of ISO 12216 are considered acceptable. See **MIN XXX**.

### 6.2 Doorways, Hatchways and Companion Hatch Openings

For the purpose of this **Code**, doorways, hatchways and companion hatch openings are collectively referred to as accessways.

#### 6.2.1 General Requirements

6.2.1.1 An accessway which gives access to any **compartment** shall be **weathertight** when closed.

6.2.1.2 An accessway which is used for escape purposes shall be capable of being opened, closed and where necessary, unlocked, from both sides.

#### 6.2.2 Doorways which are located above the weather deck

6.2.2.1 A hinged doorway located in the side of the superstructure shall have the hinges on the forward edge to prevent ingress of sea water during normal operations and unfavourable sea conditions.

6.2.2.2 A doorway shall not open inwards and shall be sized such that the covering overlaps the doorway on all sides and has **efficient** means of opening and closure which can be operated from either side.

6.2.2.3 Sliding **weathertight** doors, where fitted, shall be provided with suitable safety provision to avoid injury to personnel by closure of the door.

6.2.2.4 A doorway which is either forward or side facing shall be provided with a coaming, the top of which is at least 300 mm above the adjacent **weather deck**.

6.2.2.5 A **weathertight** coaming may be portable, provided it can be permanently secured to the structure of the **vessel** and can be locked in position whilst at sea<sup>17</sup>. A portable coaming shall be marked, "Not to be opened at sea".

### 6.2.3 Doorways which are located below the weather deck

6.2.3.1 A doorway fitted in a **watertight** bulkhead shall be of a **watertight** construction from both sides and be kept closed at sea. A notice shall be fitted to both sides of the door "To be kept closed at sea, open for access only".

6.2.3.2 Sliding **watertight** doors, where fitted, shall be provided with suitable safety provision to avoid injury to personnel by closure of the door.

### 6.2.4 Hatchways<sup>18</sup> and companion hatch openings

6.2.4.1 Where washboards are used to close a vertical opening they shall be arranged and fitted so they will not become dislodged.

6.2.4.2 A covering to a hatchway shall be hinged, sliding or permanently secured by other equivalent means to the structure of the **vessel** and be provided with locking devices to enable it to be positively secured from either side in the closed position.

6.2.4.3 A covering to a hatchway which is hinged and which is located in the forward half of the **vessel** shall have the hinges fitted to the forward side of the hatchway covering. Where this is not possible, alternative arrangements shall be presented to the **Certifying Authority** for their approval.

6.2.4.4 A hatchway in **recessed** or stepped **decks** of vessels as described in [5.5.1.2](#), that provide access to sea inlet valves, shall have access openings at least 300 mm above the minimum **freeboard** to deck (see [13.1](#)), or the sea inlet valves fitted with remote closing devices.

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

6.2.4.6 The maximum breadth of the opening of a companion hatch should not exceed 1 metre.

### 6.2.5 Hatchways which are Open at Sea

6.2.5.1 Hatchways, where practicable, shall be kept securely closed at sea. However, if a hatchway is required to be open at sea for lengthy periods, it shall be:

- .1 kept as small as practicable, but never more than 1 square metre (m<sup>2</sup>) in plane area at the top of the coaming; and
- .2 be aft facing and located on the centre line of the **vessel** or as close

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<sup>17</sup> A trough or a **recess** which is 300mm deep immediately adjacent to the accessway shall not be deemed to satisfy this requirement.

<sup>18</sup> For **cargo** hatchways, reference shall be made to section [25.1.4](#).

thereto as practicable; and

.3 shall comply with the coaming requirements of [6.2.4.5](#).

### 6.3 Skylights, Windows and Portlights

For the purpose of this Code, skylights, portlights and windows are collectively referred to as windows.

- 6.3.1 All windows fitted above the **weather deck** shall be of **weathertight** construction.
- 6.3.2 All windows fitted below the **weather deck** shall be of **watertight** construction.
- 6.3.3 Where a window is an opening type it shall be provided with **efficient** means whereby it can be positively secured in the closed position.
- 6.3.4 A window which is provided as a means of escape shall be capable of being opened and closed from both sides.
- 6.3.5 Windows shall not be fitted in an **engine space** boundary, unless otherwise specifically permitted by this **Code**.
- 6.3.6 Windows and their frames shall meet the appropriate requirements defined in equivalent British, European or International Standards or Classification Society Rules. See **MIN XXX**.
- 6.3.7 For vessels operating in **area category of operation** 0, 1, 2 or 3, unless the glazing material and its method of fixing in the frame is equivalent in strength to that required for the structure in which it is fitted, a portable **blank** shall be provided which can be secured in place in event of breakage of the glazing.
- 6.3.8 Where a window below the **weather deck** can be opened it shall be fitted with a deadlight or provided with a portable **blank**.
- 6.3.9 Where portable **blanks** are required, the number of **blanks** shall be sufficient for at least half of the number of such windows of each different size in the **vessel**. A **blank** shall be of suitable material and strength to the approval of the **Certifying Authority**.
- 6.3.10 A portlight shall not exceed 250 mm diameter or equivalent area.
- 6.3.11 A window which is capable of being opened and is located below the **weather deck** shall be marked, "Not to be opened at sea".
- 6.3.12 Windows used for navigational purposes shall not have their visibility impaired by polarised or tinted glass.

### 6.4 Valves, pipes, ventilators, exhausts, sea inlets and discharges

Section [6.4](#) applies to valves and associated piping, ventilators and exhausts, air pipes and sea inlets and discharges.

## 6.4.1 Valves and Associated Piping

- 6.4.1.1 A valve or similar fitting attached to the side of the **vessel** below the waterline, within a **machinery space** or other high fire risk area, and essential system piping shall be normally of steel, bronze, copper, or other non-brittle fire resistant material.
- 6.4.1.2 Materials with a melting point below 1000°C shall not be used for fire mains, hydrants, valves or cocks. Fittings which incorporate components with a melting point below 1000°C may be accepted, provided they have passed a fire test in accordance with ISO 10497.
- 6.4.1.3 **Plastic** / non-metallic piping shall only be allowed where consideration has been given to the usage of the pipe, e.g. with respect to system type (open or closed loop), system pressure, system temperature, system pipe internal fluid, location etc., using class requirements and **IMO A.753(18) as amended** for guidance. When **plastic** piping or flexible<sup>19</sup> pipe is used it shall not contribute any additional risks or spread of fire, and be of a type suitable for the intended purpose.
- 6.4.1.4 **Plastic** pipes shall not be used in **machinery spaces** or **cargo** pipes carrying flammable liquids unless where:
- .1 meeting the requirements of ISO 15540 or **IMO A.753(18)**; and
  - .2 exhaust hosing shall meet the requirement of the **standard** accepted by the **Administration** (see **MIN XXX**); and
  - .3 **plastic** pipes are fitted within the **machinery space** of vessels operating in **area category of operation 0, 1 or 2**, the shut off valve shall be operable from outside of the **machinery space**; or
  - .4 **plastic** pipes are fitted within the **machinery space** of vessels operating in **area category of operation 3, 4, 5 or 6**, the shut off valve may be located on the pipe within the **machinery space**.

## 6.4.2 Sea Inlets and Discharges

- 6.4.2.1 Any opening for inlets and discharges below the **weather deck** shall be provided with a **watertight** means of closure and if fitted below the waterline, the means of closure shall be either remotely operated or readily accessible in an emergency. Discharge lines shall also have an automatic non-return valve.
- 6.4.2.2 When an opening is for a log or other sensor, which is capable of being withdrawn, it shall be provided with an effective means of closure when such a fitting is removed. A non-metallic, or non-flush metallic fitting, log or sensor shall not be fitted in **machinery spaces** or in any spaces in vessels that operate at **high speed** unless located in small cofferdams designed for the purpose and

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<sup>19</sup> Flexible pipes, hoses and hose assemblies – which are flexible hoses with end fittings attached – shall be in as short lengths as practicable, but shall not, in general, exceed 1.5 m in length, and only be used where necessary to accommodate relative movement between fixed piping and machinery parts. Where a flexible section of piping is provided, connections shall be of a screw type or equivalent approved type. Flexible pipes and end attachments shall be of approved fire-resisting materials.

with any access panels and service transits made **watertight**. If access is designed to be opened at sea, a test cock shall be provided.

6.4.2.3 Inlet and discharge pipes from marine toilets shall be provided with shell fittings as required by section [6.4.2.1](#). When the rim of a marine toilet is less than 300 mm above the deepest waterline of the **vessel**, unless otherwise indicated by manufacturer's recommendations, anti - syphon measures shall be provided.

6.4.2.4 Observation glasses fitted in sea water systems below the deepest anticipated waterline, including any trim or heel, shall be so protected as to minimise the risk of mechanical damage, failure and consequential flooding.

### 6.4.3 Ventilators and Exhausts

6.4.3.1 A ventilator situated on the **weather deck** shall be provided with a readily available means of **weathertight** closure.

6.4.3.2 Ventilators including those which must be kept open, shall be located as far inboard as practicable and the height above the deck of the ventilator opening shall be sufficient to prevent inadvertent downflooding when the **vessel** is heeled (see [section 12](#)).

6.4.3.3 Vessels which are fitted with ventilators for **machinery space(s)** in the hull side, which do not satisfy the requirements of [6.4.2.1](#) and [6.4.2.2](#), may be accepted subject to approval by the **Certifying Authority**. The following shall as a minimum be considered as a part of the approval process:

- .1 the risk of fire in the **machinery space(s)**; and
- .2 the risk of downflooding in the **machinery space(s)**; and
- .3 potential restrictions to operation.

Such a ventilator shall be capable of being remotely closed prior to activation of a fixed fire extinguishing system for the **machinery space(s)**.

6.4.3.4 An engine exhaust outlet which penetrates the hull below the **weather deck** shall be provided with means to prevent backflooding into the hull through the exhaust system. The means may be provided by system design or a built-in valve.

### 6.4.4 Air Pipes

6.4.4.1 Where located on the **weather deck**, an air pipe shall be kept as far inboard as possible and have a height above deck sufficient to prevent inadvertent downflooding when the vessel is heeled (see [section 12](#)).

6.4.4.2 An air pipe, of greater than 10 mm inside diameter, serving a tank shall be provided with a permanently attached means of **weathertight** closure. Means of closure may be omitted if it can be demonstrated to approval of the **Certifying Authority**, that the open end of the air pipe is afforded adequate protection by other means, which will prevent the ingress of water.

6.4.4.3 An air pipe serving a tank (also see section [8.10](#)), where provided with a closing appliance, shall be of a type which will prevent excessive pressure on the tank



boundaries. Provision shall be made for relieving a vacuum when tanks are being drawn from or emptied.

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## 7 Water Freeing Arrangements

The purpose of this section is to set requirements for water freeing arrangements which allow water trapped on deck to run freely overboard and ensure effective drainage of the deck.

### 7.1 General Requirements

7.1.1 Where a **vessel** is fitted with bulwarks such that shipped water may be trapped behind them, the bulwarks shall be provided with freeing ports that will ensure the deck can be effectively drained.

7.1.2 The area of freeing ports shall be at least 4% of the bulwark area and be situated in the lower third of the bulwark height, as close to the deck as practicable.

7.1.3 A **vessel** which is intended to operate in **area category of operation** 4, 5 or 6, shall be provided with freeing ports required by section [7.1.2](#) or may be provided with a minimum of two ports fitted (one port and one starboard), which may be in the transom, each having a clear area of at least 225 cm<sup>2</sup> (0.0225 m<sup>2</sup>). Ports may only be fitted in the transom of vessels which, with the **vessel** trimmed as necessary to represent a normal operating condition and regardless of loading condition, will ensure the deck can be effectively drained.

7.1.4 A **Certifying Authority** may approve smaller ports in a **vessel** having only small side deck areas in which water can be trapped, the reduced area being based on the volume of water which is likely to become so trapped. The following correction to the required freeing port area may be applied:

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

Where

FP<sub>REQ</sub> = Freeing port area required

FP<sub>MAX</sub> = Maximum freeing port area required

A<sub>ACT</sub> = Actual area of deck fitted with enclosed bulwarks, excluding superstructure or **deckhouse** area

A<sub>MAX</sub> = Area of maximum sized well (0.7L x B) where L and B are the dimensions of the vessel.

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

7.1.6 Structures and spaces considered to be non-**weathertight** shall be provided with **efficient** drainage.

7.1.7 Where **cargo** is to be stowed on deck, the stowage arrangement shall be such as to not impede the free flow of water from the deck.

7.1.8 A **vessel** intended to operate in sea areas where ice accretion can occur shall be specially considered with regard to water freeing arrangements (also see [section 12.1.1.4](#)).

7.1.9 Where independent self-contained **wheelhouses** are fitted, provisions are to be made so that such **wheelhouses** can drain quickly, typically in the event of **wheelhouse** window failure and consequential flooding.

## 7.2 **Requirements for Rigid Inflatable Boats, Inflatable Boats or Boats with a Buoyant Collar**

7.2.1 If the boat is fitted with a transom, it shall be equipped with at least one drainplug or one bailing system.

7.2.2 An adequate means of draining the boat shall be demonstrated.

7.2.3 A **rigid inflatable boat**, an **inflatable boat** or a **boat with a buoyant collar** shall be provided with a minimum of one freeing port or drain fitted in the transom, with a clear area of at least 225 cm<sup>2</sup> (0.0225 m<sup>2</sup>) (minimum 9.55 cm diameter), or other means of clearing water.

7.2.4 A **rigid inflatable boat**, an **inflatable boat** or a **boat with a buoyant collar** shall have adequate means of self-draining whilst moving ahead.

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## 8 Machinery, Propulsion and Fuel Systems

The purpose of this section is to set out the requirements for **propulsion systems**, fuel supply and handling including stowage of spare petrol where appropriate.

### 8.1 General Requirements

8.1.1 A **vessel** fitted with a petrol, **diesel**, hybrid or **lithium-ion battery** powered **propulsion system** shall be provided with a **propulsion system** suitable for marine use and with sufficient fuel capacity or charge for its intended **area category of operation**.

8.1.2 The engine type, systems and installations essential to the propulsion and the safety of the **vessel** shall be of design, type, power and construction adequate to operate in accordance with the intended purpose of the **vessel**, its **area category of operation** and shall be designed to operate when the **vessel** is inclined **up to** 15 degrees of heel and 7.5 degrees of trim.

8.1.3 Where a **vessel** is fitted with multiple **engine spaces** these shall be **totally independent systems** and shall include separate fuel, control and electrical systems.

8.1.4 A **vessel** intending to operate using **low flash point fuels** (other than petrol or **diesel**) may be considered on a case-by-case basis, subject to approval by the **Administration**. A risk assessment shall be provided by the **vessel owner/operator** and shall as a minimum consider the safe storage and use of fuel on board, fuel transportation, carriage, storage ashore, and refuelling operations.

### 8.2 Diesel Propulsion Systems

8.2.1 A **vessel** may be fitted with either an inboard or an outboard **diesel** engine.

8.2.2 All **vessels** fitted with marine **diesel** engines or **battery-hybrid propulsion systems** shall comply with [section 30.5](#) of the **Code**, as applicable.

### 8.3 Hybrid Propulsion Systems

8.3.1 Where a **vessel** is fitted with a **battery-hybrid (diesel fuel and lithium-ion battery) propulsion system** it shall be designed to use one power source as primary power with the other source used as a boost or in an emergency. Requirements for electric **propulsion systems** are detailed in Annex 1.

8.3.2 A hybrid **propulsion system** shall be designed so it is not vulnerable to a single point of failure, meaning that the second power source shall be able to automatically take over and provide power in an emergency.

8.3.3 A fuel tank and **lithium-ion batteries** used as a source of power for propulsion shall be located in separate spaces which do not share a boundary with any **accommodation space** or each other.

## 8.4 Electric Propulsion Systems

8.4.1 Requirements for pure electric **propulsion systems** (i.e. exclusively using **lithium-ion batteries** as a power source for propulsion) are detailed in Annex 1.

8.4.2 A **vessel** intending to operate on a pure electric **propulsion system** powered other than by **lithium-ion batteries** may be considered on a case-by-case basis, subject to approval by the **Administration**. The **vessel owner/operator** shall demonstrate that an appropriate level of safety is provided to the satisfaction of the **Administration** which shall include verification that the machinery and systems have been installed in accordance with UK authorised Recognised Organisation standards.

## 8.5 Hybrid or Electric Outboards

8.5.1 A **vessel** may be fitted with a **battery-hybrid** or pure electric outboard.

8.5.2 The battery used as a source of power for propulsion for a hybrid or electric outboard may be of a lithium-ion or other type suitable for marine use.

## 8.6 Petrol Propulsion Systems

8.6.1 Where a **vessel** is fitted with a petrol engine it shall be of an outboard type.

8.6.2 A **vessel** of any type may be fitted with a small engine (usually less than 4.5 kW) manufactured with an integral fuel tank, provided a safety warning sign is displayed with details of appropriate precautions to be taken when filling the fuel tank.

8.6.3 Fuel shall be supplied to an engine(s) from:

- .1 a permanently installed fuel tank(s) which shall not be integral to the hull's structure; or
- .2 where a **vessel** is of less than 8 m **length** or has a total power rating of less than 75kW it may be supplied by a non-permanently installed fuel tank with a maximum capacity of 55 litres which shall be fitted with a handle; or
- .3 where a vessel is of less than 8 m **length** or has a total power rating of less than 75kW and has two outboard engines fitted it may be supplied by two non-permanently installed fuel tanks each with a maximum capacity of 27 litres; or
- .4 where an **inflatable boat** is less than 8 m in **length** and has a total power rating of less than 15 kW it may be supplied by a separate fuel tank with a maximum capacity of 27 litres.

A non-permanently installed tank/s must be fitted with the standard quick connection to the outboard engine without the risk of any spillage.

## 8.7 **Alternative Propulsion Systems and Fuel Types**

8.7.1 **Propulsion systems** and fuel types other than those listed in Section [8.2](#) – [8.5](#) may be considered on a case-by-case basis subject to the approval of the **Administration**.

8.7.2 The **vessel owner/operator** shall demonstrate that an appropriate level of safety is provided to the satisfaction of the **Administration** which shall include verification that the machinery and associated systems have been installed in accordance with UK authorised Recognised Organisation standards.

## 8.8 **Engine Starting and Stopping**

8.8.1 Where a **vessel's** engine is started by means other than mechanical, air, hand or electric with independent batteries, the starting mechanism shall be subject to approval of the **Certifying Authority**.

8.8.2 Where the sole means of starting an engine is by battery; a back-up battery and charging facility shall be available. Both batteries shall be connected to the starter motor via a 'change over switch'. The batteries shall not discharge in parallel and shall be linked by an emergency link isolator or other means of cross-connecting to allow the starting of an engine with a flat battery.

8.8.3 For air start systems there shall be 2 air receivers each with sufficient capacity to allow 6 consecutive starts of a cold engine. Design, maintenance, inspection and testing of compressed air start systems shall be in accordance with an appropriate Class standard.

8.8.4 Where air receivers are fitted in a **machinery space(s)** or other areas identified to increase risk of fire acceleration, the system shall be designed so any release of air through the pressure relief valves or bursting discs that may occur during a fire is vented to the open air.

8.8.5 Air receivers which vent to the **machinery space** may be approved in exceptional cases by the **Certifying Authority** on a case-by-case basis. The volume of compressed air which can be released into the **machinery space** shall be considered in the calculation(s) used to assess the required quantity of firefighting medium, subject to approval of the **Certifying Authority**. See section [16.4](#).

## 8.9 **Automatic Shutting Down of Propulsion Systems (Kill Cords)**

The following section is intended to cover the means of preventing injury in the event of a person(s) unintentionally entering the water whilst the propeller is running, such systems are often referred to as kill cords but other technologies exist which achieve the same objective.

8.9.1 An **inflatable boat, rigid inflatable boat, boat fitted with a buoyant collar, open boat** or any **vessel** where there is a risk of the helmsperson falling overboard, shall be fitted with a kill cord which shall be securely attached to the helmsperson and used at all times whilst the engine is running and in gear.

8.9.2 An **inflatable boat, rigid inflatable boat, boat fitted with a buoyant collar, open boat** or any **vessel** where there is a risk of helmsperson falling overboard:

- .1 shall have a spare kill cord on board; or
- .2 shall have a kill system which is capable of override; or
- .3 may have a sprung loaded throttle to return to idle in lieu of meeting the requirements of [8.8.1](#).

8.9.3 An **inflatable boat, rigid inflatable boat, boat fitted with a buoyant collar, open boat** or any **vessel** where there is a risk of helmsperson falling overboard which is not fitted with a kill cord shall demonstrate to approval of the **Certifying Authority** the ability to automatically stop and manually restart the engines in the case of the helmsperson falling overboard.

## 8.10 Installation

8.10.1 Installation of the machinery, **propulsion** and fuel **systems** shall consider means to reduce the risk of injury to persons during normal movement about the **vessel** (see **MIN XXX**).

8.10.2 **Hazardous spaces**<sup>20</sup> shall be continuously ventilated. Means of ventilation shall be appropriate to the space ventilated, subject to the satisfaction of the **Certifying Authority**.

8.10.3 Means shall be provided to isolate a source of fuel which may feed a fire in a machinery space. The means of closure shall be positioned outside the machinery space and shall be fitted as close to the fuel tank as possible. If the means of closure fitted is remotely operated, it shall have a manual override.

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

8.10.5 All **vessels**, including those with portable tanks, shall be fitted with means to drain any spillage occurring during fuel handling into a suitable receptacle.

8.10.6 A **vessel** which uses **lithium-ion batteries** as a source of power for propulsion shall have means provided to isolate the batteries from outside, or remotely to, the battery space or **battery box**.

## 8.11 Fuel pipes

8.11.1 Fuel pipes shall be constructed of a fuel compatible, fire resistant, non-corrosive and a non-kinking material (see **MIN XXX**).

8.11.2 Fuel pipes shall be adequately supported along their length especially in way of pipe connections. The method of supporting shall be appropriate for the material of the fuel pipe and its location in the fuel system.

8.11.3 Short lengths of flexible fuel pipes may be permitted where necessary to allow for movements and vibration between fixed fuel pipes and fuel tanks or fuel consumers.

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<sup>20</sup> The number and extent of **Zone 0** and **Zone 1 hazardous spaces** on a vessel shall be kept to a minimum.

Flexible fuel pipes shall be:

- .1 fire resistant, metal reinforced or protected from fire (see applicable Standards in **MIN XXX**); and
- .2 suitable for the carriage of the fuel; and
- .3 secured by either metal hose clamps or permanently attached end fittings such as swaged sleeve or sleeve and threaded insert. Every pipe connection shall have a means of preventing slippage and shall not provide a path for fuel leakage; and
- .4 renewed according to the manufacturer's instructions. The date of fitting and date for renewal shall be recorded on the **SWB2**.

8.11.4 High pressure fuel pipe(s) and associated fittings on a **machinery system(s)** shall be designed and installed to reduce the risk of oil mist fires<sup>21</sup>.

8.11.5 A fuel filling or fuel ventilation pipe(s) shall be arranged to prevent over pressure of the fuel tank systems during filling.

8.11.6 A fuel ventilation pipe(s) from a fuel tank intended to be filled on board transfer pumps or a pressurised system shall have a diameter of 1.25 times the diameter of the filling pipe.

8.11.7 A vent pipe(s) shall:

- .1 lead to the open atmosphere; and
- .2 terminate in a position level with or higher than the fuel filling mouth; and
- .3 be protected against water ingress; and
- .4 be protected from flame ingress; and
- .5 be protect against any other identified hazards.

8.11.8 Small tanks intended to be filled directly from a shore fuel line may have a vent pipe of minimum inside diameter of 11 mm if the filling pipe runs directly and near vertically to the top of the tank and has a minimum inside diameter of at least 32 mm (solid pipe) or 38 mm (hose).

8.11.9 Any fuel vent pipe opening shall terminate at least 400 mm from any opening into the interior of the **vessel**.

## **8.12 Fuel tanks**

8.12.1 All fuel tanks shall be constructed and installed to an appropriate **standard**. See **MIN XXX**.

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<sup>21</sup> Mitigations could include the use of double-skinned pipes, shielding, insulation of hot surfaces, proximity and protection of electrical apparatus, anti-vibration measures and fuel oil mist detection or a combination of these measures.



- 8.12.2 All fuel tanks shall be constructed of a fuel and corrosion resistant material.
- 8.12.3 A fuel tank shall be protected against the effect of fire in the **machinery space**. Where a **machinery space** boundary is fitted, the fuel tank(s) shall be of the same fire-resistant standard as the **machinery space** boundary.
- 8.12.4 A rigid aluminium fuel tank(s) shall not be fitted within a **machinery space(s)** or form part of the **machinery space** boundary.
- 8.12.5 A rigid **plastic** fuel tank shall not contribute to any additional fire risks, be fitted in the **machinery space** and shall not form part of a **machinery space** boundaries.
- 8.12.6 A fuel tank(s) shall not be fitted in an area containing a **heating appliance(s)**.
- 8.12.7 Spaces containing a fuel tank shall be ventilated. Where a petrol tank(s) is fitted, it shall meet the ventilation requirements of ISO 11105. See MIN XXX.
- 8.12.8 A petrol tank(s) or a spare portable petrol container(s) (see section [8.12](#)) shall be protected from any damage, secured to the **weather deck** and capable of being quickly released.
- 8.12.9 A petrol tank(s) must not be filled or decanted whilst the **vessel** is **at sea**.

### **8.13 Stowage of Spare Petrol**

- 8.13.1 Where it is essential to carry spare petrol for the use of the **vessel** and its equipment it shall not be classed as **cargo**.
- 8.13.2 Spare petrol shall be:
- .1 carried in a maximum of two 5 litre portable containers; and
  - .2 stowed securely on the **weather deck** where they can readily be jettisoned and where any spillage drains directly overboard; and
  - .3 in an approved and clearly marked containers which are ventilated.
- 8.13.3 Where it is impracticable to meet the petrol stowage requirements of [8.12.2.2](#) a vessel shall be permitted to carry a maximum of one 5 litre container of petrol stowed in a deck locker which meets the requirements of [15.4.2](#).

### **8.14 Pipes Carrying Flammable Liquids or Gases through Accommodation Spaces**

- 8.14.1 Pipes carrying flammable liquids or gases shall not pass through **accommodation spaces**. Where this is unavoidable it may be permitted on a case by case basis subject to approval of the **Certifying Authority** provided that the following are met:
- .1 pipes shall be constructed of seamless steel, and shall be as short as possible; and

- .2 pipes shall not have joints. Where this is unavoidable due to the design of the system:
- .1 for pipes over 25 mm OD joints shall be fully welded sleeves;
  - .2 for pipes under 25 mm OD joints shall be made of steel compression fittings approved for the intended service and the number of compression couplings shall be kept to a minimum; and
  - .3 pipes which may be subject to a pressure head shall be provided with either a means of isolation from the tank(s) producing the pressure head or means of stopping supply pumps. The means of isolation or pump stops shall be easily accessible from locations both within and outside the **accommodation space**; and
  - .4 pumps, piping and associated equipment located below a false floor or deck shall be separated from the **accommodation space** by a vapour-proof enclosure or cofferdam. The enclosure or cofferdam shall be suitably ventilated and drained with leakage indication, fitted to the drain, capable of providing an audible alarm. Where mechanical ventilation is used Ex-rated<sup>22</sup> fans shall be installed; and
  - .5 Hydrocarbon (HC) gas/vapour detection shall be fitted within the vapour-proof enclosure or cofferdam; and
  - .6 Pipes located behind linings may be permitted provided they are fitted within a vapour-proof enclosure; and
  - .7 Pipe systems shall be tested at 1.5 times the working pressure or 3.5 bar whichever is the greater, subject to the satisfaction of the **Certifying Authority**; and
  - .8 Where pipes pass through bulkheads, decks or deckheads these penetrations shall be sealed with an approved bulkhead gland and shall be insulated in accordance with the required bulkhead division or class.

## 8.15 Noise and Vibrations

- 8.15.1 A **vessel owner/operator** shall meet the requirements for the protection of all persons on board from the risks related to exposure to noise at work as detailed in [the Merchant Shipping and Fishing Vessels \(Control of Noise at Work\) Regulations 2007](#). See **MIN XXX**.

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<sup>22</sup> Ex is the mark for ATEX certified electrical equipment for explosive atmospheres. The ATEX directive consists of two EU directives describing what equipment and work environment is allowed in an environment with an explosive atmosphere. The ATEX 95 equipment directive 94/9/EC, Equipment and protective systems intended for use in potentially explosive atmospheres; 94/9/EC is replaced by ATEX directive 2014/34/EU from 20 April 2016.

8.15.2

A **vessel owner/operator** shall meet the requirements for the protection of all persons on board from the risks related to exposure to vibration at work as detailed in [the Merchant Shipping and Fishing Vessel \(Control of Vibration at Work\) Regulations 2007](#). See **MIN XXX**.

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## 9 Electrical Installations

The purpose of this section is to set out minimum requirements to satisfy appropriate national or international **standards** to ensure safety of marine electrical installations. Requirements for **lithium-ion batteries** used as a source of power for propulsion are detailed in Annex 1.

### 9.1 General

9.1.1 Electrical equipment and their installation shall be suitable for use in a marine environment and meet recognised **standard(s)** as listed in **MIN XXX**.

9.1.2 The electrical equipment and installations shall be earthed and bonded or such that the **vessel** and any persons on board are protected against electrical hazards.

9.1.3 All exposed non-current carrying conductive parts of both fixed and portable electrical equipment which are liable under fault conditions to become live (including similar parts inside non-metallic enclosures) are to be connected to earth unless the equipment is:

- .1 supplied at a voltage not exceeding 50 V direct current or 50 V root mean square between conductors, achieved without the use of auto-transformers, or;
- .2 supplied at a voltage not exceeding 250 V by safety isolating transformers supplying only one consuming device, or;
- .3 constructed in accordance with the principle of double insulation (Class II) as per IEC 61440 or equivalent insulation intended to prevent the appearance of dangerous voltages on its accessible parts due to a fault in the basic insulation.

### 9.2 Lighting

9.2.1 An electric lighting system shall be installed which is capable of supplying an appropriate level of light to all enclosed **accommodation** and working **spaces**.

9.2.2 For lighting distribution in **accommodation** and working **spaces**, the lighting shall be distributed on different final circuits to maintain a level of lighting in case of failure of a single distribution circuit.

9.2.3 The design and placement of lighting shall preserve the night vision of Navigation Watchkeepers.

9.2.4 For **vessels** carrying out deck operations at night, an appropriate level of light shall be provided for those areas.

### 9.3 Batteries

#### 9.3.1 Battery System Requirements

9.3.1.1 Battery systems, including any back up battery system, shall be provided to satisfy the designed electrical requirements of the **vessel**.

- 9.3.1.2 The battery terminals shall be protected from contact with metallic objects.
- 9.3.1.3 All battery charging systems shall be fitted with circuitry to prevent overcharging and over-voltage, and shall have a charge indicator.
- 9.3.1.4 All back up batteries shall be fully charged prior to departure<sup>23</sup>.
- 9.3.1.5 A battery disconnect switch shall be provided to simultaneously isolate all non-earthed poles.

### **9.3.2 Battery Stowage**

- 9.3.2.1 Batteries shall be firmly secured to avoid movement and located in a position not likely to flood in normal operations or in the event of minor damage.
- 9.3.2.2 Ventilated batteries shall be installed with drip trays to collect any electrolyte spillage.
- 9.3.2.3 Where there is a possibility of dangerous gases occurring within the battery stowage space, the space shall be ventilated. Where ventilated, air shall be supplied at a level below the top of the batteries, and shall be exhausted from the highest point of the space directly to the open air. The system shall be designed in a way that dangerous gases may not re-enter the battery stowage space.
- 9.3.2.4 Installation and ventilation arrangements shall follow national and recognised Classification Society **standards** appropriate for battery installations.

### **9.4 Electrical Cables**

- 9.4.1 Electrical cables shall be located such that they:
- .1 are protected from degradation, and
  - .2 avoid contact with damaging surfaces, and
  - .3 are protected from chafe where they pass through a part of the hull structure or storage space, and
  - .4 minimise electromagnetic interference (EMI).

### **9.5 Hazardous Spaces**

- 9.5.1 Where electrical equipment is installed in a space where there is a risk of explosion, it must comply with a recognised **standard** for prevention of ignition of a flammable atmosphere (see section [15.6.4](#)).
- 9.5.2 Lighting in **hazardous spaces** shall have two or more sub-circuits.
- 9.5.3 Where electric cables pass through bulkheads or decks separating **hazardous spaces** and non-**hazardous spaces** the integrity of the bulkhead or deck shall not be compromised.

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<sup>23</sup> For specific requirements for back up batteries, see sections [8](#), [17](#), [19](#).

9.5.4 Electric cables shall not, where practicable, pass through **hazardous spaces** except when powering equipment installed within the space.

## **9.6 Lightning Protection**

9.6.1 Where a considerable risk of lightning strike is identified, the **vessel** shall be fitted with suitable lightning strike protection. See **MIN XXX**.

## **9.7 Emergency Power Supplies**

### **9.7.1 Emergency Lighting**

9.7.1.1 Where a **vessel's** general lighting is provided by a centralised electrical system, an alternative source of lighting shall be provided by either an emergency power supply or an independent light source.

9.7.1.2 The alternative source of lighting required by section [9.7.1.1](#) shall be sufficient to facilitate continued safe operation of the **vessel** during emergency situations, to enable the safe mustering and evacuation of all persons on board and to enable the rescue of person(s) from the water.

### **9.7.2 Emergency Radio**

9.7.2.1 Emergency power supplies to fixed radio equipment shall be designed and installed to supply the equipment for a minimum of 3 hours in the event of failure of the main electrical supply.

### **9.7.3 Navigational Supplies**

9.7.3.1 Emergency power supplies shall be readily available to supply navigation lights and navigation equipment for a minimum of 3 hours.

## 10 Steering, Rudder and Propulsion Systems

The purpose of this section is to set out requirements for means of steering and manoeuvring.

### 10.1 General Requirements

10.1.1 A **vessel** shall be capable of manoeuvring from the **control position(s)** by operation of:

- .1 a steering system;
- .2 a rudder system;
- .3 a **propulsion system**; or
- .4 any combination of these.

10.1.2 Sufficient horizontal and vertical arcs of visibility shall be provided from the **control position** in all conditions of loading so as to avoid impeding the maintenance of a proper lookout as required by the International Regulations for the Prevention of Collisions at Sea. **Remotely Operated Unmanned Vessels** shall have a proper lookout provided by visual and auditory readouts from cameras and sensors (including radar, where fitted) which are replicated at the **Remote Operation Centre**.

10.1.3 A **vessel owner/operator** and all **crew** shall be aware of and respond appropriately to the dangers of interaction between vessels. See **MIN XXX**.

### 10.2 Steering System

10.2.1 The steering system may either be direct or remote control. A remote control system shall be a means that can control both the **vessel's** heading and propulsion.

10.2.2 Primary steering systems shall comply with an appropriate **standard** for small craft steering systems (see **MIN XXX**).

10.2.3 When the steering system is remote control, arrangements shall be made for emergency steering in the event of failure of the primary steering system<sup>24</sup>.

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<sup>24</sup> When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control. Arrangements may take the form of the following, and be to the satisfaction of the **Certifying Authority**:

- .1 a tiller to fit the head of the rudder stock; or
- .2 a rod attachment which may be fitted to a Z-drive framework; or
- .3 a steering oar; or
- .4 in the case of twin screw vessels manipulation of power distribution between the drives. In the case of twin stern-drive arrangements, means shall be provided to lock the drives in the midships position; or
- .5 in the case of a **vessel** fitted with outboard engine(s), a means to control the direction of thrust.

The emergency steering shall be demonstrated in the form of an emergency drill to the approval of the **Certifying Authority**.

- 10.2.4 If emergency steering is totally impractical the **vessel** shall be restricted to **area category of operation 4, 5 or 6**. Alternative safety measures and/or procedures to deal with any primary steering failure situation shall be subject to approval of the **Certifying Authority**.

### **10.3 Rudder System**

- 10.3.1 Where fitted, the design, construction and fittings of a rudder system shall be to an appropriate **standard** and to the approval of the **Certifying Authority**.

- 10.3.2 The rudder system shall comprise of the rudder blade, the rudder stock and the methods of attachment to the hull or steering system.

### **10.4 Propulsion System**

- 10.4.1 The design, construction and fittings of the **propulsion system** shall be to an appropriate **standard** and to the approval of the **Certifying Authority**.

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## 11 Bilge Pumping

The purpose of this section is to set out requirements for **vessel** bilge pumping systems and associated piping for the **efficient** drainage of bilge water, and drainage of flooded spaces. It shall be noted that fitted bilge pump system is not to be relied upon to deal with a large ingress of water into a space or **compartment**, but rather to deal with leakages.

### 11.1 Bilge Pumping System Requirements

- 11.1.1 A bilge pump shall be permanently installed, self-priming and capable of being operated with all accessways closed.
- 11.1.2 A bilge suction line shall be fitted with an **efficient** strum box to protect from obstruction.
- 11.1.3 A bilge suction valve of a permanently installed bilge pump shall be of a non-return type.
- 11.1.4 Bilge pumps shall not be connected to **cockpit** drains and shall not discharge into a closed **cockpit**.
- 11.1.5 To prevent pollution, any space containing potential pollutants shall not be fitted with auto-start bilge pumps.
- 11.1.6 All spaces where bilge water is likely to occur shall be able to be drained when the **vessel** is heeled to an angle of 10 degrees.
- 11.1.7 The **Certifying Authority** may permit an alternative means of providing **efficient** bilge pumping other than those described in this text, provided that full information is submitted to and approved by the **Certifying Authority**.

### 11.2 Bilge Pumping Carriage Requirements

#### 11.2.1 All vessels

- 11.2.1.1 A vessel shall have at least one hand bilge pump and one engine driven or independently powered bilge pump, which shall be situated in each separate space. If two powered pumps are provided, they shall be powered by independent sources. All pumped spaces shall be capable of being drained after the failure of one pump.
- 11.2.1.2 **Open boats, rigid inflatable boats, inflatable boats and boats fitted with a buoyant collar** of less than 6 metres in **length** operating in **area category of operation 6** are not required to comply with [11.2.1.1](#) and may instead carry a minimum of one hand powered bilge pump, one hand bailer, or one bucket of minimum capacity 10 litres.

#### 11.2.2 Vessels in Area Categories of Operation 0, 1 or 2

- 11.2.2.1 The bilge pumps shall have a combined capacity of not less than 210 litres per minute. A powered pump shall have a capacity not less than 140 litres per minute

### 11.2.3 Vessels in Area Categories of Operation 3, 4, 5 or 6

11.2.3.1 The bilge pumps shall have a combined capacity of not less than 140 litres per minute.

11.2.3.2 **Open boats, rigid inflatable boats, inflatable boats and boats fitted with a buoyant collar** of 6 metres in **length** and over, shall carry a hand bailer, or a bucket of minimum capacity of 10 litres, in addition to the bilge pumping requirements in section [11.2.1.1](#).

### 11.3 Bilge Alarms

11.3.1 A bilge alarm shall be fitted:

- .1 in any **watertight compartment** containing propulsion machinery; and
- .2 in any other **compartment** where there is a risk of accumulation of bilge water, or where the ingress of water may not be readily seen.

11.3.2 Where a bilge alarm is fitted it shall be audible from the **control position(s)** and be capable of being heard in all anticipated weather and operational conditions. For all manned vessels where more than one bilge alarm is fitted, a visual alarm indication shall also be visible at the **control position(s)**.

11.3.3 All **Remotely Operated Unmanned Vessels** shall have a visual alarm indication replicated at the **control position(s)** for all bilge alarms fitted.

## 12 Stability

The purpose of this section is to set out the stability requirements for all **vessels**.

**Vessels** not required to be issued with an approved Stability Information Booklet shall refer to [12.1](#) and [12A](#).

**Vessels** required to be issued with an approved Stability Information Booklet shall refer to [12.1](#) and [12B](#).

### 12.1 All Vessels

#### 12.1.1 General

12.1.1.1 For the purposes of this **Code**:

- .1 a person shall weigh a minimum of 82.5 kg;
- .2 where a person weighs less than 82.5 kg, additional weight shall be carried so the total weight of person and weight is a minimum of 82.5 kg;
- .3 where a weight is used in lieu of a person, this shall weigh a minimum of 82.5 kg.

12.1.1.2 The following **vessels** are required to be provided with a Stability Information Booklet which is approved by the **Certifying Authority** (see section [12B](#)):

- .1 **vessels** operating in **area category of operation** 0 or 1;
- .2 **vessels** carrying 16 or more persons;
- .3 **vessels** carrying **cargo** exceeding 1,000 kg or where the **cargo** element may create a free surface effect which may affect stability of the **vessel**;
- .4 **vessels** fitted with a **lifting device(s)** including **vessels** engaged in dredging activities (see [12B.4](#));
- .5 **vessels towing** where the displacement of the towed vessel or floating object is greater than twice the displacement of the **towing vessel**, except as provided for by [26.1.1.2](#). See section [12B.5](#) and [26](#); or
- .6 seagoing **pilot boats** (see [section 27](#)).

For guidance on the content and structure of a Stability Information Booklet and the stability assessment see **MIN XXX**.

12.1.1.3 A **vessel** not required to be provided with a Stability Information Booklet shall meet the requirements of section [12A](#) as appropriate or may

alternatively comply with the requirements for **vessels** required to be issued with a Stability Information Booklet detailed in section [12B](#).

- 12.1.1.4 A **vessel** operating in area(s) where there is a risk of icing shall either be provided with a Stability Information Booklet including conditions with icing allowances approved by the **Certifying Authority**, or avoid operating in this area(s) in winter (1 November to 30 April inclusive for northern areas, 15 April to 15 October for southern areas).

A **vessel** which is not approved to operate in area(s) where there is a risk of icing shall have this noted in its approved Stability Information Booklet and **Certificate**.

- 12.1.1.5 Where a **vessel** has been modified from the condition that was subject to the previous stability assessment, the **vessel owner/operator** shall inform the **Certifying Authority** who may undertake a lightship or **freeboard** check. If the lightship or **freeboard** is significantly different, then the **Certifying Authority** shall conduct a full stability analysis.

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## 12A Vessels not required to be issued with an approved Stability Information Booklet

### 12A.1 General

12A.1.1 Tests and calculations of **vessel** stability shall be conducted by a **competent person(s)** and be approved to the satisfaction of the **Certifying Authority**.

12A.1.2 A detailed record of test and calculation procedure(s) and the approved results shall be kept by the **Certifying Authority**.

### 12A.2 Intact Stability: Vessels Complying with Simplified Stability Assessment

12A.2.1 A **vessel** shall be tested in the fully loaded condition(s)<sup>25</sup> which shall correspond to the assigned **freeboard**. Testing shall ascertain the resulting angle of heel and position of the waterline when the maximum number of persons the **vessel** is certificated to carry are assembled along one side of the **vessel** (the helmsman may be assumed to be at the helm).

12A.2.2 A **vessel** shall be considered to have an acceptable standard of stability if:

.1 the angle of heel does not exceed 7°, or

.2 the angle of heel shall not exceed 10° where it is not possible to comply with [12A.2.2.1](#), provided the **freeboard** in the heeled condition is in accordance with the requirements of [Table 13.1.1](#).

12A.2.3 In addition, for **decked vessels** the **freeboard** to deck shall not be less than 75 mm at any point.

12A.2.4 For **vessels** over 15 metres in **length** the heeling moment applied during the test required in [12A.2.1](#) shall be calculated using the following formula:

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

where:

HM = No. of persons x weight per person (kg) x distance from CL (m)  
θ = heel angle (degrees) obtained from the test defined in [12A.2.1](#) and [12A.2.2](#)

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<sup>25</sup> For vessels carrying a combination of **passengers, industrial personnel**, activity related equipment and **cargo**, for which the **cargo** element does not exceed 1000 kg the test shall be carried out with the **maximum permissible weight**, and additionally with **passenger plus industrial personnel** weight only. The **cargo** and activity related equipment shall be assumed to be retained at its normal stowage position.

$\Delta$  = full displacement including **passengers, industrial personnel, crew, equipment and cargo** (kg)

Note: Weight shall be taken as per [12.1.1.1](#).

**Cargo** weight must not exceed 1,000 kg.

A **vessel** shall attain a value of initial GM not less than 0.5 m where displacement of the **vessel** is estimated, or 0.35 m where the displacement of the **vessel** is known and verified by the **Certifying Authority**.

Where displacement of the **vessel** is estimated:

$$\Delta = C_B \times LOA \times Moulded\ Beam \times Load\ Draught \times 1.025$$

The **Certifying Authority** shall approve the value of  $C_B$  used.<sup>26</sup>

12A.2.5 **Vessels** complying with any option of section 5.3 of ISO 12217 Part 1 (see **MIN XXX**) may as an alternative, after verification of the stability assessment by the **Certifying Authority**, be assigned an **area category of operation** in accordance with the following [Table 12A.2.5](#):

Table 12A.2.5 – Permitted Areas of Operation and ISO 12217 Design Categories

Permitted Area of Operation	MCA Area Category of Operation	ISO 12217 Design Category
Up to 60 miles from a safe haven	2	B
Up to 20 miles from a safe haven	3	B
Up to 20 miles from a safe haven in favourable weather and daylight	4	C
Up to 3 miles from a point of departure in favourable weather	5	C
Up to 3 miles from a point of departure in favourable weather and daylight	6	C

12A.2.6 The **maximum permissible weight** derived from the test(s) conducted shall be recorded on the **Certificate**.

<sup>26</sup> In the case of doubt  $C_B$  of 0.9 can be used (for pontoons etc.) or 0.67 for others.

### 12A.3 Stability and Survivability of Open Boats, Inflatable Boats, Rigid Inflatable Boats or Boats with a Buoyant Collar

Section 12A.3 applies to **open boats, inflatable boats, rigid inflatable boats and boats with a buoyant collar** which are not completely in accordance with a standard production type.<sup>27</sup>

#### 12A.3.1 General

12A.3.1.1 The tests detailed in [12A.3](#) shall be carried out on a **vessel** floating in still water.

12A.3.1.2 The **maximum permissible weight** derived from the test(s) conducted shall be recorded on the **Certificate**.

12A.3.1.3 **Vessel** loading shall be restricted by the **maximum permissible weight**. For the purpose of these tests attention shall be paid to any activity related equipment where additional weight may be significant.

#### 12A.3.2 Stability Test Criteria

12A.3.2.1 The stability tests detailed in [12A.3.3](#) – [12A.3.5](#) shall be carried out with all the **vessel's** equipment, fuel, **cargo**, activity related equipment and the maximum number of persons the **vessel** is certificated to carry on board. The engine, equipment and cargo may be replaced by an equivalent mass.

12A.3.2.2 Testing shall be carried out with a maximum number of persons the **vessel** is certificated to carry assembled on one side of the **vessel** with half this number seated on the buoyancy tube or gunwale.

This test shall be repeated with the persons seated on the other side and at each end of the **vessel**.

The **cargo** or equivalent alternative mass shall be retained at its normal stowage position.

12A.3.2.3 The **freeboard** to the top of the buoyancy tube or gunwale shall be recorded and shall be positive around the entire periphery of the **vessel**.

#### 12A.3.3 Damage Tests

12A.3.3.1 The damage test(s) shall be carried out with all the **vessel's** equipment, fuel, **cargo**, activity related equipment and the maximum number of persons the **vessel** is certificated to carry. The engine, equipment and **cargo** may be replaced by an equivalent mass.

12A.3.3.2 The damage test(s) shall be carried out:

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<sup>27</sup> Completely in accordance with a standard production means where the **Certifying Authority** is provided with a certificate of approval for the tests detailed in [12A.3](#).

- .1 with forward buoyancy **compartment** deflated (both sides where appropriate);
- .2 with the entire buoyancy **compartment** from the centre line at the stem to the transom on one side deflated.

12A.3.3.3 The tests will be successful if, for each of the conditions of simulated damage above, the maximum number of persons the **vessel** is certificated to carry are supported within **vessel**, and the requirements of [12A.3.2.3](#) are met.

12A.3.3.4 A **boat fitted with a buoyant collar** is not required to undertake the test in [12A.3.3.2](#).

#### **12A.3.4 Swamp Test**

12A.3.4.1 The swamp test shall be carried out by fully swamping the **vessel** and meeting the following carriage requirements:

- .1 all the **vessel's** equipment; and
- .2 a full fuel tank; and
- .3 a mass equivalent to its engine; and
- .4 **cargo**; and
- .5 activity related equipment; and
- .6 the maximum number of persons the **vessel** is certificated to carry.

During the swamp test the **vessel** shall have a reserve buoyancy of 10%.

12A.3.4.2 During the swamp test the **vessel** shall not be seriously deformed subject to the satisfaction of the **Authorised Person**.

12A.3.4.3 An adequate means of draining the **vessel** shall be demonstrated at the conclusion of this test to the satisfaction of the **Authorised Person**.

12A.3.4.4 As an alternative to the test in [12A.3.4.1](#) it may be demonstrated by calculations to the satisfaction of the **Certifying Authority** that the **vessel** meets the requirements of [12A.3.4.1](#)– [12A.3.4.3](#).

#### **12A.3.5 Person Recovery Stability Test**

12A.3.5.1 The person recovery stability test is designed to test the stability of the **vessel** and is not a test of the person overboard recovery systems and procedures for which there are more appropriate tests (see [section 14.7](#)). During the person recovery stability test two persons shall recover a third person or a mannequin of equivalent weight from the water into the **vessel** under the following conditions:



- .1 the third person shall feign to be unconscious and have their back towards the **vessel** or, the mannequin shall be positioned such that the back is towards the **vessel**; and
- .2 each person involved shall wear an approved lifejacket; and
- .3 where the water temperature requires, the third person shall wear suitable anti-exposure clothing (see [14.5](#)); and
- .4 the **vessel** shall remain stable and not capsize.

**12A.4 Stability of Vessels Engaged in Towing where the displacement of the towed object is less than or equal to twice the displacement of the towing vessel**

All **vessels** engaged in **towing** where the displacement of the towed object is less than or equal to twice the displacement of the **towing vessel** shall comply with requirements of [12A.4](#) in addition to applicable requirements of [12A.1](#)- [12A.3](#) (see [Table 12A.2.5](#)).

12A.4.1 The danger to safety of deck edge immersion makes an **open boat** (other than those assessed in accordance with [section 5.1.5](#)) unsuitable for **towing** other vessels or floating objects other than side by side. **Open boats** may only tow vessels more than twice their displacement side by side in harbour areas and in **area categories of operation** 5 and 6, in **favourable weather**.

12A.4.2 The stability of a **vessel** engaged in **towing** where the displacement of the towed object is less than twice the displacement of the **towing vessel** shall be considered satisfactory where the following conditions are met:

- .1 in the normal working condition, the **freeboard** is such that the deck edge is not immersed at an angle of less than 10°; and
- .2 the heel test shall have the following result:

$$\frac{wd}{LBT\rho\tan(\theta)} \geq \frac{0.076 K}{f}$$

Where:

- K = 1.524 + 0.08L - 0.45r
- L = Length of vessel between perpendiculars (metres)
- B = Beam of vessel
- T = Draught of vessel in fully loaded condition
- r = Length of radial arm of **towing** hook (metres) (distance from **towing** hook to point of attachment on the **towing** vessel)
- f = **Freeboard** (metres)
- ρ = Density of sea water θ = Heel angle from heel test
- w = Weight moved for heel test
- d = transverse distance moved by weight for heel test.

.3 the heel test shall be carried out in small increments in both directions. The average resultant heel angle shall be noted for the average heeling moment wd.

12A.4.3 Where the calculation detailed in [12A.4.2](#) is not appropriate, a more comprehensive stability analysis shall be completed using appropriate criteria to satisfy the **vessel owner/operator's** responsibility to provide a safe working environment.

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## 12B Vessels required to be issued with an approved Stability Information Booklet

### 12B.1 Damage Survivability

[Section 12B.1](#) applies to all **vessels** carrying 16 or more persons regardless of the certificated **area category of operation**, and those vessels operating in **area category of operation 0** and 1 carrying 7 or more persons, subject to minimum safe manning levels being agreed by the **Certifying Authority**.

#### 12B.1.1 General

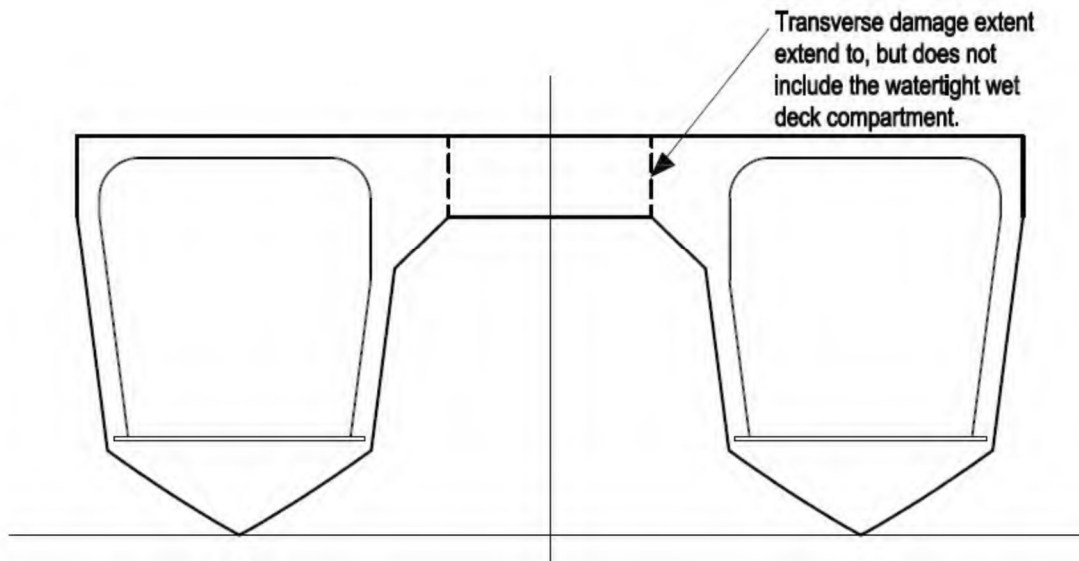
12B.1.1.1 In assessing survivability, the following standard permeabilities shall be applied:

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

12B.1.1.2 A **vessel** shall meet the damage stability criteria for one of two methods:

- .1 Option 1 (see [12B.1.2](#)) considers minor hull damage scenarios with limited equilibrium trim and heel angles after damage; or
- .2 Option 2 (see [12B.1.3](#)) considers minimum length single **compartment** damage scenarios with more onerous residual stability, combined with increased allowable equilibrium angles after damage.

12B.1.1.3 Other methods of assessing survivability may be considered on a case-by-case basis, subject to approval by the **Certifying Authority**.



12B.1.1.4 **Multihull vessels** shall be fitted with **engine spaces** that are separated by a **watertight** bulkhead.

#### 12B.1.2 **Damaged Stability, Option 1**

12B.1.2.1 A **vessel** shall be designed to satisfy at a minimum the following residual stability criteria where minor hull damage or failure of any one hull fitting in any one **watertight compartment** has occurred:

- .1 the angle of equilibrium does not exceed 7 degrees from the upright; and
- .2 the resulting righting lever curve has a range to the downflooding angle of at least 15 degrees beyond the angle of equilibrium; and
- .3 the maximum righting lever within that range is not less than 100 mm; and
- .4 the area under the curve is not less than 0.015 metre radians; and
- .5 the **vessel** shall not float at a waterline less than 75 mm from the **weather deck** at any point.

12B.1.2.2 Residual stability criteria detailed in [12B.1.2.1](#) may be achieved by fitting watertight subdivision(s) or alternative methods subject to the satisfaction of the **Certifying Authority**. Any damage to a **watertight** subdivision shall be assumed to be major.

#### 12B.1.3 **Damaged Stability, Option 2**

Any **weathertight** doors or openings leading from undamaged accommodation or **machinery spaces** to the **weather deck** shall be classed as downflooding points.

### 12B.1.3.1 Damaged Stability where one compartment is flooded

12B.1.3.1.1 Damaged stability shall be calculated assuming one **compartment** is flooded. The extent of damage for the purpose of these calculations shall include the following:

- .1 A damage length not exceeding 10% **Length**. The damage length need not apply within the forepeak and aftpeak **compartment(s)**. Where the distance between two transverse **watertight** bulkheads is less than the damage length, one or more bulkheads shall be disregarded in the damage stability calculations so that the **compartment** length considered is equal or above the damage length;
- .2 The transverse extent of damage for monohulls shall be **up to** and including the centre line of the **vessel**.  
  
A catamaran shall be considered to have damaged the full extent of one hull but does not include the **watertight** wet deck **compartment** provided the two hulls are totally independent and do not have cross connections.  
  
A trimaran shall be considered to have damaged the wing and centre **compartments up to** the centre line of the **vessel**;
- .3 The vertical extent of damage shall be assumed to be the full vertical extent of the **vessel**;
- .4 The shape of the damage to the **vessel** shall be assumed to be a rectangular block.

**Watertight compartments** which meet the following criteria do not need to be considered in the damaged stability calculations:

- .1 aft of the transom and does not form part of the hull length; and
- .2 does not extend below the design waterline (such as overhangs and appendages).

12B.1.3.1.2 Where damage of lesser extent than considered in [12B.1.3.1.1](#) could result in equivalent or more severe impact on **vessel's** stability this shall be included within damaged stability calculations.

### 12B.1.3.2 Damaged Stability where all the forward compartments are flooded

[Section 12B.1.3.2](#) only applies to **multihull vessels**.

12B.1.3.2.1 Damaged stability shall be calculated assuming all forward **compartments** of each hull are damaged. In the damaged condition, the residual stability and damaged waterline shall be such that:

- .1 A damage length not exceeding 5% **Length** of the **compartments** from the forward extremity of the **watertight** hull measured on the **vessel's** centre line;

- .2 the angle of equilibrium (combined heel and trim) does not exceed 15 degrees from the upright;
- .3 the resulting righting lever curve (GZ) shall have a range to the downflooding angle of at least 20 degrees beyond the angle of equilibrium;
- .4 the maximum GZ within the range to the downflooding angle shall not be less than 200 mm, and
- .5 the area under the GZ shall not be less than 0.045 metre radians;
- .6 the final equilibrium waterline shall be below the lowest point of any opening which is not closed by an approved **watertight** closure. This includes air pipes, hatch covers, doors and any other **weathertight** closure.

12B.1.3.2.2 The calculated damage conditions shall not cause the **vessel** to float at a waterline less than 75 mm from the **weather deck**. This requirement may be lessened provided that all of the following are met subject to approval by the **Administration**:

- .1 the immersed portion of the **weather deck** is not a storage area for life-saving appliances; and
- .2 the immersed portion of the **weather deck** is not part of an assembly station, evacuation point or evacuation route; and
- .3 no more than 10% of the length of the deck edge on the damaged side is immersed; and
- .4 the negative **freeboard** measured from the deck edge is limited to a maximum of 300 mm.

## 12.B.2 Vessels Required to Have Approved Damage Stability Calculations

12.B.2.1 A **vessel owner/operator** shall ensure that the damage stability calculation(s):

- .1 are prepared by a **competent person(s)**; and
- .2 use appropriate methods and procedures for calculations; and
- .3 are included in the Stability Information Booklet; and
- .4 are in accordance with the requirements of [section 13.3](#).

12.B.2.2 A **vessel owner/operator** shall either submit two hard copies or one electronic copy, as agreed, of the damage stability calculations to the **Certifying Authority** for approval.

12.B.2.3 Where the **Certifying Authority** is satisfied that the damage stability methods meet the requirements of [section 12B.1](#), it shall:

- .1 issue a formal letter to the **vessel** owner(s); and

- .2 return a marked copy of the damage stability calculations to the **vessel** owner(s) with which includes the name of the **Certifying Authority**, the approval date and the words 'RESULTS APPROVED'.

### **12B.3 Intact Stability**

12B.3.1 The lightship weight, vertical centre of gravity (VCG) and longitudinal centre of gravity (LCG) of a monohull **vessel** shall be determined from the results of an inclining experiment. There shall be a minimum of 8 weight movements. The use of an electronic inclinometer<sup>28</sup> is an acceptable alternative to the second pendulum provided it is calibrated and readings are recorded.

Guidelines for the procedure on carrying out of an inclining experiment can be found in the Instructions for [the Guidance of Surveyors on Load Line \(MSIS 1\), Part 6](#). Where it is impracticable to adopt the procedures given in [MSIS 1](#) any deviations to the number of pendulums or repetitions of the inclining experiment shall be agreed by the **Certifying Authority**.

12B.3.2 An inclining experiment may not produce satisfactory results for **vessels** where the VCG is less than one third of the metacentric height (GM) over the range of standard operating conditions (such as multihulls). In such cases the LCG shall be obtained by a displacement check or by weighing with two gauges. The lightship VCG may be obtained by an accurate weight estimate calculation with a suitable margin added. In no case shall the lightship VCG be taken below main deck level. Details of the estimated lightship weight, LCG and VCG shall be submitted to the **Certifying Authority** at an early stage for verification.

12B.3.3 The lightship weight may include a margin for growth at the discretion of the **Certifying Authority**. A margin for growth may only comprise **up to 5%** of the lightship weight at the LCG and vertical centre of the **weather deck** amidships or the lightship VCG, whichever is higher. The margin for growth shall not be used in practice to increase maximum **cargo**-deadweight.

12B.3.4 Curves of static stability (GZ curves) shall be produced for:

- .1 Loaded departure, 100% consumables;
- .2 Loaded arrival, 10% consumables;
- .3 Anticipated service conditions;
- .4 Conditions involving lifting appliances (where appropriate).

12B.3.5 Where a **vessel** is permitted to carry **cargo** exceeding 1,000 kg simplified stability information in the form of maximum VCG data shall be provided including a worked example.

12B.3.6 Maximum free surface moments shall be included within the loaded departure condition, and as a minimum, factored according to tank percentage fill for all other conditions.

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<sup>28</sup> Where an electronic device is used it shall be demonstrable that the output resolution and tolerance is suitable for the application.

12B.3.7 Buoyant structures which are fixed to superstructures, **deckhouse**, masts or rigging shall not be included when calculating the range of positive stability.

12B.3.8 The curves of static stability for the loaded conditions shall meet the following criteria:

- .1 the area under the righting lever curve (GZ curve) shall be not less than 0.055 metre-radians **up to** 30 degrees angle of heel and not less than 0.09 metre-radians **up to** 40 degrees angle of heel, or the angle of downflooding if this angle is less;
- .2 the area under the GZ curve between the angles of heel of 30 and 40 degrees or between 30 degrees and the angle of downflooding if this less than 40 degrees, shall be not less than 0.03 metre-radians;
- .3 GZ shall be at least 0.20 metres at an angle of heel equal to or greater than 30 degrees;
- .4 the maximum GZ shall occur at an angle of heel of not less than 25 degrees;
- .5 after correction for free surface effects the initial metacentric height ( $GM_o$ ) shall not be less than 0.35 metres.

12B.3.9 Where a **vessel** with broad beam in relation to depth (such as a catamaran or multihull) does not meet the stability criteria given in [section 12B.3.8](#), it shall meet the following criteria:

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

$\theta_{GZmax}$  is the angle of heel in degrees at which the righting lever curve reaches its maximum.

When the maximum GZ occurs between  $\theta = 15^\circ$  and  $\theta = 30^\circ$  the required area under GZ **up to**  $\theta_{GZmax}$  shall not be less than:

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

- .2 the area under the righting lever curve (GZ curve) between  $\theta = 30^\circ$  and  $\theta = 40^\circ$  or between  $\theta = 30^\circ$  and the angle of downflooding ( $\theta_f$ ), if this angle is less than  $40^\circ$ , shall not be less than 0.03 metre-radians;
- .3 GZ shall not be less than 0.2 metre at an angle of heel of  $30^\circ$ ;
- .4 the maximum GZ shall occur at an angle of not less than  $15^\circ$ ;
- .5  $GM_o$  shall not be less than 0.35 metre.



- 12B.3.10 For any newly built **vessel** with known differences from a sister ship<sup>29</sup>, a detailed weights and centres calculation to adjust the lead **vessel's** lightship properties shall be carried out.

The lightship properties for the **new vessel** may be assessed by carrying out a lightweight check. The deviation in lightship displacement shall not exceed 2% of the lightship displacement of the sister ship. In addition, the deviation in lightship LCG shall not exceed 1% of the LBP of the sister ship LCG. Where the deviation is within these limits the actual lightship weight and LCG derived from the lightship check shall be used in conjunction with the higher of either the 'lead' sister ship's VCG or the calculated value. Where the deviation exceeds either of these limits, an inclining test shall be carried out.

The requirement for an inclining test may be dispensed with in cases where the margins on intact and damage stability are sufficient to permit minor changes in VCG subject to the satisfaction of the **Certifying Authority**.<sup>30</sup> Where the **vessel's** inclining data are based on a lightship check the inclining report for the 'lead' sister ship shall be included in the stability information.

- 12B.3.11 Barges or pontoons which:

- .1 are non-self-propelled; and
- .2 are un-manned; and
- .3 carrying deck **cargo** only; and
- .4 have a block coefficient of 0.9 or greater; and
- .5 have a breadth to depth ratio of more than 3; and
- .6 have no hatchways in the deck except small openings which are closed with gasketed covers

may use the following stability criteria<sup>31</sup> in lieu of either [12B.3.8](#) or [12B.3.9](#):

- .1 the area under GZ **up to** the angle of maximum GZ shall not be less than 0.08 metre-radians;
- .2 the static angle of heel due to a uniformly distributed wind load of 540 Pa (wind speed 30 m/s) shall not exceed an angle corresponding to half the **freeboard** for the relevant loading condition, where the lever of the wind heeling moment is measured from the centroid of the windage area to half the draught;
- .3 the maximum range of stability shall be at least 20°.

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<sup>29</sup> A sister ship is defined as a **vessel** built under the survey of a **Certifying Authority**, by the same yard from the same plans and within five years of the original **vessel**.

<sup>30</sup> The **vessels** must be similar in all respects and the **Certifying Authority** must be satisfied with the procedure and accuracy of the original inclining. Small **modifications**, for which an accurate assessment by calculation may be taken into account, are acceptable.

<sup>31</sup> **IMO** International Code of Intact Stability, 2008

## 12B.4 Stability of Vessels Fitted with a Lifting Device(s)

- 12B.4.1 Person retrieval system(s), anchor handling equipment, and davits for tenders need not be included in the stability tests of [12B.4](#) where the **Certifying Authority** is satisfied that the device(s) do not have a detrimental effect on the stability of the **vessel**.
- 12B.4.2 A **decked vessel** fitted with a **lifting device(s)** shall meet the requirements of sections [12B.1](#) and/or [12B.3](#) where appropriate.
- 12B.4.3 A **vessel** fitted with a **lifting device(s)** operating at its maximum load and heeling moments<sup>32</sup> shall demonstrate to the satisfaction of the **Certifying Authority**, by practical test or calculation(s), compliance with one of the following:
- .1 the angle of heel of the **vessel** shall not exceed 7° or an angle of heel which results in a minimum **freeboard** to deck edge of 250 mm anywhere on the periphery of the **vessel**, whichever is the lesser angle; or
  - .2 where the angle of heel is greater than 7° but does not exceed 10° the following criteria shall be met:
    - .1 the range of stability from the angle of equilibrium to downflooding or angle of vanishing stability, whichever is the lesser, is equal to or greater than 20°; and
    - .2 the area under the righting lever curve (GZ curve), **up to 40°** from the angle of equilibrium or the downflooding angle, if this is less than 40°, is equal to or greater than 0.1 metre-radians;
    - .3 the minimum **freeboard** to deck edge at side, measured at Aft perpendicular (A.P.) and Forward perpendicular (F.P.) throughout the lifting operations shall not be less than half the assigned **freeboard** to deck edge at side amidships. For **vessels** with less than 1000 mm assigned **freeboard** to deck edge amidships the **freeboard** at A.P. or F.P. at deck edge shall not be less than 500 mm; and
    - .4 the **freeboard** to deck edge anywhere on the periphery of the **vessel** is at least 250 mm; or
    - .5 a **vessel** which is unable to comply with the requirements of section [12B.4.2](#) or if fitted with a lifting system which incorporates either counterbalance weight(s) or counter ballasting may be permitted on a case-by-case basis. Where the **Certifying Authority** considers the **vessel** to have adequate residual stability application for special consideration shall be submitted to the **Administration**.

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<sup>32</sup> Consideration should be given to the operating performance of variable load-radius type **lifting devices**, and the load moment for **lifting devices** situated off the centre line of the **vessel**.

- 12B.4.4 At a minimum the following shall be included in the Stability Information Booklet:
- .1 the maximum permitted load and outreach which satisfy the requirements of section [12B.4](#) or the Safe Working Load (SWL), whichever is the lesser; and
  - .2 means provided to determine the radius of load lifting attachments and SWL; and
  - .3 details of all accessways leading below the **weather deck** which shall be securely closed prior to undertaking lifting operations.

12B.4.5 For **vessels** fitted with stern or bow gantry or fitted with a **lifting device(s)** over the side of the **vessel** the following shall be demonstrated to the satisfaction of the **Certifying Authority**:

- .1 the **lifting device** is not of a variable load radius type; and
- .2 the SWL of the **lifting device** does not exceed 1% of the vessel's displacement, or 200 kg whichever is the greater.

Where the displacement of the **vessel** is not known it may be estimated from the following formula:

$$\Delta = C_B \times LOA \times Moulded\ Beam \times Load\ Draught \times 1.025$$

The **Certifying Authority** shall approve the value of  $C_B$  used<sup>A</sup>; and

- .3 A practical test shall be conducted with **crew** in their operational positions and the gantry or **lifting device** at the maximum rated load and radius. The test shall demonstrate the angle of heel of the **vessel** does not exceed 4° and the **freeboard** to deck edge anywhere on the periphery of the **vessel** is at least 250 mm.

12B.4.6 A **vessel** fitted with a stern or bow gantry or a **lifting device** located on the centre line shall meet the following criteria:

- .1 A **lifting device** or 'A-frame' shall operate at its maximum vertical moment; and
- .2 the range of stability from the angle of equilibrium to downflooding or angle of vanishing stability, whichever is the lesser, is equal to or greater than 15°; and
- .3 the residual area under GZ, **up to 40°** or the downflooding angle, if this is less than 40°, is equal to or greater than 0.10 metre-radians; and
- .4 GM shall be greater than or equal to 0.05 m; and
- .5 the minimum **freeboard** to deck edge at bow, side or transom, measured at A.P. and F.P. throughout the lifting operations shall not be less than half the assigned **freeboard** to deck edge at side amidships or at the transom. For **vessels** with less than 1000 mm

assigned **freeboard** to deck edge amidships the **freeboard** at A.P. or F.P. at deck edge shall not be less than 500 mm; and

- .6 the **freeboard** to deck edge anywhere on the periphery of the vessel is at least 250 mm.

**12B.5 Stability of Vessels Engaged in Towing where the displacement of the towed vessel or floating object is more than twice the displacement of the towing vessel**

All **vessels** engaged in **towing** where the displacement of the towed vessel or floating object is more than twice the displacement of the **towing** vessel, except where provided for by [26.1.1.2](#), shall comply with requirements of section [12B.5](#) in addition to applicable requirements of [12B.1](#)- [12B.4](#) (see [Table 12A.2.5](#)).

12B.5.1 A Stability Information Booklet shall include loading conditions for **towing**.

12B.5.2 It is the responsibility of a **vessel owner/operator** to ensure that an inclining test(s) and calculation(s) of the lightship particulars are:

- .1 undertaken by a **competent person(s)**, and  
.2 with an independent witness, approved by the **Certifying Authority**, who can attest that the conditions and the manner in which the test(s) are conducted are satisfactory.

12B.5.3 The stability of a **vessel** engaged in **towing** where the displacement of the towed vessel or floating object is more than twice the displacement of the **towing** vessel shall be considered satisfactory where the heeling lever does not exceed 0.5 times the maximum GZ for the critical loading condition.

Heeling Lever

$$= \frac{(0.6 \times \text{Max. bollard pull} \times \text{Vertical distance between hawser and centre of the propeller(s)})}{\text{Displacement}}$$

The height of the hawser shall be measured at:

- .1 where a fixed gog is always used the height of the hawser shall be measured at the fixed gog or side rails if higher; and  
.2 where a fixed gog is not always used the height of the hawser shall be measured at the top of the winch drum (with no towline deployed) or the side rails if higher.

Where the maximum GZ occurs at a greater than 30° angle of heel, the value of GZ at 30° of heel shall be substituted.

12B.5.4 **Vessels** the keel of which is laid or which is at a **similar stage of construction** on or after 1 January 2020 may comply with section 2.8 of Part B of the **IMO's** amended Intact Stability Code<sup>33</sup> (2008 IS Code) in lieu of compliance with [12B.5.3](#).

<sup>33</sup> **IMO** International Code on Intact Stability, 2008, Resolution MSC.267(85), **as amended**.

## 12B.6 Approval and Carriage of a Stability Information Booklet

12B.6.1 A **vessel** shall carry a copy of a Stability Information Booklet.<sup>34</sup>

12B.6.2 Where a **vessel** is considered by the **Certifying Authority** to be unable to carry a Stability Information Booklet it shall be made available to **crew** on shore.

12B.6.3 A Stability Information Booklet shall:

- .1 be produced by a **competent person**; and
- .2 match the form and content of the Administration's model Stability Information Booklet (see [Appendix 3](#)); and
- .3 meet the applicable requirements of [section 12](#); and
- .4 use appropriate methods and procedures for calculations and the **vessel's** stability standard; and
- .5 include, where appropriate, instructions to be given to the **Master**.

12B.6.4 A **vessel owner/operator** shall either submit three hard copies or one electronic copy, as agreed, of the Stability Information Booklet to the **Certifying Authority** for approval.

12B.6.5 Where the **Certifying Authority** is satisfied that the Stability Information Booklet meets the requirements of [12B.6.3](#), it shall stamp the booklets with the following<sup>35</sup>:

- .1 the name of the **Certifying Authority**; and
- .2 a file (or record) reference; and
- .3 number of pages in the booklet; and
- .4 "APPROVED FORM AND CONTENT."

12B.6.6 Where the **Certifying Authority** has a concern(s) with regards to a **vessel's** stability they may request a full assessment in place of a form and content check in [12B.6.5.4](#). (see [Appendix 3](#)).

12B.6.7 Following approval of the Stability Information Booklet:

- .1 two copies shall be returned to the **vessel owner/operator**. One copy shall be retained on board the **vessel** (or an electronic copy if agreed by the **Certifying Authority**) for the use of the **Master**. The second copy shall be retained for the record of the **vessel owner/operator**; and

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<sup>34</sup> For details of information to include within a Stability Information Booklet refer to the [MCA's Stability Information Booklet: Load Line Vessel](#) which is available free of charge from the **Administration** or **Certifying Authorities**.

<sup>35</sup> Guidance on minimum levels of checking for **Certifying Authorities** leading to approval are set out in [Appendix 3](#).

.2 one copy shall be retained by the **Certifying Authority** for the records kept for the **vessel**.

12B.6.8 The **vessel owner/operator** shall be in possession of an approved Stability Information Booklet before the issuance of the **Certificate**.

12B.6.9 The **Master** of the **vessel** shall have a knowledge and understanding of the content of the **vessel's** Stability Information Booklet and shall ensure that the **vessel** is operated within the limiting conditions stated in the Stability Information Booklet.

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## 13 Freeboard and Freeboard Marking

The purpose of this section is to set out requirements for minimum **freeboard** and **freeboard** markings

### 13.1 Minimum Freeboard for vessels which carry 1000 kg or less of cargo

Section [13.1](#) applies to **vessels** which carry **cargo** or a combination of **passengers**, **industrial personnel** and **cargo** for which the **cargo** element does not exceed 1000 kg, and which are not **rigid inflatable boats**, **inflatable boats** or **boats fitted with a buoyant collar**.

- 13.1.1 The minimum **freeboard** requirements shall be met by either:
- .1 complying with ISO 12217<sup>36</sup>. A declaration of conformity must be provided to the **Certifying Authority** for validation prior to issuing of the **Certificate**; or
  - .2 complying with the requirements of [Table 13.1.2](#) as appropriate; or
  - .3 complying with the requirements of [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#), as amended.
- 13.1.2 The **freeboard** for a **vessel** shall be calculated with the **vessel** in sea water, upright, in its normal trim and fully loaded with weights to compensate for both **cargo** and non-**cargo** deadweight items as certificated to be carried (each person taken as 82.5kg).

Table 13.1.2 – The minimum **freeboard** requirements

The minimum freeboard requirements of vessels which do not carry cargo in excess of 1000 kilograms (kg)			
Vessel type	Vessel with a continuous watertight weather deck in accordance with section <a href="#">5.5.1.1</a> , which is not stepped, recessed or raised	Vessel with a continuous watertight weather deck in accordance with section <a href="#">5.5.1.2</a> , which may be stepped, recessed, or raised	Open boats
Vessel LOA	The <b>freeboard</b> , measured from the lowest point of the <b>weather deck</b> to the water surface, shall not be less than:		The clear <b>height of side</b> , measured between the lowest point of the gunwale <sup>37</sup> and the water surface, shall not be less than:

<sup>36</sup> ISO 12217 'Small Craft – Stability and buoyancy assessment and categorisation' Part 1

<sup>37</sup> The clear **height of the side** shall be measured to the top of the gunwale or capping or to the top of the wash strake if one is fitted above the capping.

<7m	300 mm	200 mm	400 mm
≥7m and <18m	as determined by linear interpolation.		
≥18m	750mm	400mm	800mm

### 13.2 Minimum Freeboard for vessels which carry greater than 1000 kg of cargo

Section [13.2](#) applies to **vessels** which carry **cargo** or a combination of **passengers**, **industrial personnel** and **cargo** for which the **cargo** element exceeds 1000kg, and which are not **rigid inflatable boats**, **inflatable boats** or **boats fitted with a buoyant collar**.

13.2.1 The minimum **freeboard** requirements shall be met by complying with [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#), as amended<sup>38</sup>.

### 13.3 Freeboard Mark and Loading

13.3.1 A **vessel** which carry **cargo** or a combination of **passengers**, **industrial personnel** and **cargo** for which the **cargo** element exceeds 1000 kg, and which are not rigid **inflatable boats**, **inflatable boats** or **boats fitted with a buoyant collar** shall be marked with a **freeboard** mark in accordance with [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#), as amended, and have a scale of draught marks marked clearly at the bow and stern, on both sides of the **vessel**. The longitudinal position of the draught marks, relative to the longitudinal datum for the hydrostatic data, shall be recorded in the Stability Information Booklet, where provided.

13.3.2 Where the **Certifying Authority** considers that the addition of a scale of draught marks is not practicable, application for special consideration shall be submitted to the **Administration**.

13.3.3 The **freeboard** mark shall:

- .1 consist of a ring 300 mm in outside diameter and 25 mm wide, intersected by a horizontal line 450 mm long and 25 mm wide the upper edge of which passes through the centre of the ring; and
- .2 the top of the intersecting line shall be positioned at the waterline corresponding to the assigned **freeboard** to deck edge amidships; and

<sup>38</sup> See [MSN 1752 \(M\), as amended](#), Schedule 5 Table B and calculation for **ships** <24m and noting the corrections for Type B ships "other than timber **freeboards**" that are required for lack of superstructure, lack of sheer, block coefficient, depth and bow height shown in Schedule 4.



- .3 be painted black on a light background or in white or yellow on a dark background, and
  - .4 have an assigning letter marking on the bar of the ring which shall be D on the left and T on the right when the **Administration** is the **Certifying Authority**. In the case of any other **Certifying Authority**, as identified in [MIN 538 \(M\) as amended](#), the assigning letters shall be U on the left and K on the right.
- 13.3.4 A **vessel** shall not operate in a condition which will result in its **freeboard** marks being totally submerged when it is at rest and upright in calm sea water.
- 13.3.5 A **freeboard** mark for Fresh Water Allowance is not required.
- 13.3.6 Where the line of the deck is not clearly discernible, a **vessel** shall be provided with a deck line. The deck line shall be clearly marked amidships on each side of the **ship** to indicate the position of the **freeboard** deck.
- 13.3.7 Where it is not possible to mark the deck line in its required position, the **Certifying Authority** may approve the deck line to be marked in an alternative location as near as possible to the required position.

#### 13.4 **Rigid Inflatable Boats, Inflatable Boats and Boats Fitted with a Buoyant Collar**

Section [13.4](#) defines the requirements for **rigid inflatable boats, inflatable boats and boats fitted with a buoyant collar**.

- 13.4.1 The minimum **freeboard** of a **rigid inflatable boat, inflatable boat or boat fitted with a buoyant collar** shall be:
- .1 300 mm measured from the upper surface at the lowest point of the buoyancy tubes; and
  - .2 250 mm at the lowest part of the transom or if there is no transom the **vessel** shall not be capable of being swamped and shall be able to quickly clear any water from the **weather deck** which shall be demonstrated to the satisfaction of the **Certifying Authority**; and
  - .3 measured with weights to compensate for all its equipment, fuel, **cargo, activity related equipment**, the number of persons for which it is certified to carry on board, with the boat re-trimmed as necessary to represent a normal operating condition, and with the drainage socks, if fitted, tied up (each person taken as 82.5 kg).
- 13.4.2 **Vessels** operating in **area category of operation** 4, 5 or 6, which do not meet the **freeboard** requirement of section [13.4.1](#) at the transom, may still be approved by the **Certifying Authority** provided it can be demonstrated that the boat is self-draining when moving ahead, and has a substantial reserve of buoyancy (>10%).
- 13.4.3 Where the **vessel** is certified to carry more than 1000 kg of **cargo** it shall:

- .1 meet the minimum **freeboard** requirements for a **vessel** with a continuous **watertight weather deck** in accordance with section [5.5.1.1](#), which is not stepped, **recessed** or raised (see [Table 13.1.1](#)); and
- .2 have a **freeboard** assigned in accordance with [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#) **as amended**; and
- .3 have a scale of draught marks marked clearly at the bow and stern.

The minimum **freeboards** shall be recorded on the **SWB2** and the **maximum permissible weight** shall be recorded on both the **SWB2** on the **Certificate** for the **vessel**.

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## 14 Life-Saving Appliances

The purpose of this section is to set out the minimum requirements for life-saving appliances on board. There are a number of additional safety products on the market that **vessel** owners/operators may wish to carry in addition to the minimum requirements, these shall also be maintained and serviced in accordance with the relevant regulations and manufacturer recommendations.

### 14.1 General

14.1.1 The following life-saving appliances shall be marked in accordance with the guidelines in **IMO** Resolution A.658 (16), **as amended**<sup>39</sup>:

- .1 liferafts; and
- .2 lifebuoys; and
- .3 lifejackets; and
- .4 Thermal protective aids (TPA).

14.1.2 The minimum required life-saving appliances are given in Table [14.1.2](#) below.

Table 14.1.2 – Carriage Requirements for Life-saving Appliances

Area Category of Operation		6	5	4	3	2	1	0
Liferafts (see <a href="#">14.2</a> )		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total number of lifebuoys (see <a href="#">14.3</a> )	<16 persons	2	2	2	2	2	2	2
	≥ 16 persons	4	4	4	4	4	4	4
Lifebuoy with light (see <a href="#">14.3</a> )	<16 persons	N/A	1	N/A	1	1	1	1
	≥ 16 persons	N/A	2	N/A	2	2	2	2
Lifebuoy with buoyant line (see <a href="#">14.3</a> )	<16 persons	1	1	1	1	1	1	1
	≥ 16 persons	1	1	1	1	1	1	1
Lifebuoys without attachments (see <a href="#">14.3</a> )	<16 persons	1	1	1	0	0	0	0
	≥ 16 persons	3	3	3	1	1	1	1
Additional buoyant line (see <a href="#">14.3</a> )	<16 persons	0	0	0	0	0	0	0
	≥ 16 persons	1	1	1	1	1	1	1

<sup>39</sup> **IMO** Resolution A.658(16) - Use And Fitting Of Retro-Reflective Materials On Life-Saving Appliances"

Lifejacket (see <a href="#">14.4</a> )	100%	100%	100%	100%	100%	100%	100%
Inflatable lifejacket rearming kit (see <a href="#">14.4.5</a> )	None	None	None	None	100%	100%	100%
Thermal protective aids (TPA) (see <a href="#">14.5</a> )	See 14.5.2	100%	100%	100%	100%	100%	100%
Portable VHF <sup>40 27 33</sup> (see <a href="#">17.4</a> )	1	1	1	1	1	1	1
EPIRB <sup>41</sup> (see <a href="#">17.5</a> )	None	None	None	None	1	1	2
Personal Emergency Radio Devices <sup>42</sup> (see <a href="#">17.6</a> )	None	None	None	R	Yes	Yes	Yes
SART <sup>27,32. 33</sup> (see <a href="#">14.12</a> )	None	None	None	None	1	1	1
General Alarm ≥ 16 persons (see <a href="#">14.6</a> )	None	None	None	None	Yes	Yes	Yes
General Alarm > 750 kW installed power (see <a href="#">14.6</a> )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parachute flares (see Table 14.1.2 <a href="#">Note A</a> )	None	4	None	4	4	6	12
Red hand flares (see Table 14.1.2 <a href="#">Note A</a> )	2	6	2	6	6	6	6
Smoke signals (see Table 14.1.2 <a href="#">Note A</a> )	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held	2 buoyant	2 buoyant held
Means of recovery of persons from water (see <a href="#">14.7</a> )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Training Manual (see <a href="#">14.8</a> )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instruction Manual for onboard maintenance (see <a href="#">14.9</a> )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Table of International Life-Saving Signals (see <a href="#">14.10</a> )	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lifejacket spray hoods (see <a href="#">14.4.6</a> )	R	R	R	R	Yes	Yes	Yes

R – Strongly recommended

Note A – Parachute flares, red hand flares, smoke signals, and other pyrotechnics shall be **MED** approved (“Wheelmarked”) or shall comply with **MSN 1676 (M) as amended**. Hand held smoke signals need not be approved to the **MED** or **MSN 1676 (M+F), as amended**.<sup>43</sup>

<sup>40</sup> **SOLAS ‘A’** PACK requirements can be found in **MSN 1676 (M+F) as amended**.

<sup>41</sup> The carriage of Portable VHF, EPIRB and SART/AIS-SART in this section may also be used to fulfil any carriage requirements detailed in [section 17 Radiocommunication Equipment](#).

<sup>42</sup> Strongly recommended for any **Single Handed operations** in **Area Category of Operation** 3, 4, 5 or 6.

<sup>43</sup> **MSN 1676 (M+F) as amended**. - Merchant shipping life-saving appliances regulations

## 14.2 Liferrafts

### 14.2.1 General Requirements for Liferrafts

14.2.1.1 All liferafts shall be serviced at a service station approved by the manufacturer, and in accordance with the manufacturer's recommended service schedule. The only exception are valise liferafts which shall be serviced at a maximum of annual intervals.

For all liferafts, certification of servicing must be submitted to the **Certifying Authority** at the compliance or **renewal examination**.

14.2.1.2 **Vessel** owners/operators shall frequently inspect the outside of the liferaft storage container/valise for damage. If it is damaged it shall be checked by an approved service station.

14.2.1.3 Hydrostatic Release Units (HRU) (other than the types which have a date limited life and are test fired prior to disposal) shall be serviced at maximum of annual intervals at a service station approved by the manufacturer. Also see section [14.2.3](#).

### 14.2.2 Stowage of liferafts

14.2.2.1 Liferrafts shall:

- .1 be stowed on or above the **weather deck** as appropriate to **vessel's** design and intended operation, to prevent loss of the raft in a sea way, such that they float free<sup>44</sup>, inflate and break free automatically, with the exception of valise liferafts which shall be stored in dedicated locker readily accessible from the **weather deck**; and
- .2 be safely accessible by the **crew** in all weather conditions; and
- .3 be capable of being moved from its stowed position and stowed state to being launched in the water in the shortest practicable time<sup>45</sup>; and
- .4 have launching instructions displayed; and
- .5 clear any projections and belting when launched; and
- .6 if fitted with a float free arrangement, be secured through an approved and compatible HRU (see [14.2.3](#)).

14.2.2.2 Other stowage and release mechanisms may be considered if an equivalent level of safety can be demonstrated to the approval of the **Administration**.

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<sup>44</sup> The liferaft retaining strap must be capable of being released quickly and easy, e.g. by senhouse slip.

<sup>45</sup> For further details please see [MGN 343 Hydrostatic release units: stowage and arrangements for liferafts](#).

14.2.2.3 **Vessel** owners/operators shall demonstrate physical deployment<sup>46</sup> of liferafts:

- .1 at compliance or **renewal examinations**, and
- .2 where any changes are made to the liferaft type/capacity, and
- .3 where **modifications** are made to the liferaft stowage arrangements or location.

During the test the **Certifying Authority** need only witness the raft being moved to the side of the **vessel**, adjacent to any guard wires e.g. getting to a suitable launch site.

### 14.2.3 **Float Free Arrangements for Liferafts**

14.2.3.1 Re-useable HRUs shall be serviced annually in accordance with the manufacturer's recommendations. Certification of servicing shall be submitted to the **Certifying Authority** at the **compliance** or **renewal examination**. Manufacturer's requirements, in respect of servicing and working life, shall be followed for disposable HRUs.

14.2.3.2 Where a **vessel** carries non-**SOLAS** standard and **UKCA** or non-**MED** approved liferafts that are stowed using HRU units, the **vessel owner/operator** shall ensure the chosen HRU is compatible with the size and standard of the liferaft.

### 14.2.4 **Liferaft carriage and capacity requirements**

14.2.4.1 The following **vessels** shall be provided with a sufficient number of liferafts so that in the event of any one liferaft being lost or rendered unserviceable, there is sufficient certified capacity in the remaining liferafts for all on board:

- .1 all **vessels** certified to operate in **Area Category of Operation 0**; and
- .2 **vessels** certified to operate in **Area Category of Operation 1** which carry 16 or more persons.

14.2.4.2 **Vessels** certified to operate in **Area Category of Operation 1** and carry fewer than 16 persons, may be provided with a single liferaft which capacity shall accommodate at least the total number of persons on board.

14.2.4.3 **Vessels** certified to operate in **Area Category of Operation 2, 3, 4, 5** or **6** shall be provided with sufficient liferaft capacity to accommodate a minimum of the total number of persons on board.

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<sup>46</sup> For further details please see [MGN 343 Hydrostatic release units: stowage and arrangements for liferafts](#).

## 14.2.5 Liferaft requirements

14.2.5.1 The minimum liferaft requirements based on **area category of operation** in which the **vessel** is operating are indicated in Table [14.2.5.1](#).

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Table 14.2.5.1 — Liferaft requirements

Requirements for liferafts	Vessels in Areas Category of Operation				
	0	1	2 - 3	4 - 5	6
<b>Construction</b>	Constructed to <b>SOLAS</b> standard and <b>UKCA</b> or <b>MED</b> approved, or <b>MCA DfT</b> approved	Constructed to <b>SOLAS</b> standard and <b>UKCA</b> or <b>MED</b> approved, or <b>MCA DfT</b> approved,  or be built to the ISO 9650 <sup>Note E</sup> – Small Craft Inflatable Liferrafts, Part 1, Type 1, Group A standard and certified <sup>Note D</sup> to Part 3 of ISO 9650.			Constructed to <b>SOLAS</b> standard and <b>UKCA</b> or <b>MED</b> approved, or <b>MCA DfT</b> approved; or  be built to the ISO 9650 – Small Craft Inflatable Liferrafts, Part 1, Type 1, Group A standard and certified to Part 3 of ISO 9650; or  may be the open reversible type, constructed to <b>IMO High Speed</b> Craft Code 2000 standard and <b>MED</b> approved (“Wheelmarked”) or <b>DfT</b> approved. Liferaft(s)
<b>Insulation</b>	Have insulated floor and canopy	Have insulated floor and canopy except where a <b>vessel</b> operates exclusively in waters having a temperature of 10 degrees centigrade or higher (see Notes A and B)	For <b>vessels</b> operating outside the UK Search and Rescue region, where the mean sea temperature is less than 10 degrees centigrade, liferafts shall also have an insulated floor and canopy	Not required	
<b>Equipment</b>	Equipped with a <b>SOLAS</b> “A” PACK <small>Note F</small>	Equipped with a “ <b>SOLAS</b> A PACK” <small>Note C, F</small>	Equipped with “ <b>SOLAS</b> “B” PACK”	Equipped to a level equivalent to a <b>DfT</b> “E” Pack. <small>Note F</small>	
<b>Stowage</b>	Be contained in fibre reinforced <b>plastic</b> (FRP) containers		Be contained in fibre reinforced <b>plastic</b> (FRP) containers or a valise		



- Note A – Sea temperature data may be found in sources such as the Admiralty Pilot for a given sea area and period.
- Note B – The certification of the liferaft shall show this limitation.
- Note C – This may, where necessary, include a **grab bag** to supplement the equipment integral to the liferaft. To facilitate rapid abandonment in an emergency, where a liferaft **grab bag** is provided, it shall be in an accessible position known to all on board. Equipment carried in the **grab bag** as required by these regulations, does not count towards the equipment the **vessel** itself must ordinarily carry, with the exception of TPAs described in [14.5](#).
- Note D – The **Administration** has designated organisations listed in Paragraph 5 of [MSN 1874 \(M+F\), as amended](#), as approved bodies for the purpose of carrying out approvals of equipment to undertake the examination, testing and certification of the equipment to ISO 9650 Part 3.
- Note E – This standard currently provides for a maximum capacity of 12 man liferafts.
- Note F – Requirements can be found in [MSN 1676 \(M+F\) as amended](#).

### 14.3 Lifebuoys

#### 14.3.1 Lifebuoys shall:

- .1 not be of an inflatable type; and
- .2 be marked with two means of **vessel's** identification (including **vessel's** name); and
- .3 be fitted with lights for **vessels** operating in **area categories of operation** 0, 1, 2, 3 and 5; and
- .4 if of a light-weight type, be fitted with either a buoyant line or a drogue.

14.3.2 Where fitted, buoyant lines shall be a minimum of 18 metres in length<sup>47</sup>.

### 14.4 Lifejackets

#### 14.4.1 Lifejackets shall be constructed to:

- .1 **SOLAS** standard and **UKCA** or **MED** approved, or **MCA DfT** approved; or
- .2 BS EN 396 or BS EN ISO 12402, Part 3 for lifejackets of 150 Newtons; or

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<sup>47</sup> Guidance on lifebuoy buoyant lines and grablines can be found in [MGN 106 \(M+F\)](#).

- .3 BS EN 399 or BS EN ISO 12402, Part 2 for lifejackets of 275 Newtons (see **MIN XXX** ); or
- .4 any other equivalent standard **approved** by the **Administration**.
- 14.4.2 All lifejackets shall be fitted with a whistle and retro-reflective materials.
- 14.4.3 For **vessels** operating in **Area Categories of Operation** 0, 1, 2, 3 or 5, all lifejackets shall also be fitted with a light.
- 14.4.3 A suitable lifejacket shall be provided for each person on board (including a suitable lifejacket provided for each person on board under 32kg). If the lifejackets are of an inflatable type, an additional 2 lifejackets shall also be provided.
- 14.4.4 Inflatable lifejackets shall be of the compressed gas inflation type, with either manual or automatic inflation, and fitted with oral top up valves.
- 14.4.5 Vessels operating in **Area Categories of Operation** 0, 1, or 2, shall carry an appropriate rearming kit for each lifejacket on board.
- 14.4.6 Vessels operating in **Area Categories of Operation** 0,1 or 2 shall carry an appropriate spray hood for each lifejacket on board.
- Vessels operating in **Area Categories of Operation** 3, 4, 5 or 6 may carry an appropriate spray hood for each lifejacket on board.
- 14.4.7 Lifejackets which are only inflated orally are not permitted.
- 14.4.8 Inflatable jackets shall be serviced<sup>48</sup> in accordance with the manufacturer's recommendations within a maximum of one month either side of the **compliance, renewal and intermediate examinations**.  
In intervening years inflatable lifejackets shall be serviced at a maximum of annual intervals in accordance with the manufacturer's recommendations.
- 14.4.9 Certification of servicing shall be submitted to the **Certifying Authority** at the **compliance or renewal examination**.
- 14.4.10 Not more than two different types of lifejacket are permitted on any **vessel**. Any two lifejackets of '32 kg or more' or any two lifejackets of 'under 32 kg' respectively, may be regarded as being of the same type provided that there are no differences between the donning instructions.
- 14.4.11 Donning instructions for the types of lifejackets carried shall be displayed in a position(s) that is clearly visible or accessible to all persons on board the **vessel**.

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<sup>48</sup> See either [MGN 548](#) or [MGN 553](#) for further guidance on the servicing of inflatable lifejackets

## 14.5 Thermal Protective Aids (TPAs)

14.5.1 For **vessels** operating in **Area Categories of Operation** 0, 1, 2, 3, 4 or 5, a TPA shall be provided for each person on board.

14.5.2 **Vessels** operating in **Area Category of Operation** 6 shall have TPAs provided for all persons on board where:

- .1 the sea surface temperature is 10 degrees centigrade or less, or
- .2 has open reversible liferaft(s).

**Vessels** operating in **Area Category of Operation** 6 fitted with a canopied liferaft need not carry any TPAs.

14.5.3 TPAs shall be **UKCA** or **MED** approved.

14.5.4 TPAs should be stowed in the **grab bag**.

14.5.5 Where **immersion suits** are provided for all on board, as part of the **vessel's** equipment (see [section 22](#)), only 2 TPAs need to be provided for the use of injured persons.

14.5.6 **Immersion suits:**

- .1 may be of the non-insulated type.
- .2 shall be compatible with the lifejackets provided.
- .3 may be provided to satisfy the personnel clothing requirements of section [22.2.6](#).

## 14.6 General Alarm

14.6.1 A vessel shall have a general alarm where it:

- .1 is operating in **area categories of operation** 0, 1 or 2; and
- .2 is carrying 16 or more persons on board; or
- .3 has total installed power (propulsion and electrical generation) greater than 750 kW.

14.6.2 A general alarm shall be audible in all parts of a **vessel**.

## 14.7 Recovery of Persons from the Water

14.7.1 An **efficient** means to enable the recovery of persons (whether conscious or unconscious) from the water shall be physically demonstrated to the satisfaction of the **Certifying Authority** at each **compliance** and **renewal examinations**. See **MIN XXX**.

## 14.8 Training Manual

14.8.1 A **vessel's** training manual shall be stowed at a **control position**, and shall as a minimum set out instructions from the manufacturers of the life-saving appliances with the following items explained in detail:

- .1 the need for warm clothing and awareness of risks associated with exposure; and
- .2 the number and positions of stowage of the life-saving equipment; and
- .3 donning of lifejackets; and
- .4 use of sea anchors; and
- .5 recovery of persons from the water; and
- .6 illumination in launching areas; and
- .7 boarding, launching, and clearing the survival craft from the **vessel**; and
- .8 "Personal Survival at Sea" booklet, e.g. **MCA Booklet MCA/075**; and
- .9 best use of all survival equipment including equipment on survival craft; and
- .10 use of all aids to location; and
- .11 instructions for emergency repair of the life-saving appliances; and
- .12 methods of retrieval of persons.

14.8.2 For **open boats, inflatable boats, rigid inflatable boats** and **boats with a buoyant collar** a **vessel's** training manual may be stowed in an alternative location on board the **vessel** to prevent damage due to exposure.

## 14.9 Maintenance of life-saving appliances

14.9.1 A **vessel's** instruction manual for on board maintenance of life-saving appliances shall be stowed, and shall as a minimum set out the following instructions as appropriate:

- .1 required criteria for inspection checklists; and
- .2 log of records of inspection; and
- .3 schedule of periodic maintenance; and
- .4 maintenance and repair instructions; and

- .5 list of replaceable parts; and
- .6 list of sources for spare parts.

14.9.2 The instruction manual may be kept ashore by the **vessel** owner/operation in the case of an **open boat, inflatable boat, rigid inflatable boat or boat with a buoyant collar**.

So long as sufficient training and instruction has been provided to the **crew**.

14.9.3 **Vessels** operating on **bare-boat charter** shall be provided with the instruction manual.

#### **14.10 Table of International Life-Saving Signals**

14.10.1 All **vessels** shall carry a Table of International Life-Saving Signals<sup>49</sup>. This shall be in the form of either one **SOLAS** No. 1 poster, or two **SOLAS** No. 2 posters.

#### **14.11 Drills, Training and Recording of Drills**

14.11.1 On board training including practice fire and abandon **ship** drills shall be regularly carried out by the **crew**. For **vessels** over 25 GT this shall be recorded in the Official Log Book in accordance with the requirements of [SI 1999/2722](#) (see also [MGN 71](#)).

14.11.2 Means of recovery of persons and physical deployment of each liferaft from water drills shall be regularly carried out and recorded, see [MGN 544](#)<sup>50</sup>.

14.11.3 All **crew** on **vessels** shall have familiarisation training on Life-Saving Appliances and emergency procedures on board to ensure that they are able to respond effectively in emergency situations.

#### **14.12 Search and Rescue Locating Devices**

14.12.1 **Vessels** certified to operate in **area category of operation** 0, 1, 2, 3 or 5 shall be provided with either:

- .1 a waterproof and electric signalling lamp; and
- .2 a searchlight; or
- .3 a portable **daylight** signalling lamp with searchlight capability.

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<sup>49</sup> Alternatively, [MCA Leaflet "Life Saving Signals 2021"](#) may be posted in the **wheelhouse**.

<sup>50</sup> MOB drills shall be carried out in a range of **daylight**, low light e.g. dusk and weather conditions, which shall be noted in the Official Log Book and reviewed to the satisfaction of the **Certifying Authority**.

14.12.2 **Vessels** operating outside the areas covered by dedicated Search and Rescue (SAR) assets shall carry one of the following in addition to the EPIRB:

- .1 a Radar SART (see **MIN XXX**); or
- .2 an AIS-SART (see **MIN XXX**); or
- .3 an EPIRB-AIS beacon.

14.12.3 **Vessels** certified to operate in **area categories of operation 0, 1 or 2** shall carry a Search and Rescue Transponder (SART).

14.12.4 A second SART shall also be carried unless:

- .1 a **vessel** operates in areas covered by dedicated Search and Rescue (SAR) assets; and
- .2 the EPIRB provided has a 121.5 MHz locator beacon and is of the non-float free type for placing in a liferaft.

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## 15 Fire Safety

The purpose of this section, alongside the requirements of [section 16 Fire Appliances](#), is to provide a level of fire safety for the **vessel** which is designed to extinguish minor fires, prevent minor fires becoming major fires and in the event of the major fire permit enough time for the evacuation of the **vessel**. This section provides minimum requirements to maintain a level of structural integrity that ensures the **vessel** remains habitable following a minor fire.

### 15.1 Machinery space

#### 15.1.1 General

15.1.1.1 The **machinery space** shall be capable of being isolated to minimise the risk of fire extinguishing medium escaping.

15.1.1.2 The following shall be capable of being stopped from outside, or remotely to, a **machinery space** in the event of a fire:

- .1 fans within **machinery space(s)**; and
- .2 fans feeding **machinery space(s)**; and
- .3 pumps transferring fuel or oil; and
- .4 centrifuges; and
- .5 any other equipment in areas identified to increase risk of fire acceleration.

15.1.1.3 Systems fitted with automatic fans which stop in the event of a fire shall have a manual override.

15.1.1.4 Linkages forming part of the remote operation for flaps, cut-offs and similar devices shall be of a fire-resistant construction and shall be unlikely to fail in the event of fire.

15.1.1.5 Only non-combustible materials that are required for the operation and maintenance of machinery may be stowed in **machinery space(s)**. Stowed materials shall be adequately secured and shall not obstruct access to or from **machinery space(s)**.

15.1.1.6 In the **machinery space** windows shall only be fitted as an observation port meeting the following requirements:

- .1 fitted only in an internal boundary bulkhead or door; and
- .2 be non-opening; and
- .3 have a maximum diameter of 150 mm or equivalent rectangular area; and
- .4 fitted in a steel frame or other equivalent material; and

- .5 fitted with a permanently attached fire retardant cover with securing arrangements; and
- .6 constructed of fire rated toughened safety glass, rated A-0 in accordance with the **FTP Code**.
- 15.1.1.7 Where it is impracticable to have a **machinery space**, the engine may be enclosed in an **engine box**. The **engine box** shall meet the requirements of [15.1.1.1](#) – [15.1.1.3](#).
- 15.1.2 Oily Wastes**
- 15.1.2.1 A **vessel** shall have means to retain any oil leakage within the confines of the **machinery space**.<sup>51</sup>
- 15.1.2.2 The **machinery space(s)** shall be kept clean and clear of any oily waste, and all oily residues shall be collected and retained on board (e.g. in a dedicated stowage tank) for discharge to on shore collection facilities.
- 15.1.3 Insulation**
- 15.1.3.1 General**
- 15.1.3.1.1 Insulation shall be fitted inside the **machinery space** and shall be of a non-combustible material(s)<sup>52</sup> which meets the applicable requirements of the Table [15.1.3.2.1](#).
- 15.1.3.1.2 Non-solvent based intumescent materials may be used where the insulation performance meets or exceeds the requirements for 'A' or 'B' Class Insulation.
- 15.1.3.1.3 Insulation shall be protected from damage and against impregnation by flammable vapours and liquids. Where insulation is cut, the edges shall be protected against such impregnation.
- 15.1.3.1.4 Vapour barriers and adhesives used in conjunction with insulation need not be of non-combustible materials but shall be kept to the minimum quantity practicable and their exposed surfaces shall have low flame-spread characteristics.
- 15.1.3.1.5 A **vessel** constructed of steel with **machinery space** boundaries contiguous with **accommodation space(s)**, stores or other areas identified to increase risk of fire acceleration shall be insulated as per the requirements of [15.1.3.1.1](#) – [15.1.3.1.4](#).

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<sup>51</sup> Where it is impracticable to fit a metal drip tray, engine bearers may be used as an alternative if of sufficient height and have no limber-holes.

<sup>52</sup> The insulation will be considered as being a non-combustible material if it complies with BS EN ISO 4589 Part 3, and the material has an Oxygen Index greater than 21, or if it fulfils the requirements of the IMO International Code for application of Fire Test Procedures (**FTP Code** 2010), Part 1, Non Combustibility Test (see **MIN** XXX).



- 15.1.3.1.6 A **vessel** constructed of aluminium shall be assessed regarding additional insulation requirements (in accordance with [15.1.3.1.1](#) – [15.1.3.1.4](#)) where high heat items pass through hull, decks or bulkheads.
- 15.1.3.2 Vessels Carrying 16 or More Persons or in Area Category of Operation 0 or 1, or when the total installed Power Exceeds 750 kW per machinery space<sup>53</sup>**
- 15.1.3.2.1 A **vessel** shall comply with **machinery space** insulation requirements specific to the **vessel** construction material listed in Table [15.1.3.2.1](#).

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<sup>53</sup> For a **vessel** with separate **machinery spaces**, each space can be considered separately in interpretation of total installed power provided that any common connecting service duct is fitted with a structural fire barrier to prevent the passage of smoke and flame in either direction for a period of 15 minutes.

Table 15.1.3.2.1 – Machinery insulation requirements specific to the vessel construction material

A	Steel	Aluminium	Fibre Reinforced Plastic (FRP)	Wooden
<p><b>Requirements for internal surface of machinery space boundaries and other areas identified as at risk from fire.</b></p>	<p>No additional fire protection required.</p>	<p>Shall be insulated to a minimum B-15 <sup>Note F</sup> standard when tested in accordance with the procedure shown in the <b>IMO</b> International Code for application of Fire Test Procedures<sup>54</sup>, <b>FTP Code</b> Annex 1 Part 3.</p>	<p>The <b>machinery space</b> boundaries shall:</p> <ol style="list-style-type: none"> <li>1. be constructed to meet the B-15 standard when tested in accordance with the procedure shown in the <b>IMO</b> International Code for application of Fire Test Procedures<sup>55</sup>, <b>FTP Code</b> Annex 1 Part 3,) <sup>Note A</sup>; or</li> <li>2. be demonstrated to comply with the Fire Test for FRP in accordance with IMO International Code for application of Fire Test Procedures, 2010, Resolution MSC.307; or</li> </ol>	<p><b>Machinery space</b> boundaries constructed of wood shall have an equivalent level of fire protection compared to vessels constructed of FRP. <sup>Note G</sup></p>
<p><b>Requirements for external surface of machinery space boundaries and other areas identified as at risk from fire.</b></p>	<p>With the exception of the hull, shall be coated with finishes which have a Class 1 surface spread of flame rating when tested in accordance with MIN XXX.</p>	<p>Insulation shall be fitted to the hull, bulkheads and decks in their entirety except for areas of the hull positioned 300 mm or more below the waterline.</p>	<ol style="list-style-type: none"> <li>.3 comply with Annex 1 Part 11 of the <b>FTP Code</b> 2010 – Test for fire resisting divisions for HSC <sup>Note B</sup> ; or</li> <li>4 have an insulation <b>approved</b> by the <b>Administration</b> as satisfying the requirements of an “<b>A</b>” or “<b>B</b>” <b>Class</b> division for the construction material and division scantlings fitted to the hull, bulkheads and decks in their entirety except on the hull sides lower than 300 mm below the waterline; or</li> <li>5. have layers of woven roving glass or additives added to the resin to improve and protect the structural integrity of bulkheads or structure(s) <sup>Note C</sup> ;</li> <li>6 have layers of intumescent polyester, epoxy, vinylester or phenolic resin surface coatings used to improve and protect the structural integrity of bulkheads or structure(s). <sup>Note D, E</sup></li> </ol>	<p>For <b>vessels</b> constructed of wood measures shall be taken to prevent absorption of oil into the structure.</p>

<sup>54</sup> **IMO** International Code for application of Fire Test Procedures, 2010, Resolution MSC.307(88)

<sup>55</sup> **IMO** International Code for application of Fire Test Procedures, 2010, Resolution MSC.307(88)

- Note A — Except that in para. 3.3, for load bearing divisions, the structural core temperature shall not exceed the heat deflection temperature (HDT) of the resin in the laminate; and that in para. 3.5.1 this does not have to be a non-combustible material.
- Note B — Acceptable insulations shall have the notation of 'Fire-resisting divisions'. The approval shall state the orientation of the division and whether the division is load bearing or non-load bearing.
- Note C — Any addition of woven glass or additives shall meet manufacturer's recommendations.
- Note D — A **vessel** owner shall provide a declaration attesting to the suitability of the coatings from the manufacturer.
- Note E — Solvent borne intumescent paints are not acceptable.
- Note F — For **vessels** constructed of aluminium insulation approved to A-15 standard (with steel) will be considered acceptable.
- Note G — A metallic bulkhead conducts heat very well, and the main reason for the fitting of structural fire protection is to stop the spread of fire from one compartment to the next. It is worth remembering that (aluminium aside) the survival of the structure is not of primary concern. However, where wood and composites are concerned, the opposite is true. In this case, the structure is an insulator. The downside of these materials is that they have relatively poor structural response to heat. It is for this reason that insulation is required to be fitted to these structures. So in effect, we are not concerned with spread of fire through conduction, more with the collapse of the structure. In this regard, assuming that the structure has been sufficiently protected to ensure no collapse we are then interested to know what represents a 'worst case' thermally for the bulkhead.

## 15.2 Open Flame Appliances and Gas Installations

- 15.2.1 Open flame gas appliances shall be designed and constructed for marine use, and where applicable shall comply with the requirements of Regulation (EU) 2016/426 **as amended**.
- 15.2.2 Installation of a gas appliance shall be in accordance with a recognised **standard** listed in MIN XXX.
- 15.2.3 For further requirements on installation, use and maintenance of gas appliances, see [Appendix 2A – Liquid Petroleum Gas Installation for Domestic Marine Use](#).
- 15.2.4 Combustible materials, and other surfaces, which do not have a surface spread of flame rating, shall not be left unprotected within the following distances of an open flame appliance:
- .1 600 mm vertically above the appliance, for horizontal surfaces, when the **vessel** is upright;

- .2 600 mm horizontally from the appliance, for vertical surfaces.
- 15.2.5 Curtains, or any other suspended textile materials, shall not be within 600 mm of any open flame appliance.
- 15.2.6 Materials which are closer than as described in [15.2.4](#) and [15.2.5](#) to an open flame appliance shall:
  - .1 be non-combustible, or
  - .2 have a surface finish with a Class 1 spread of flame rating which has been tested in accordance with a recognised **standard**, see MIN XXX.
- 15.2.7 Open flame appliance(s) shall be inspected by a Gas Safe Registered marine qualified technician (or equivalent recognized body if outside the UK) and shall be issued with a safety certificate. Inspections shall be carried out annually or following installation.

### 15.3 Liquid Fuel Appliances

- 15.3.1 **Liquid Fuel** Appliances shall only run on **diesel**.<sup>56</sup>

Alternative fuel types may be considered on a case-by-case basis, subject to approval of the **Administration**.

- 15.3.2 **Liquid Fuel** Appliances shall be designed and constructed to meet the following general requirements:

- .1 be suitable for marine use; and
- .2 be able to operate at angles of 15 degrees in any direction; and
- .3 have overheat control devices; and
- .4 have a flame failure device if the fuel supply is pressurised, unless it is a wick type burner.

Appliances shall be installed in accordance with the appliance manufacturer's instructions. Any **modifications** to the appliance shall be done in consultation with the appliance manufacturer.

- 15.3.3 Fuel tanks, fuel pipes and their installation for appliances shall be fitted in accordance with the requirements of sections [8.9](#) - [8.11](#).

- 15.3.4 Exhaust systems shall be installed in accordance with the appliance manufacturer's instructions. Exhaust systems and surrounding structures shall be arranged to allow heat dissipation and shall be protected from heat damage.

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<sup>56</sup> **Diesel** is the only fuel with a flashpoint under 60°C which is permitted for use in **cookers** or **heating appliances**. The use of petrol is not permitted for **cookers** or **heating appliances**. See MIN XXX.

- 15.3.5 Appliances shall be installed so that the outgoing products of combustion pass through sealed ductwork terminating outside the **vessel**.
- 15.3.6 Operating controls for appliances shall be easily accessible and in a safe location to prevent the likelihood of injury.
- 15.3.7 In the event of fire, a space containing **liquid fuel** appliance(s) shall be capable of being isolated by means of a valve(s) operated from outside of the space.
- 15.3.8 Where user awareness for the safe operation of an appliance is required, a permanently legible sign shall be provided in the immediate vicinity covering:
- .1 safe operation; and
  - .2 refuelling procedure (if applicable); and
  - .3 any unique hazards involved with its use.
- 15.3.9 Additional requirements for **liquid fuel** appliances are set out in [Appendix 2B](#).

#### **15.4 Portable Petrol Fuelled Equipment**

- 15.4.1 Portable equipment powered by a petrol engine unless fully drained of fuel shall be stored on the **weather deck**, stowed in a deck locker or in a protective enclosure.
- 15.4.2 Where stowed in a deck locker or protective enclosure portable equipment powered by a petrol engine shall meet the following requirements to the satisfaction of the **Certifying Authority**:
- .1 be vapour tight to the **vessel's** interior; and
  - .2 be ventilated to atmosphere; and
  - .3 not openable from the **vessel's** interior.
- 15.4.3 A suitable receptacle shall be provided to collect any spillage which occurs during the filling and draining of a fuel tank for portable equipment powered by a petrol engine.
- 15.4.4 A safety warning sign shall be displayed by the stowage location of portable equipment powered by a petrol engine with details of any precautions to be taken when filling the fuel tank.

#### **15.5 Assessment of the ignitability of upholstered furniture**

- 15.5.1 Upholstery covering fabrics shall satisfy the cigarette and butane flame tests of a recognised **standard**. See MIN XXX.

15.5.2 For upholstered furniture and mattresses only Combustion Modified High Resilient (CMHR) foams shall be used.

## **15.6 Detection**

### **15.6.1 General**

15.6.1.1 All fire and gas detectors shall at a minimum be maintained and tested in accordance with the manufacturer's recommendations.

### **15.6.2 Fire detection**

15.6.2.1 Fire detectors complying with EN 54 shall be fitted in the following locations:

- .1 **machinery space(s)**; and
- .2 **accommodation spaces**; and
- .3 all spaces containing open flame, gas or **liquid fuel** appliances; and
- .4 all areas of concentrated electrical equipment; and
- .5 all other areas as identified by the **Certifying Authority** as being at risk from fire.

15.6.2.2 Fire detector(s) shall be of an appropriate type to respond to potential hazard(s) e.g. smoke, flame.

15.6.2.3 Where a fire detector(s) is fitted it shall be audible from the space(s) concerned, the **accommodation space(s)** and the **control position(s)**, and be capable of being heard with doors closed, machinery running and in all anticipated weather and operational conditions.

15.6.2.4 **Machinery spaces** shall be fitted with fire detector(s) which detect smoke and heat, or flame.

### **15.6.3 CO Detection**

15.6.3.1 Where open flame, gas or **liquid fuel** appliances are installed in, or adjacent to accommodation areas, a carbon monoxide (CO) detector(s) shall be fitted in accordance with the manufacturer's instructions for detection<sup>57</sup>. See MIN XXX.

15.6.3.2 Where a CO detector(s) is fitted it shall be audible from the space(s) concerned, the **accommodation space(s)** and the **control position(s)** be capable of being heard with doors closed, machinery running and in all anticipated weather and operational conditions.

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<sup>57</sup> CO detection is not required when heating or cooking is undertaken using electrical **cookers** or heaters.

15.6.3.3 A CO detector(s) shall be provided in spaces where exhaust gases may accumulate in the event of an exhaust leak.

#### **15.6.4 Hydrocarbon Gas Detection**

15.6.4.1 Any space which contains gas consuming appliances or into which flammable gas may be leak or accumulate, shall be provided with a hydrocarbon gas detector and alarm. The hydrocarbon gas detector and alarm shall be designed to comply with a recognised **standard** relating to electrical equipment in hazardous areas.

#### **15.7 Means of Escape**

15.7.1 All **vessels** shall have means of escape.

15.7.2 All escape routes shall be located so that a single hazardous event is not likely to cut-off all escape routes.

15.7.3 Any identified means of escape shall not endanger any person using it.

15.7.4 Any means of escape shall be clearly marked for its purpose on both sides, and the function of each escape route shall be practically demonstrated to the satisfaction of the **Certifying Authority**.

15.7.5 Two separate means of escape shall be provided in:

- .1 **accommodation spaces** containing sleeping bunks; and
- .2 any spaces identified by the **Certifying Authority** as being at high risk from fire; and
- .3 **machinery** or battery **spaces** except where:
  - .1 usually unmanned during normal operation;
  - .2 any person entering and moving about the space is within 5 metres of the entrance at all times;
  - .3 the entrance gives ready escape, at all times, in the event of fire.

15.7.6 Where a hatchway or companion hatch opening is used as part of an escape route it shall be capable of being opened from both sides.

15.7.7 Exceptions to [15.7.5](#) shall be considered on a case by case basis only where the overall safety of the **vessel** would be diminished, subject to approval of the **Certifying Authority**.

#### **15.8 Fire Control and Safety Plan**

15.8.1 **Vessels** required to have a Stability Information Booklet, or with a total installed power greater than or equal to 750 kW shall have a fire control and safety plan(s) which shall be prominently displayed at the **control position(s)**.

- 15.8.2 It is recommended that **vessels** not required to have a Stability Information Booklet, or with a total installed power less than 750 kW shall have a fire control and safety plan(s) which shall be prominently displayed at the **control position(s)**.
- 15.8.3 The fire control and safety plan(s)<sup>5859</sup> shall detail the following:
- .1 the type and position of all fire appliances, and
  - .2 the location of fire detectors; and
  - .3 locations and means of control of systems and openings which shall be closed down in a case of a fire; and
  - .4 a procedure for persons on board to follow prior to or in event of activation of the fixed fire extinguishing system; and
  - .5 means of escape and any additional access points; and
  - .6 the location(s) of life-saving appliances; and
  - .7 the location(s) of embarkation stations and muster points.
- 15.8.4 The fire control and safety plan(s) shall be kept **up to date**.

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<sup>58</sup> Symbols used on the fire control and safety plan(s) shall comply with a recognised international **standard** where applicable.

<sup>59</sup> **Vessel** owners/operators shall be aware that some foreign flag administrations may also require fire control and safety plan(s) to be verified by the **Certifying Authority**.



## 16 Fire Appliances

The purpose of this section, alongside the requirements of section [15 Fire Safety](#), is to provide a level of fire safety for the **vessel** which is designed to extinguish minor fires, prevent minor fires becoming major fires and in the event of the major fire permit enough time for the evacuation of the **vessel**. This section provides minimum requirements to maintain a level of structural integrity that ensures the **vessel** remains habitable following a minor fire.

### 16.1 Protection of machinery spaces and outboard engines

#### 16.1.1 General

16.1.1.1 The protection of engine and engine **compartments** shall be achieved according to the requirements listed in [Table 16.1.1.1](#).

Table 16.1.1.1 — Protection of the **machinery spaces** and outboard engines

Engine position	Criteria	Minimum Protection
Outboard engine(s) <sup>d)</sup>	P ≤ 220 kW <sup>a)</sup>	1 portable fire extinguisher 34B
	P > 220 kW	Portable fire extinguisher(s) total B capacity= 0,3P <sup>b)</sup>
Inboard <b>Diesel</b> engine(s)	P < 120 kW	1 multi-purpose fire extinguisher <sup>60</sup> of appropriate size located adjacent to the main entrance of each <b>machinery space</b> . <sup>e)</sup>
	Engine located in <b>engine box</b> above deck	- Portable fire extinguisher(s) to fire port <sup>c)</sup> or - Fixed fire extinguishing system according to <a href="#">16.4</a> .
	Engine <b>compartments</b> below deck	- Fixed fire extinguishing system according to <a href="#">16.4</a> <sup>e)</sup> .

a) P is the aggregate power rating in kW of the engine(s) in the space.  
b) Example: For 1 × 220 kW outboard engine the required minimum rating is 220 × 0,3 = 66B which corresponds to two 34B extinguishers.  
c) The fire rating of the portable extinguisher shall not be less than the minimum recommended by its supplier for use with the fire port and for the volume of the **engine box** or **space**.  
d) All **open boats, inflatable boats, rigid inflatable boats** or **boats with a buoyant collar** which are **up to 8 metres in length** and are not fitted with a **substantial enclosure** or cooking appliance(s), shall be fitted with a minimum of two 34B fire extinguishers.  
e) A **vessel** fitted with inboard **Diesel** engine(s) where P < 120 kW may comply with the requirements of **Diesel** engine located in **engine box** above deck or **compartments** below deck.

#### 16.1.2 Fire ports in engine boxes

16.1.2.1 For **vessels** installed with fire port(s) in **engine boxes** as listed in [Table 16.1.1.1](#), fire extinguishing medium shall be able to be discharged into the **engine box** without a person needing to enter the space.

<sup>60</sup> Multi-purpose fire extinguishers have a capability to deal with both Category A fires involving solid materials, and Category B fires involving liquids or liquefiable solids, and may be marked with the multipurpose rating, e.g. 5A/34B.

- 16.1.2.2 Fire ports shall be:
- .1 constructed of fire-resistant material; and
  - .2 appropriately sized and positioned to accept the discharge nozzle; and
  - .3 openable to provide access for discharge of the medium into the **engine box**; and
  - .4 labelled with “Fire port” or an appropriate graphical symbol<sup>61</sup>.

## 16.2 Protection of Accommodation Spaces

### 16.2.1 Accommodation Spaces not Containing Sleeping Bunks or Cooking and Heating Appliances

16.2.1.2 A minimum of one 5A/34B rated portable fire extinguisher shall be located in each **accommodation space**<sup>62</sup>, in accordance with the requirements of [16.3](#).

### 16.2.2 Accommodation spaces containing sleeping bunks

16.2.2.1 Where an **accommodation space(s)** has both sleeping bunks and cooking and **heating appliances**, it shall instead comply with the requirements of [16.2.3](#).

16.2.2.2 A minimum of one 5A/34B rated portable fire extinguisher shall be located in each **accommodation space** containing sleeping bunk(s), in accordance with the requirements of [16.3](#).

### 16.2.3 Accommodation spaces containing cooking and heating appliances

16.2.3.1 A portable fire extinguisher in accordance with the requirements of [16.3](#) and according to [Table 16.2.3.1](#) shall be located in each **accommodation space** containing cooking or **heating appliances**.

Table 16.2.3.1 — Protection of **accommodation spaces** with cooking and **heating appliances**

Type of cooking/heating appliance(s)	Protection device(s)
Cooking and <b>heating appliances</b> without open flame	One 5A/34B rated portable fire extinguisher; or  a fixed fire extinguishing system in accordance with the requirements of <a href="#">16.4</a> .
Cooking and <b>heating appliances</b> with	One 5A/34B rated portable fire

<sup>61</sup> If a graphical symbol is used, it must be explained in the owner’s manual.

<sup>62</sup> Where **accommodation spaces** are protected by a fixed system according to [16.4](#), only one portable fire extinguisher need be provided for that space.

open flame	<p>extinguisher; and either 8A/68B rated portable fire extinguisher(s), or a fire blanket in accordance with the requirements of <a href="#">16.5</a>; or</p> <p>a fixed fire extinguishing system according to <a href="#">16.4</a>.</p>
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## 16.3 Portable Fire Extinguishers

### 16.3.1 General requirements

16.3.1.1 Portable fire extinguishers shall be marked in accordance with ISO 7165, BS EN 3 or equivalent<sup>63</sup>.

16.3.1.2 Extinguishing media containing halons or per-fluorocarbons shall not be used. For details on accepted extinguishing media types see ISO 7165.

16.3.1.3 The location requirements of portable extinguishers as required by Tables [16.1.1.1](#) and [16.2.3.1](#) shall:

- .1 be within 2 m from the main **control position**;
- .2 be within 2 m from any permanently installed open flame, gas or **liquid fuel** appliances;
- .3 be within 3 m from fire ports for inboard engines;
- .4 be within 3 m from outboard engines.

16.3.1.4 All portable fire extinguishers shall be readily accessible.

16.3.1.5 Portable extinguishers may be stored in a locker or other protected or enclosed space but shall remain readily accessible at all times. The locker or the enclosed space door shall identify that it contains a portable extinguisher.

16.3.1.6 Portable extinguishers not certified or listed for marine use which are located where they may be exposed to water shall have the extinguisher operating nozzle and triggering devices shielded.

16.3.1.7 All portable fire extinguishers shall be serviced by a **competent person** in accordance with the servicing intervals listed in Table 1 of [MGN 276](#) (M+F).

### 16.3.2 Carbon Dioxide (CO<sub>2</sub>) Fire Extinguishers

16.3.2.1 Portable carbon dioxide (CO<sub>2</sub>) fire extinguishers may only be located in **accommodation spaces**<sup>64</sup> where there is a risk of an electrical fire. Consideration shall be given to the volume of carbon dioxide that could be

<sup>63</sup> If a graphical symbol is used, it must be explained in the owner's manual.

<sup>64</sup> If a graphical symbol is used, it must be explained in the owner's manual.

released and the requirement for an appropriate means of ventilation in the event of discharge.

16.3.2.2 Portable carbon dioxide (CO<sub>2</sub>) fire extinguishers shall not be located in **accommodation spaces** containing sleeping bunks.

16.3.2.3 A maximum of one portable carbon dioxide fire extinguisher may be located in an **accommodation space**.

16.3.2.4 Portable carbon dioxide fire extinguishers shall meet the requirements of an appropriate **standard**. See MIN XXX.

16.3.2.5 Portable carbon dioxide fire extinguishers shall each have a maximum capacity of 2 kg.

## **16.4 Fixed Fire Extinguishing Systems**

### **16.4.1 General Requirements**

16.4.1.1 Where a fixed fire extinguishing system is installed in a **machinery space** (as listed in [Table 16.1.1.1](#)) it shall be of the **Administration**, or equivalent, approved type appropriate to the space to be protected.

16.4.1.2 Fixed fire extinguishing systems shall meet the manufacturer's installation and maintenance requirements and shall be serviced at minimum on an annual interval or as per manufacturer's recommendations, whichever is more frequent.

16.4.1.3 Fixed fire extinguishing systems shall meet the:

.1 [Merchant Shipping \(Fire Protection – Small Ships\) Regulations 1998 \(SI 1998 No. 1011\)](#), **as amended**<sup>65</sup>; and

.2 [MCA Fire protection arrangements \(MSIS 12\)](#), **as amended**.

16.4.1.4 Fixed fire extinguishing media accepted by the **Administration** are as follows:

.1 medium expansion foam;

.2 high expansion foam;

.3 carbon dioxide (see **MIN XXX**);

.4 pressure water spraying;

.5 water mist/water fog;

.6 vapourising fluids (hydrofluorocarbons - HFCs);

.7 aerosols (solid pyrotechnic type).

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<sup>65</sup> For further requirements for the installation of fixed fire fighting systems see [MSN 1666 \(M\)](#), **as amended**.

16.4.1.5 Where activation of the fixed fire extinguishing system is automatic, or the cylinders containing extinguishing media are located within the **machinery space**, a visual alarm shall be displayed outside the **machinery space** and at the **control position(s)** during discharge of fire extinguishing media.

## 16.4.2 Fire Pumps

16.4.2.1 All **vessels** shall be fitted with either:

- .1 a power driven self-priming fire pump(s) which ensures that the fire main pressure and availability can be maintained following the loss of a **machinery space**; or
- .2 a hand fire pump(s) outside the **machinery space** (where fitting of a power driven self-priming fire pump(s) is impracticable).

16.4.2.2 **Open boats, inflatable boats, rigid inflatable boats** and **boats with a buoyant collar** may not be required to comply with the requirement of [16.4.2.1](#) if not fitted with a **substantial enclosure** and are of less than 8 m **length**. Such **vessels** shall comply with requirements of Tables [16.1.1.1](#) and [16.2.3.1](#) as appropriate.

16.4.2.3 A fire pump shall be fitted with sea and hose connections capable of delivering one jet of water to any part of the ship through hose and nozzle, one fire hose of adequate length with a 10 mm nozzle and a suitable spray nozzle.

16.4.2.4 Where a **vessel** has two independent power bilge pumps fitted (see [11.2.1.1](#)), one of these pumps may be used as a fire pump where an accessible change over arrangement is fitted. The ability to remove accumulated fire extinguishing water shall not be compromised, and contaminated bilge water shall not be pumped onto a fire.

## 16.5 Fire Blanket

16.5.1 A fire blanket as required by [Table 16.2.3.1](#) shall meet the requirements of an appropriate **standard**. See **MIN XXX**.

16.5.2 A fire blanket shall be located in an area identified to increase risk of fire acceleration and shall be accessible for immediate use.

## 16.6 Fire Buckets

16.6.1 Where practicable or deemed necessary<sup>66</sup> all **vessels** shall carry at least two fire buckets with lanyards long enough to reach the sea from the weather deck. Buckets shall be of suitable material and size for their intended service.

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<sup>66</sup> Larger **vessels** carrying multiple fire extinguishers and/or fixed fire extinguishing system(s) are considered to exceed the minimum required level of safety and are not required to carry fire buckets.

## 17 Radiocommunications Equipment

A **vessel** shall have an **efficient** radiocommunications equipment installation to enable the safe navigation and transmission of distress calls in emergency situations. The purpose of this section is to set out requirements for **vessel** radiocommunications, including installation, operation, maintenance and testing.

### 17.1 The Global Maritime Distress and Safety System (GMDSS)

17.1.1 For all vessels the GMDSS Sea Area(s) that the vessel is permitted and equipped to operate in (see [Table 17.2.1](#)) shall be stated on the Certificate.

17.1.2 All **vessels** shall be equipped with a continuously available communication system for use in the GMDSS Sea Area, which shall provide capabilities for at least the following maritime distress and safety communications (see also **MIN XXX**):

- .1 Ship-to-shore distress alerts/calls by two independent means; and
- .2 Shore-to-ship distress relay alerts/calls; and
- .3 Ship-to-shore, shore-to-ship and ship-to-ship search and rescue co-ordinating communications; and
- .4 Ship-to-shore transmission of Maritime Safety Information (MSI); and
- .5 Receipt of shore-to-ship broadcasting of Maritime Safety Information; and
- .6 Ship-to-shore, shore-to-ship and ship-to-ship general communications.

17.1.3 Exceptions to [17.1.2](#) are:

- .1 **Vessels** certificated to operate in **area category of operation 4, 5 or 6**, which can obtain up to date navigation and weather information by other means, are not required to be able to receive MSI by a communication system for use in the GMDSS.
- .2 Vessels certificated to operate in **area category of operation 6** only are not required to have a second means of transmitting ship to shore distress alert if an alternative effective means of distress alerting (visual or non-GMDSS) is available, subject to approval by the **Certifying Authority**.

### 17.2 Carriage Requirements by GMDSS Sea Areas

17.2.1 The minimum radiocommunication equipment carriage requirements based on the GMDSS Sea Area(s) in which the **vessel** is operating are indicated in [Table 17.2.1](#).

17.2.2 If a **vessel's area category of operation** changes the radiocommunication equipment fitted and carriage requirements shall be

re-assessed and approved by the **Certifying Authority** for compliance with [17.2.1](#).

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Table 17.2.1 – Carriage Requirements by GMDSS Area

GMDSS Carriage Requirements										
Area Category of Operation	0-4				5				6	
GMDSS Areas	A1 <sup>80</sup>	A1+A2	A1+A2+A3	A1+A2+A3+A4	A1	A1+A2	A1+A2+A3	A1+A2+A3+A4	A1	A1+2 A1+A2+A3 A1+A2+A3+A4
Fixed Very High Frequency (VHF) Radio installation with Digital Select Calling (DSC)	1	1	1	1	1	1	1	1	1	1
Portable VHF DSC Radio (see 17.4)	1	1	1	1	1	1	1	1	1	1
VHF Channel 70 DSC watch installation <sup>84</sup>	1	1	1	1	1	1	1	1	1	1
MF radio installation with DSC (see MIN XXX)		↑Note C				1				
A recognised mobile satellite service for distress alerting and Enhanced Group Calls <sup>Note D</sup>		or 1	1			or 1	1			C1
MF/HF radio installation with DSC with Narrow Band Direct Printing (NBDP)		or 1	or 1	1		or 1	or 1	1		
Personal Locator Beacons (PLB) <sup>85, 86,87</sup>	1	1	1	1	R	1			C2	1
EPIRB <sup>83</sup>	↑Note A	1	1	1	or R	or 1	1	1	or C2	or 1
NAVTEX receiver (see MIN XXX)	↑Note B	1	1	1	C1	C1	C1	C1	C3	C3



- 1 Number required to be fitted.
- Note A Vessels in Sea Area A1 in **area category of operation** 3 and 4 where visual or other non-GMDSS means of alerting is ineffective, an EPIRB is recommended to be carried.
- Note B This is recommendatory only in Sea Area A1 for **area category of operation** 4, noting that the **vessel** should be on a voyage of <12 hours, outside this duration a NAVTEX shall be fitted.
- Note C Within UK waters no listening watch is conducted on MF by HM Coastguard, therefore alerting via MF DSC would be required.
- Note D For guidance on iridium satellite distress system, see **MIN XXX**.
- R Recommended for **area category of operation** 5 where visual or other non-GMDSS means of alerting is considered to be ineffective e.g. if a vessel is working in bays with high cliffs that may impede the operation of the VHF.
- C1 A carriage requirement where up to date navigation and weather information cannot be reliably obtained by other means as noted in [17.1.3.1](#).
- C2 Recommended where visual or other non-GMDSS means of alerting is considered to be ineffective.
- C3 Recommended where up to date navigation and weather information cannot be reliably obtained by other means (see [17.1.3.1](#)).

### 17.3 Radio Installation

- 17.3.1 Aerials shall be mounted on the highest point on the **vessel**. Alternative locations may be accepted provided its location allows maximum performance.
- 17.3.2 In UK areas where transmission quality may be reduced, **vessel** owners/operators shall consider alternative radio communications such as Medium Frequency (MF) or mobile satellite communications systems. **Vessel** owners/operators shall consider Table [17.2.1 Note C](#) and if required seek advice from the **Administration** on whether such equipment should be carried.
- 17.3.3 All radio installations shall be located to aid operational availability and be protected against damage.
- 17.3.4 Fixed radio installation(s) shall be clearly marked with the **vessel's** call sign, any other codes applicable to the use of the radio, and a Maritime Mobile Service Identity (MMSI).
- 17.3.5 Fixed radio installation(s) shall have a clear summary of the radio distress, urgency and safety procedures displayed in full view of the radio operating position(s).
- 17.3.6 Where batteries are used for the electrical supply to radio equipment, an alternative power supply shall be provided by either charging facilities which shall be capable of recharging batteries to required minimum capacity within 10 hours, or a back-up battery of capacity sufficient for the voyage.
- 17.3.7 The battery electrical supply to radio shall be located in a position not likely to flood in normal operations or in the event of minor damage to the

**vessel**, and shall be arranged so that radio communications, as far as practicable, are not interrupted in adverse conditions including extremes of temperature and harmful effects of water.

17.3.8 When fully charged, the batteries shall provide at least the minimum required hours of operation to ensure effective use of the GMDSS installation.

#### **17.4 Portable VHF Radio**

17.4.1 A **vessel** shall carry at least one portable VHF radio fitted with a Digital Selective Calling (DSC) facility. See **MIN XXX**.

17.4.2 A portable VHF radio shall be capable of operation on Channel 16 and at least one additional voice channel in the international VHF marine band.

17.4.3 A portable VHF radio shall have brief and clear operating procedures provided if not already printed on the casing.

17.4.4 A portable VHF radio shall have means to attach to clothing or a lanyard with a low breaking strain safety link.

17.4.5 A portable VHF radio and spare batteries shall be protected against water damage, either by design or by a waterproof cover, to a depth of 1 metre for a period of 5 minutes.

17.4.6 A portable VHF radio, batteries and any waterproof covers shall not have any sharp projections that might damage a survival craft.

17.4.7 A vessel shall carry charging facilities or spare batteries able to provide at all times at least 8 hours of VHF radio operation. Batteries or seals shall be marked with an expiry date by the manufacturer and shall be in date.

17.4.8 Where a vessel is equipped with more than one liferaft, it shall carry one portable VHF per liferaft.

#### **17.5 Emergency Position Indicating Radio Beacon (EPIRB)**

17.5.1 **Vessels** required to carry a 406 MHz EPIRB (see [Table 17.2.1](#)) shall be installed in a location so that it is capable of floating free and activating automatically if the vessel sinks. This location shall also be easily accessible so that it can be manually released and placed in a liferaft.

17.5.2 Manned vessels operating in **area category of operation 0** shall carry a second EPIRB stowed in an accessible place, where it is capable of being placed in a liferaft and need not be capable of floating free.

17.5.3 All EPIRBs shall be maintained in accordance with the manufacturer's recommendations. Batteries shall be replaced as required by a manufacturer approved service station.

17.5.4 All EPIRBs shall meet the mandatory registration requirements as detailed in **MGN 665 (M+F), as amended**<sup>67</sup>. See **MIN XXX**.

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<sup>67</sup> [MGN 665 \(M+F\) Registration of EPIRBs and 406 MHz PLBs used in the maritime environment.](#)

## 17.6 Personal Emergency Radio Devices

17.6.1 A **vessel** shall meet the 406 MHz Personal Locator Beacon (PLB<sup>68, 69</sup>) carriage requirements of the [Table 17.2.1](#). For guidance on PLBs see **MIN XXX**.

17.6.2 A PLB equipped with GPS and a light shall be worn by at least one **crew** member whilst on open deck. Any **crew** not wearing a PLB are strongly recommended to wear a Class M VHF DSC MOB (Man Overboard) with AIS<sup>70</sup> and a light.

## 17.7 Test and Maintenance

17.7.1 A **vessel owner/operator** shall ensure that the radio equipment is being tested and operating effectively prior to departure. Equipment shall be maintained regularly according to manufacturer's instructions. Additionally, for **Remotely Operated Unmanned Vessels** testing shall be carried out following any power or communications outage either on the **Remotely Operated Unmanned Vessel** or at the **Remote Operation Centre**.

## 17.8 Radio Watches

17.8.1 A **vessel**, while **at sea**, shall maintain a continuous radio watch:

- .1 on VHF Digital Selective Calling (DSC), on Channel 70;
- .2 for broadcasts of Maritime Safety Information (see **MIN XXX**);
- .3 where practicable, on VHF Channel 16;
- .4 where practicable, on VHF Channel 13;
- .5 on distress and safety DSC frequency 2187.5 kHz if fitted with a MF/HF DSC radiotelephone;
- .6 for satellite shore-to-ship distress alerts, if fitted with a terminal for a recognised GMDSS satellite service.

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<sup>68</sup> This has a global range and alerts the nearest Coastguard Station to a Man Overboard situation. It will typically take 5 minutes for the Coastguard to be aware of your position with an accuracy of 100 m.

<sup>69</sup> 406MHz PLBs and VHF DSC devices shall be registered with the EPIRB Registry, details of which are given in [MSN 1816 \(M+F\) 406 MHz Beacons: registration requirements](#)

<sup>70</sup> The MMSI number can be programmed into this device so that the first alert is sent immediately to the **vessel**, alerting **crew** to the Man Overboard situation and also potentially reducing the possibility of false alerts. If the VHF/DSC is not responded to by someone on the **vessel** within a designated time period, other vessels in the area will be alerted. The inbuilt AIS will enable other vessels in the area equipped with AIS to locate any casualty in the water. A casualty can be located to an accuracy of 100m

## **17.9 Ships' Radio Licence**

17.9.1 A **vessel** shall be issued with a valid Ships' Radio Licence by the relevant authority<sup>71</sup>.

## **17.10 Ships' Radio Survey**

17.10.1 Where a **vessel** is fitted with GMDSS radio equipment, the **vessel owner/operator** shall undertake a survey of the radio installation every 5 years. The survey shall be undertaken by an organisation authorised by the **Administration** to perform a survey of code vessel radio equipment. A Statement of Compliance may be issued by the authorised organisation upon successful completion of the radio survey.

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<sup>71</sup> The issue and enforcement of these licences is the responsibility of OFCOM.

## 18 Navigation Lights, Shapes and Sound Signals

The purpose of this section is to set out requirements for navigation lights, shapes and sound signalling appliances.

18.1 All **vessels** shall comply with the requirements of [the Merchant Shipping \(Distress Signals and Prevention of Collisions\) Regulations 1996 \(SI 1996 No. 75\), as amended](#).

18.2 Where full compliance with [18.1](#) is impracticable and demonstrated to the satisfaction of the **Certifying Authority**, an application to the **Administration** shall be submitted by the **Certifying Authority** for consideration of equivalent safety standard(s). This shall take account of the nature of the operation of the **vessel** concerned.

18.3 Exceptions to [18.1](#) are:

- .1 A **vessel** which is certified to operate only during **daylight**, and in **favourable weather**, is not required to carry navigation lights.
- .2 A **vessel** of less than 12 metres in **length** is only not required to carry the sound signalling equipment required by [SI 1996 No. 75\), as amended](#), when an alternative means of making an **efficient** sound signal is carried.

18.4 [Table 18.4](#) is a summary table of common navigation lights, shapes and sound signalling appliance requirements. This Table is not exhaustive, does not cover all possible operations, and is for guidance only.

It is the responsibility of the **vessel owner/operator** to ensure that the **vessel** fully complies with [SI 1996 No. 75, as amended](#).

Table 18.4 – Common navigation lights, shapes and sound signalling appliance requirements

Overall length	Power driven vessels when underway	At anchor <sup>3</sup>	Not under command <sup>6</sup>	Aground	Sound signalling appliances
Less than 7m	All round white + sidelights <sup>1,2</sup>	Required <sup>4,5</sup>	Not required <sup>9</sup>	Not required	Means to make an <b>efficient</b> sound signal required
7m – 12m	All round white + sidelights <sup>1</sup> or Masthead + sidelights <sup>1</sup> + stern light or  (if lights have to be offset from centreline) combined lantern sidelights plus either all round white or masthead and stern light	Required <sup>5</sup>	Not Required <sup>9</sup>	Not required	Means to make an <b>efficient</b> sound signal required
12m – 20m	Masthead + sidelights + stern light	Required <sup>5</sup>	Required <sup>5,7</sup>	Required <sup>5,7,8</sup>	Whistle required
20m – 24m	Masthead + sidelights + stern light	Required	Required	Required <sup>8</sup>	Whistle and bell required approved by UK nominated bodies

<sup>1</sup> Range of sidelight is 1 mile.

<sup>2</sup> **Vessels** with a maximum speed of 7 knots shall, if practicable, show sidelights.

<sup>3</sup> By night a round white light where most visible. By day one black ball (0.6 metres in diameter) in the fore part.

<sup>4</sup> Compliance with point 3 is only required when anchored in or near a narrow channel, fairway, anchorage or where other vessels normally navigate.

<sup>5</sup> Size of the daytime shapes may be reduced commensurate with **vessel** size.

<sup>6</sup> A vessel not under command shall exhibit:

- (i) two all-round red lights in a vertical line where they can best be seen;
- (ii) two balls or similar shapes in a vertical line where they can best be seen;
- (iii) when **making way** through the water, in addition to the lights prescribed in this paragraph, sidelights and a stern light.

<sup>7</sup> The distances for the lights may be reduced to one metre apart and two metres above the hull (**weather deck**).

<sup>8</sup> By night two round red lights in a vertical line two metres apart, plus a round white light (see point 3). By day three black balls (0.6 metres diameter) in a vertical line, 1.5 metres apart.

<sup>9</sup> **Vessels** of less than 12 metres in **length** which are engaged in diving operations shall exhibit the lights and shapes prescribed in point 6.

#### Notes

a Sidelights and stern light shall have a range of 2 **miles** unless indicated otherwise.

b All round white lights, lights used at anchor and where not under command shall have a range of 2 **miles**

c **Vessels** of 7 to 12 metres shall have a masthead light range of at least 2 **miles**.  
**Vessels** of 12 **upto** 20 metres shall have a masthead light range of at least 3 **miles**.

- d **Vessels** of 20 to 24 metres shall have a masthead light range of at least 5 miles. For **open boats** vertical height shall be measured from the gunwale. For **rigid inflatable boats, inflatable boats** and **boats fitted with a buoyant collar** vertical height shall be measured from the top of the collar or tubes.

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## 19 Navigation

The purpose of this section is to set out requirements for the safe navigation of a **vessel**.

### 19.1 General

19.1.1 All navigational equipment shall be routinely tested and maintained in accordance with the manufacturer's instructions.

### 19.2 Compass

19.2.1 A **vessel** shall be fitted with a properly adjusted suitable magnetic marine compass with consistent deviation<sup>72</sup>.

19.2.2 Any alternative arrangements to [19.2.1](#) (e.g. Transmitting Magnetic Heading Device) may be considered on a case-by-case basis to the approval of the **Certifying Authority**. Alternative arrangements shall be of an equivalent standard to a magnetic compass, and shall at a minimum:

- .1 be independent of the **vessel's** main power supply; and
- .2 have means of determining the ship's heading; and
- .3 have means of displaying the ship's heading at the **control position(s)**; and
- .4 have means of correcting headings and bearings to true at all times (e.g. a valid deviation card).

19.2.3 The compass, alternative device or a repeater:

- .1 shall be clearly readable at all times at the main steering position; and
- .2 means shall be provided for taking bearings as nearly as practicable over an arc of the horizon of 360 degrees.<sup>73</sup>

19.2.4 Each magnetic compass shall be properly adjusted and its deviation card available at all times. Magnetic compasses shall be adjusted when:

- .1 they are first installed;
- .2 they become unreliable;
- .3 the **vessel** undergoes structural repairs or alterations that could affect its permanent and induced magnetism;
- .4 electrical or magnetic equipment close to the compass is added, removed or altered; or

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<sup>72</sup> Consistent deviation is considered to be when there has been no appreciable change observed within the two years preceding the date of inspection by the **Master**.

<sup>73</sup> This requirement may be met by a pelorus or, in a **vessel** other than a steel vessel, a hand bearing compass.



.5 a period of two years has elapsed since the last adjustment and a record of actual compass deviations has not been maintained, or the recorded deviations are excessive or when the compass shows physical defects.

19.2.5 In a steel **vessel** it shall be possible to correct a magnetic compass for coefficients B, C and D and heeling error.

19.2.6 A record of a **vessel's** compass deviations shall be maintained.

19.2.7 For **vessels** certified to operate in **area category of operation** 0, 1, 2, 3 or 5, a compass light shall be fitted.

### 19.3 Nautical Publications

19.3.1 Charts<sup>74</sup> and nautical publications shall be kept up to date and accessible for the entire duration of the voyage.

19.3.2 **Vessels** certified to operate in **area category of operation** 6 only are not required to comply with [19.3.1](#).

19.3.3 Charts shall be of sufficient scale and detail to display:

- .1 all relevant navigational marks, and
- .2 known navigational hazards, and
- .3 where, appropriate, information concerning ship's routing and ship reporting schemes.

19.3.4 Electronic Chart Display and Information System (ECDIS) or an electronic chart plotting system which complies with the requirements of [MGN 319 \(M+F\) as amended](#), may be accepted as an alternative to the requirements of [19.3.1](#)

### 19.4 Signalling Lamp

19.4.1 A **vessel** shall be equipped with a waterproof electric lamp suitable for signalling.

### 19.5 Echo Sounder

19.5.1 All **vessels** shall be fitted with an echo sounder, or other effective means to measure the available depth of water.

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<sup>74</sup> See also [MGN 293 \(M+F\) Alternative arrangement for paper chart requirements on MCA code vessels under 24 metres in length and fishing vessels under 24 metres in length](#).

## 19.6 Radar Reflector

19.6.1 A **vessel** shall be provided with a radar reflector of an appropriate **standard (MIN XXX)**. A radar reflector shall be fitted on the **vessel** in accordance with the manufacturer's instructions.

19.6.2 **Vessels** certified to operate in **area category of operation 6** only need not comply with [19.6.1](#) if it can be demonstrated to the satisfaction of the **Certifying Authority** that it is not practicable. They must not put **to sea** in fog, and if visibility starts to deteriorate they are to return to shore.

19.6.3 If the radar cross sectional area of the boat is larger than the passive reflector standard then the carriage of a reflector is not required.

## 19.7 Barometer

19.7.1 A **vessel** certified to operate in **area category of operation 0, 1, 2 or 3** may carry a barometer.

## 19.8 Additional Navigational Equipment requirements for vessels certified to operate in area category of operation 0, 1 or 2

19.8.1 A **vessel** which is certified to operate in **area category of operation 0, 1 or 2** shall be equipped with:

- .1 an electronic position fixing system GPS (global navigation satellite system), or a terrestrial radio-navigation system, or other automatic means suitable for use at all times throughout the intended voyage); and
- .2 a distance measuring log (except where the navigational equipment in paragraph [19.8.1.1](#) provides reliable distance measurements in the area of operation of the **vessel**); and
- .3 a 3 cm radar on an appropriate **standard (MIN XXX)** shall be fitted. Radars for **vessels** designed to operate at speeds over 30 knots shall comply with the **MED**. Where radar is equipped with automatic target tracking then a suitable transmitting heading device shall be fitted<sup>75</sup>; and
- .4 a suitable Automatic Identification System (AIS) transceiver (see **MIN XXX** for installation and maintenance guidelines).

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<sup>75</sup> Additionally, **vessels** that are operated at **high speed** are recommended to be provided with an electronic chart system to satisfy chart carriage requirements as in [19.3](#), complying at least with the specifications required by the SeaFish Industry Authority (SFIA), see also section [19.3.4](#) and [MGN 319 as amended](#).

## 20 Anchors and Cables

A **vessel** shall be equipped with anchor(s) and cable(s) to grip the sea bottom and hold the **vessel** at the desired position. The purpose of this section is to set minimum requirements for mass, design and material of anchor(s) as well as the length, diameter and material of anchor cable(s).

### 20.1 General

20.1.1 A **vessel** shall be equipped with at least two anchors (one main and one spare or two main) and comply with the minimum anchors and cables requirements given in Tables [20.1](#) and [20.2](#)<sup>76</sup>.

20.1.2 **Vessels** that do not normally anchor as part of their operational procedures may have the carriage requirements of Tables [20.1](#) and [20.2](#) reduced, subject to approval of the **Certifying Authority**.

20.1.3 Provision shall be made for the secure storage of an anchor and its cable.

Table 20.1 – Anchors and cables for vessels up to and including 15 m

Mean Length of vessel	Anchor Mass		Anchor Cable Diameter			
	Note 3		Note 1, 3			
	Main	Spare	Main Chain	Rope	Spare Chain	Rope
(metres)	(kg)	(kg)	(mm)	Note 2 (mm)	(mm)	Note 2 (mm)
6	8	4	6	12	6	10
7	9	4	8	12	6	10
8	10	5	8	12	6	10
9	13	5	8	12	6	10
10	16	6	8	12	6	10
11	19	7	8	12	6	10
12	22	10	10	14	8	12
13	25	12	10	14	8	12
14	28	12	10	14	8	12
15	30	15	10	14	8	12

Table 20.2 – Anchors and cables for vessels over 15 m

Loaded Displacement	Anchor Main	Anchor Spare	Anchor Chain diameter.
	Note 3	Note 3	Note 1,3,5
(Tonnes)	(kg)	(kg)	(mm)
25	30	30	10
50	40	40	12
75	50	50	12
100	75	75	13.5
125	90	90	13.5
150	100	100	13.5
175	125	125	16

<sup>76</sup> Anchors and cables are not designed to hold a **vessel** off of exposed coasts in rough weather nor stop a **vessel** that is moving.

200	130	130	17.5
225	150	150	17.5
250	180	180	17.5
275	225	225	17.5
300	230	230	17.5
350	240	240	17.5
400	245	245	17.5
450	250	250	19
500	255	255	19
550	260	260	19
600	265	265	19
650	270	270	20
700	300	300	20
750	360	360	20

Note 1 — Chain cable diameter given is for short link chain. Chain cable shall be sized in accordance with BS 7160 or equivalent.

Note 2 — The rope diameter given is for nylon construction. Where rope of another construction is proposed, the breaking load shall be at least equivalent to that of the nylon rope specified in the table.

Note 3 — Where anchors and cables are manufactured to imperial sizes, the anchor mass and the cable diameter shall be at least equivalent to the metric table value.

Note 4 — For the purposes of this section, mean length is defined as:

$$(\text{Length} + \text{Length on waterline}) / 2$$

Note 5 — Where rope or wire is used instead of chain, the breaking strength shall be equivalent to that of the chain specified in the Table.

## 20.2 Anchoring Systems

20.2.1 A strong securing point shall be located on the foredeck or equivalent structure, and where appropriate a fairlead or roller shall be located at the stem head.

20.2.2 Mechanical means shall be provided for handling the anchor where an anchor mass is more than 30 kilogrammes.

20.2.3 Anchors are to be rigged ready for use.

## 20.3 Anchors

20.3.1 The values for anchor masses required in Tables [20.1](#) and [20.2](#) refer to **High Holding Power** anchors. Anchors of other designs with equivalent holding power may be accepted subject to approval of the **Certifying Authority**.

20.3.2 Where a fisherman type of anchor is fitted, the mass required in [Table 20.1](#) or [20.2](#) shall be increased by 33% but the diameter of the anchor cable need not be increased.

- 20.3.3 Materials for anchors shall be approved by the **Certifying Authority**. Stainless steel and aluminium anchors shall be separately considered dependent upon the test loads for which the anchor has been designed.
- 20.3.4 For **vessels** with a large windage area (as a result of a high **freeboard**, a large rig, large **deckhouses** or superstructures, or other factors) the mass of the anchor and the anchor cable diameter shall be increased above that required in Table [20.1](#) or [20.2](#) to correspond to the increased wind loading. The increase in anchor mass and corresponding cable strength is to be to the approval of the **Certifying Authority**.
- 20.3.5 For **vessels** of non-conventional ship form (including pontoon barges) or working under specified restricted coastal or inshore operations, the size and material of the anchor and cable if different to the requirements of Table [20.1](#) or [20.2](#) shall be of an appropriate **standard** recognised by one of the **Load Line Assigning Authorities**, and to the satisfaction of the **Certifying Authority**.
- 20.3.6 For **vessels** engaged in **towing** the mass of the anchor and the anchor cable diameter shall be increased above that required in Table [20.1](#) or [20.2](#) to include the length and/or displacement of the tow. The increase in anchor mass and corresponding cable strength is to be to the approval of the **Certifying Authority**.
- 20.4 Cables**
- 20.4.1 The length of anchor cable attached to an anchor shall be appropriate to the area of operation and not less than 4 x the **vessel's** mean length or 30 metres, whichever is the longer, for each of the main and spare anchors.
- 20.4.2 The strength and form of the anchor cable and its attachments to the anchor and the **vessel** shall be approved by the **Certifying Authority**.
- 20.4.3 The material of the anchor cable and its attachments to the anchor and the **vessel** shall be of an appropriate **standard** recognised by one of the **Load Line Assigning Authorities**, and to the satisfaction of the **Certifying Authority**.
- 20.4.4 Where the anchor cable is made of fibre rope or wire, 10 metres or 20% of the minimum required cable length, whichever is the greater, shall be made of chain connecting the rope, or wire, and the anchor.
- Where the anchor cable is wire, the chain part of the cable can be substituted by an anchor and/or chain of enhanced mass, subject to satisfaction of the **Certifying Authority**.
- 20.4.5 Anchor steel wire rope shall be fitted with thimbles at both ends.
- 20.4.6 The bitter end of the anchor cable shall be secured to the **vessel's** structure and shall be capable of being released in an emergency.
- 20.4.7 All **vessels** shall have a towline. The towline may be the warp for the second/spare anchor.

## 21 Accommodation and Recreational Facilities

The purpose of sections [21](#), [21A](#) and [21B](#) is to set out the minimum requirements for accommodation and recreational facilities. For the applicable requirements refer to the headings below:

- **Vessels** to which MLC does not apply – refer to [21.1](#) and [21A](#)
- **Vessels** to which MLC does apply – refer to [21.1](#) and [21B](#).

### 21.1 All vessels

All **vessels** irrespective of compliance with the **Maritime Labour Convention, 2006 (MLC)**, **as amended** shall meet the requirements of section [21.1](#).

21.1.1 Heavy items of equipment shall be secured firmly to avoid movement either during normal conditions, or when the **vessel** is subjected to sudden acceleration, deceleration, or a large angle of heel or trim.

21.1.2 Stowage lockers containing heavy items shall have lids or doors which can be securely fastened.

21.1.3 Mechanical ventilation shall be provided to all **accommodation spaces** below the **weather deck** where:

.1 an air conditioning system(s) is not fitted; and

.2 9 or more persons are berthed below the **weather deck**; or

to all **accommodation spaces** on board **vessels** engaged on **long international voyages** or operating in tropical waters.

Such mechanical ventilation shall provide at least 6 changes of air per hour when the access openings to the spaces are closed.

21.1.4 Where a **vessel** is fitted with a galley there shall be secure and hygienic storage for food and garbage in the vicinity. See **MIN XXX**.

21.1.5 All hot water supply systems shall be appropriately designed, installed and maintained for the pressure and temperature at which they are intended to operate.

21.1.6 All **vessels** fitted with marine toilet(s) shall have suitable receptacle(s) for the safe disposal of non-flushable sanitary wastes.

## 21A Accommodation and Recreational Facilities for all vessels to which the MLC does not apply

All **vessels** to which the MLC does not apply shall meet the requirements of section [21A](#).

### 21A.1 General requirements for all vessels

21A.1.1 Accommodation shall provide decent living conditions and recreational facilities for all persons on board.

21A.1.2 All **accommodation spaces** shall be adequately ventilated.

21A.1.3 **Accommodation spaces** shall not be exposed to excessive vibration or noise. See **MIN XXX**.

21A.1.4 The materials used for construction of internal bulkheads, panelling and sheeting, floors and joints shall be suitable for the purpose and conducive to ensuring a healthy environment.

### 21A.2 All vessels at Sea for More Than 24 Hours

21A.2.1 An adequate supply of fresh drinking water shall be provided and piped to easily accessible locations throughout the **accommodation spaces**.

21A.2.2 In addition to [21A.2.1](#) an emergency reserve supply of drinking water shall be carried, sufficient to provide at least 2 litres per person. The installation of fresh water making machines and disinfection arrangements may be accepted subject to the approval of the **Certifying Authority**.

21A.2.3 A **vessel** shall be fitted with a galley which shall be equipped with means for cooking, a sink and adequate working surface for the preparation of food.

21A.2.4 Where a cooking appliance(s) is gimballed it shall be protected by a crash bar or other means to prevent it being tilted when it is free to swing. A means shall be provided to lock the gimbal mechanism to prevent movement.

21A.2.5 At least one flushing marine toilet and one wash hand basin which is separated from the rest of the accommodation, shall be provided for every 12 persons on board<sup>77</sup>.

21A.2.6 A separate bunk or cot shall be provided for each person on board and at least 50% of those provided shall be fitted with lee boards or lee cloths.

21A.2.7 A **vessel** shall have adequate stowage facilities for the clothing and personal effects of each person on board.

21A.2.8 An electric lighting system shall be installed which is capable of supplying adequate light to all enclosed **accommodation spaces**.

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<sup>77</sup> Due consideration shall be given to the requirements of section [30.2 Sewage](#).

## 21B Accommodation and Recreational Facilities for all vessels to which the MLC applies

All **vessels** constructed on or after 7th August 2014 to which the **Maritime Labour Convention, 2006 (MLC)** applies shall comply with the requirements of **MLC**. It is strongly recommended that **vessels** constructed between 20th August 2013 and 6th August 2014 shall comply with the requirements of the MLC.

It is the responsibility of the **vessel owner/operator** to be familiar and compliant with the content of the MLC. [Section 21B](#) sets out the minimum requirements for accommodation and recreational facilities which are either:

- additional to those of the **MLC**; or
- amendments to the requirements of the **MLC** which are specific for **workboats** less than 24 m in **Load Line Length**.

A model format for a **Seafarer** Employment Agreement can be found in [MGN 477 \(M\) Amendment 2](#), as amended.

### 21B.1 Additional requirements for all vessels to which the MLC applies

All **vessels** to which the **MLC** applies shall comply with section [21B.1](#) (which sets out requirements additional to those of the **MLC**).

21B.1.1 An adequate supply of fresh drinking water shall be provided and piped to easily accessible locations throughout the **accommodation spaces**.

21B.1.2 In addition to [21B.1.1](#) an emergency reserve supply of drinking water shall be carried, sufficient to provide at least 2 litres per person. The installation of fresh water making machines and disinfection arrangements may be accepted subject to the approval of the **Certifying Authority**.

21B.1.3 Sleeping accommodation below the load line/**freeboard** mark (or the maximum loaded displacement where no load line/**freeboard** mark is provided) may only be permitted in exceptional cases<sup>78</sup> to the approval of the **Administration**. Such sleeping accommodation shall be fitted with an alarm to provide **seafarers** with an early warning of flooding.

### 21B.2 Vessels less than 200 GT to which the MLC applies

All **vessels** less than 200 GT to which the **MLC** applies shall comply with the requirements of the **MLC**. Section [21B.2](#) applies to all **vessels** less than 200GT to which the **MLC** applies. Sections [21B.2.1](#) and [21B.2.2](#) detail specific amendments and additions to the requirements of the **MLC**.

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<sup>78</sup> An exceptional case is where the size, type or intended operation of the **vessel** renders any other location of sleeping accommodation impracticable.



**21B.2.1 Amended MLC requirements for vessels less than 200 GT to which the MLC applies**

21B.2.1.1 For spaces where **seafarers** are expected to stand for prolonged periods, the minimum headroom shall be 190 centimetres. The **Certifying Authority** may allow reduced height in some locations if it does not result in discomfort to **seafarers**.

21B.2.1.2 All **accommodation spaces** shall be adequately heated and insulated for the intended area of operation and anticipated weather conditions.

21B.2.1.3 Excessive noise and vibration shall be limited within **accommodation spaces**, and as far as practicable in accordance with relevant international **standards**. Where the **seafarers'** exposure to noise and vibration in **accommodation spaces** is very time limited, alternative arrangements may be accepted subject to approval of the **Certifying Authority**.

21B.2.1.4 Where a sleeping room(s) is adjacent to a **machinery space(s)**, galley(s), storeroom(s), drying room(s), or communal sanitary space(s), there shall be a bulkhead between spaces with a door that can be locked.

21B.2.1.5 In **seafarer** accommodation, wherever possible, the maximum number of persons per sleeping room is to be two. Any increase in the maximum number of persons per sleeping room shall be **approved** by the **Administration**.

21B.2.1.6 Berths for **seafarers** shall have a minimum inside dimension of either:

- .1 not less than 190 centimetres in length and not less than 70 centimetres in width, with no tapering, where it is satisfied that this is reasonable and will not result in discomfort to the **seafarer**; or
- .2 not less than 198 centimetres in length and not less than 80 centimetres in width over half the length of the berth. A taper is permitted from half the length of the berth towards the foot of the berth but under no circumstances is the berth permitted to be narrower at any point than 50 centimetres.

21B.2.1.7 For each 6 **seafarers** on board there shall be at least one set of sanitary facilities on board, such that the ratio of sanitary facilities does not exceed 6:1.

21B.2.1.8 Designated areas on open deck for recreational use may be shared with the **passengers** and **industrial personnel** on board.

21B.2.1.9 Each **seafarer** shall be provided with a minimum of 125 litres of an adequate stowage space for personal effects.

**21B.2.2 Additional requirements for vessels less than 200 GT to which the MLC applies**

21B.2.2.1 Recirculation of air supply may be permitted provided that mechanical exhaust ventilation is installed and that the fresh air content of the supply to the accommodation is not less than:

- .1 25 cubic metres per hour for each person for whom accommodation is provided; or

- .2 the total capacity of all other accommodation exhaust fans (excluding the galley) in cubic metres per hour, whichever is the greater.
- 21B.2.2.2 Where air conditioning is not fitted in an enclosed galley(s) a minimum mechanical supply of 20 fresh air changes per hour and a mechanical exhaust supply of 30 air changes per hour shall be provided.
- 21B.2.2.3 In spaces where sanitary or galley facilities are provided there shall be ventilation that draws from the accommodation and extracts to the open air.
- 21B.2.2.4 The galley floor shall have a non-slip surface and provide a good foothold.
- 21B.2.2.5 All furniture and fittings in the galley shall be made of a material which is impervious to dirt and moisture. All metal parts of furniture and fittings shall be rust resistant.
- 21B.2.2.6 Where a cooking appliance(s) is gimballed it shall be protected by a crash bar or other means to prevent it being tilted when it is free to swing. A means shall be provided to lock the gimbal mechanism to prevent movement.
- 21B.2.2.7 It is strongly recommended that means for preventing **seafarers** from falling out of their bunk shall be provided.
- 21B.2.2.8 Each set of sanitary facilities shall be provided with a door that is lockable.
- 21B.2.2.9 Where a sanitary system is fitted with a holding tank it shall be designed to ensure that any fumes from the holding tank are not released into the sanitary space if the water seal of the toilet is broken.
- 21B.2.2.10 There shall be weekly inspections carried out on board **vessel**, by or under the authority of the **Master**, and shall as a minimum include the following:
- .1 supplies of food and drinking water; and
  - .2 all spaces and equipment used for the storage and handling of food and drinking water; and
  - .3 galley and other equipment used for the preparation and service of meals.

The results of each inspection shall be recorded and available for review.

### **21B.3 Vessels of between 200 GT and less than 500 GT to which the MLC applies**

All **vessels** of between 200 GT and less than 500 GT to which the **MLC** applies shall comply with the requirements of the **MLC**.

- 21B.3.1 All **vessels** of between 200 GT and less than 500 GT to which the **MLC** applies may comply with substantially equivalent arrangements for **crew** accommodation as set out in [MGN 602 \(M\), as amended](#).

## 22 Protection of Personnel

The purpose of this section is to set a minimum required level of safety to ensure protection of all personnel on board. There are a number of additional regulations which set out requirements for protection of personnel. This section does not provide definitive guidance and it remains the responsibility of the **vessel owner/operator** to comply with the requirements of these regulations (see **MIN XXX**).

### 22.1 Health and Safety at Work

22.1.1 All **vessels** shall comply with the requirements of [the Merchant Shipping and Fishing Vessels \(Health and Safety at Work\) Regulations 1997 \(SI 1997 No. 2962\), as amended](#). For further guidance see **MIN XXX**.

### 22.2 Structural Requirements and the Carriage of Equipment

#### 22.2.1 Deckhouses

22.2.2.1 A **deckhouse's** construction shall be of an appropriate strength to withstand the sea and weather conditions likely to be encountered in the intended **area category of operation**.

#### 22.2.2 Bulwarks, Guardrails and Handrails

22.2.2.1 Guardrails and guard wires shall be supported by stays or stanchions.

22.2.2.2 There shall be sufficient hand holds and grab rails within **accommodation spaces** to allow safe movement when the **vessel is underway**.

22.2.2.3 Where persons are on deck, a **vessel** shall meet the following requirements unless otherwise permitted by [22.2.2.6](#) and [22.2.2.8](#):

- .1 be fitted with either bulwarks, three courses of guardrails or three courses of taut guard wires; and
- .2 the bulwark top, top course of guardrails or top course of taut guard wires shall be not less than 1000 mm above the deck; and
- .3 the distance between the lowest course of guardrails or taut guard wires and the deck shall not exceed 230 mm; and
- .4 the distance between other courses of guardrails or taut guard wires shall not exceed 380 mm; or
- .5 where guardrails or guard wires are not fitted, or do not meet the requirements of paragraphs [22.2.2.1](#) – [22.2.2.4](#), portable or fixed jackstays secured to strong points shall be provided on each side of the **vessel**.

22.2.2.4 **Vessels** with guardrails of a height less than that required by section [22.2.2.2](#) may be accepted for areas restricted to **crew** use only. Alternative

arrangements shall be provided for the protection of the **crew**, subject to approval by the **Certifying Authority**. A notice shall be prominently displayed that clearly indicates that **passengers** are not permitted in the restricted area.

22.2.2.5 Where a **vessel** is fitted with a **cockpit** which has an aft facing opening, additional guardrails shall be fitted so that there is no unprotected vertical opening greater than 500 mm in width.

22.2.2.6 Alternative arrangements to requirements of [22.2.2.2](#) and [22.2.2.4](#) may be accepted for the following, subject to approval by the **Certifying Authority**:

- .1 for **vessels** certified to operate in **area category of operation** 6 only, where the fitting of guardrails is impractical or unnecessary; or
- .2 where the fitting of guardrails impedes the safe operation of a **vessel** (except where a **vessel** is certificated to operate single handedly), see **MIN XXX**.

22.2.2.7 Additional handrails shall be fitted for:

- .1 decks without bulwarks or guardrails; and
- .2 access stairways; and
- .3 ladders; and
- .4 passageways; and
- .5 side and ends of the **deckhouse**; and
- .6 other locations where handrails would mitigate any identified risk.

22.2.2.8 For an **open boat**, **boat with a buoyant collar**, **inflatable boat** or **rigid inflatable boat** where it is not possible to fit bulwarks, handrails or guardrails there shall be handgrips and toeholds provided to ensure safety of all persons on board in the range of the sea and weather conditions likely to be encountered in the intended **area category of operation**.

### 22.2.3 Safety Harness

Section [22.2.3](#) does not apply **open boats**, **boats with a buoyant collar**, **inflatable boats** and **rigid inflatable boats**.

22.2.3.1 Safety harnesses shall be provided for all persons who may be required to work on deck. A minimum of 2 safety harnesses shall be provided on board of all **decked vessels** regardless of the number of persons who may be required to work on deck.

22.2.3.2 Fastening points for the attachment of safety harness lifelines shall be provided at the following positions:

- .1 close to a companionway; and
- .2 on both sides of a **cockpit**; and

- .3 on exposed decks; and
- .4 perimeter of a **deckhouse**; and
- .5 other locations where a fastening point(s) would mitigate the risk of falling overboard.

#### **22.2.4 Safe location aboard open boats, boats with a buoyant collar, inflatable boats and rigid inflatable boats**

22.2.4.1 It is the responsibility of owners/operators of **open boats, boats with a buoyant collar, inflatable boats and rigid inflatable boats** to ensure that a safe location is provided on board the **vessel** for all persons.

#### **22.2.5 Non-slip surfaces**

22.2.5.1 The surface of a working deck including any hatch coverings shall be finished in; non-slip deck paint, chequered plate, unpainted wood, a non-skid pattern moulded into FRP, or an **efficient** non-slip covering.

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

#### **22.2.6 Personal Clothing**

22.2.6.1 Each person on board a **vessel** shall have:

- .1 protective clothing appropriate to the prevailing air and sea temperatures that provides protection from precipitation and spray from the sea; and
- .2 footwear with non-slip soles.

22.2.6.2 **Vessels**<sup>79</sup> operating in **area category of operation** 0, 1 or 2 and in waters of sea surface temperature of 10 degrees Celsius or less shall provide an **immersion suit** (see [14.5.6](#)), a dry suit or other **efficient** garment (such as a floatation suit meeting EN ISO 15027-1) for each person on board.

#### **22.3 Safety and Transfer of Personnel**

22.3.1 All persons shall have a safe, clear access to the embarkation station.

22.3.2 A designated embarkation area shall have sufficient hand holds, foot holds and/or grab rails to allow safe access.

22.3.3 A safety briefing shall be provided prior to departure to all persons engaged in transfer operations. See [section 31 SMS](#).

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<sup>79</sup> Sea temperature data may be found in sources such as the Admiralty Pilot for a given sea area and period.

22.3.4 Ambient sea conditions and whole body vibration shall be continually assessed throughout the voyage.

22.3.5 Individual ergonomic seating shall be provided for all persons on board Offshore Energy Service Vessels or vessels operating at **high speed** or in a planing mode (see [section 25.4](#)). A comprehensive risk assessment shall be carried out to identify appropriate mitigation measures to reduce the effects of vibration including but not limited to: seat belts, headrests, footrests, movable armrests and shock absorbent seating.

## 22.4 Industrial Personnel Requirements

22.4.1 Before commencing any voyage, it shall be ensured by the **Master** that any **industrial personnel**:

- .1 are engaged and on board for transport for the purposes of **offshore industrial activities**;
- .2 are able bodied and meet appropriate medical standards;
- .3 have received basic safety training, according to relevant industry standards;
- .4 have an understanding of the layout of the ship and the handling of the **vessel's** safety equipment before departure from port (e.g., through a safety briefing);
- .5 are equipped with appropriate **PPE** suitable for the risks to safety such personnel are likely to experience on the forthcoming voyage (e.g., **immersion suits**);
- .6 declare any quantities of **dangerous goods** carried onboard as personal effects, and that these are stowed as appropriate.

22.4.2 **Industrial personnel** that do not meet all of the requirements of [22.4.1](#) may be transported as **passengers**, subject to an overall limit of 12 **passengers** being carried within the total number of persons on board.

## 22.5 The Code of Safe Working Practices for Merchant Seafarers

22.5.1 An updated copy of the **MCA's** publication [The Code of Safe Working Practices for Merchant Seafarers](#), **as amended** shall be available at the **control position** at all times.

22.5.2 Where it is not practical to carry the publication on board the **vessel** due to its design, [The Code of Safe Working Practices for Merchant Seafarers](#), **as amended** may be kept ashore. In such cases it shall be available for use by all members of the **crew**.

## 23 Medical Care

The purpose of this section is to set out the minimum requirements for **medical stores** to be carried on board a **vessel** and to define the liability of a **vessel** owner for medical care.

### 23.1 Medical Stores

23.1.1 At the point of publication of this **Code** the requirements for **medical stores** are as follows:

- .1 **vessels** certified to operate in **area category of operation 0** shall meet the requirements for **Category of Medicines and Medical Stores A**;
- .2 **vessels** certified to operate in **area category of operation 1** shall meet the requirements for **Category of Medicines and Medical Stores B**;
- .3 **vessels** certified to operate in **area categories of operation 2, 3, 4, 5 and 6** shall meet the requirements for **Category of Medicines and Medical Stores C**.

A **vessel** owner shall ensure that **medical stores** are carried in accordance with the latest requirements (see **MIN XXX**).

23.1.2 A **vessel** owner is responsible for the cost of any medicine and medical equipment, including periodic replacements in order to keep stocks of any required medicines in date and immediately useable.

23.1.3 The **Master** shall manage the **medical store** and ensure it is kept in a good condition. Alternatively, the **Master** may designate a competent person to manage the **medical store**.<sup>80</sup>

23.1.4 A **vessel** which meets the requirements of [23.1.1.1](#) or [23.1.1.2](#) shall carry an annually reviewed checklist of the **medical stores** kept on board.

23.1.5 A **vessel** which meets the requirements of [23.1.1.3](#) shall carry **medical stores** stored in a sealed kit, which shall be reviewed as part of the **vessel's annual examination**.

23.1.6. Where carrying a specific item(s) is impractical or unsafe, this may be omitted subject to satisfactory risk assessment and medical advice from a qualified medical practitioner or pharmacist. Where any item(s) is omitted, this shall be stated on the checklist required in [23.1.4](#).

23.1.7. If the **vessel** carries **dangerous goods**, the **vessel's owner/operator** shall ensure that the additional requirements in [section 29.9](#) are met.

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<sup>80</sup> It is good practice for this to be someone other than the ship's **officer** who has responsibility for the **medical stores**. The **Administration** does not specify who may be competent to carry out the annual inspection of the stores.

## **23.2 Medical Care on Board a Vessel**

23.2.1 First aid training requirements are set out in [Appendix 5](#) of this Code, [Table A5.3](#). See also **MIN XXX**.

## **23.3 Vessel Owner's Liability for Medical Care**

23.3.1 A **vessel** owner has liability to meet the following:

- .1 Where a **passenger** requires medical care beyond the scope of first aid trained **crew**, the **vessel's owner/operator** shall as soon as reasonably practicable provide onshore access to medical care; and
- .2 Where a member of the **crew** requires prompt and adequate medical, surgical, optical or dental treatment which cannot be provided on board, the **vessel's** owner shall as soon as reasonably practicable provide onshore access to medical care at no cost to a **crew** member. See **MIN XXX**; and
- .3 For **crew** members who are ill or injured during, or as a result of, employment on the **vessel**, the owner shall pay for the medical care and any related expenses for accommodation or upkeep for up to 16 weeks, or until repatriation whichever is shorter.



## 24 Tenders and Daughter Craft

The purpose of this section is to define permitted use and requirements for **vessels** to operate as mother vessels, Type 1, Type 2 or Type 3 tenders which may otherwise referred to as a daughter craft, and ensure a level of safety for tenders which are launched and recovered from mother vessel(s) or shore/platform based facilities.

### 24.1 Mother Vessels or Shore/Platform-based Facility

24.1.1 A Mother Vessel is any vessel which leads, serves, or carries tenders, and may provide a **safe haven** for a Type 1 Tender.

24.1.2 Where a mother vessel or shore/platform-based facility carries its tender(s) onboard, it shall have lifting equipment capable of safely launching and recovering the tender in any sea or weather conditions anticipated in the mother vessel's intended area of operation or in the location of the shore/platform based facility.

24.1.3 A mother vessel or shore/platform based facility shall comply with [The Lifting Operations and Lifting Equipment Regulations \(LOLER\)](#) and [Provision and Use of Work Equipment Regulations \(PUWER\)](#) as amended. See also [section 25.2](#).

### 24.2 Tenders

#### 24.2.1 Type 1 Tenders

For the purpose of this **Code**, Type 1 Tenders are **vessels** which are towed or carried on board specifically for off-ship working on the business or support of the mother vessel.

24.2.1.1 For a **vessel** to operate as a Type 1 Tender the following requirements shall be met:

- .1 a **vessel** shall be coded and certified independently of the mother vessel with the endorsement "suitable for use as a Type 1 Tender" listed on the **Workboat Certificate**; and
- .2 be separately named from the mother vessel; and
- .3 be limited to operations no more than 10 **miles** from the mother vessel regardless of a tender's certified **area category of operation**; and
- .4 be limited to **daylight** hours in **favourable weather** regardless of a tender's certified **area category of operation**, and
- .5 shall have a risk assessment of the operation and equipment carried as per requirements of [section 3.14](#); and

- .6 shall follow [The Lifting Operations and Lifting Equipment Regulations \(LOLER\)](#)<sup>81</sup> and [Provision and Use of Work Equipment Regulations \(PUWER\)](#)<sup>82</sup> as amended where applicable.

## 24.2.2 Type 2 Tenders

For the purpose of this **Code**, Type 2 Tenders are **vessels** towed or carried solely for tendering persons or stores directly to and from the mother vessel and not for **workboat** duties. Such transits shall be restricted to nearby shore facilities or vessels, within harbour limits, or no more than 0.5 **miles** from the mother vessel whilst the mother vessel is **at sea**.

- 24.2.2.1 A Type 2 tender is not required to be coded and shall be considered as work equipment under [Provision and Use of Work Equipment Regulations \(PUWER\)](#) as amended.
- 24.2.2.2 For a **vessel** to operate as a Type 2 Tender the following requirements shall be met:
- .1 shall be clearly marked "Tender to [mother vessel name]"; and
  - .2 shall be clearly marked with the permissible maximum weight which can be safely carried; and
  - .3 a minimum of one handheld VHF shall be carried at all times; and
  - .4 if the Type 2 Tender is an **open boat**, **boat with a buoyant collar**, an **inflatable boat** or **rigid inflatable boat** it shall meet the kill cord requirements as per [section 8.8](#).

## 24.2.3 Type 3 Tenders

For the purpose of this **Code**, Type 3 Tenders are independent **vessels** which support the main working business of the mother vessel and may be carried on board.

- 24.2.3.1 For a **vessel** to operate as a Type 3 Tender the following requirements shall be met:
- .1 a **vessel** shall be coded and certified independently of the mother vessel with the endorsement "suitable for use as a Type 3 Tender" listed on the **Workboat Certificate**; and
  - .2 does not use the mother vessel as a **safe haven**; and
  - .3 be separately named from the mother vessel; and
  - .4 be limited to the certified **area category of operation**; and
  - .5 shall have risk assessments and documented procedures for all foreseeable operations; and

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<sup>81</sup> [MGN 332 \(M+F\) Lifting operations and lifting equipment \(LOLER\) regulations 2006](#), as amended.

<sup>82</sup> [MGN 331 \(M+F\) Provision and use of work equipment \(PUWER\) regulations 2006](#), as amended.

- .6 shall have its equipment carried as per the requirements of [section 3.14](#); and
- .7 shall follow [The Lifting Operations and Lifting Equipment Regulations \(LOLER\)](#) <sup>83</sup> and [Provision and Use of Work Equipment Regulations \(PUWER\)](#) <sup>84</sup> **as amended** where applicable; and
- .8 shall be designed and constructed in such a way to allow the **crew** to access and operated the release/lifting equipment in a safe way without risk of falling overboard or crushing.
- .9 External equipment on board type 3 tenders shall be suitably situated, or otherwise protected, to prevent damage via lifting equipment or launching facilities.

### **24.3 Tenders Launched and Recovered from Mother Vessels or Shore/Platform Based Facilities**

- 24.3.1 Where a tender is required to be launched and recovered by lifting or via a ramp, its hull structure shall be designed and constructed to withstand the expected range of static and dynamic loads.
- 24.3.2 Where a tender is required to be launched or recovered by lifting it shall be fitted with lifting points that correspond with the construction of the **vessel**. Additional factors of safety and operational limitations shall be considered if personnel will be on board the tender during lifting.

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<sup>83</sup> [MGN 332 \(M+F\) Lifting operations and lifting equipment \(LOLER\) regulations 2006, as amended.](#)

<sup>84</sup> [MGN 331 \(M+F\) Provision and use of work equipment \(PUWER\) regulations 2006, as amended.](#)

## 25 Cargo Carrying, Lifting, High Speed and Bow Push Up Operations

The purpose of this section is to set out the minimum additional requirements for **vessels** which intend to undertake any of the following operations:

- **Cargo** Carrying;
- Lifting (including diver lifts);
- **High Speed** or Planing Mode;
- Bow Push Up.

### 25.1 Cargo<sup>85</sup> Carrying Operations

25.1.1 All **cargo** shall be stowed and secured in a manner which will not adversely affect the safe operation of the **vessel**.

25.1.2 A **vessel** shall have adequate **cargo** support and securing arrangements appropriate for all intended modes of operation.

25.1.3 Stowed **cargo** shall not obstruct accessways or walkways, drainage of water from the deck or restrict visibility from the **wheelhouse**.

25.1.4 **Cargo** hatchways shall:

- .1 be of **weathertight** construction; and
- .2 have a coaming with a minimum height of 760 mm; and
- .3 be fitted with a means of closure which shall be secured to the coaming; and either
- .4 have a hatch cover and coaming designed to withstand (without permanent deformation) a hydrostatic load of not less than 1.5 tonnes/metre<sup>2</sup> overall and associated buckling stress; or
- .5 have a hatch cover and coaming of sufficient strength to withstand the loading due to **cargo** stowed on the hatch cover.

### 25.2 Lifting Operations

#### 25.2.1 Vessels Fitted with Lifting Devices

25.2.1.1 A **vessel** intending to operate lifting equipment shall comply with the following safety requirements<sup>86</sup>:

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<sup>85</sup> For scope of operation please see also [1.5](#).

<sup>86</sup> Additional information on maintenance and lifting operations is available in [Code of safe working practices for merchant seafarers \(COSWP\) amendment 6 2021](#)

- .1 [The Merchant Shipping \(Lifting Operations and Lifting Equipment\) Regulations 2006 \(SI 2006 No. 2184\)](#), **as amended**; and
- .2 [The Merchant Shipping \(Provision and Use of Work Equipment\) Regulations 2006 \(SI 2006 No. 2183\)](#), **as amended**.

A **vessel** fitted with a crane intending to carry out lifting operations shall also comply with the following safety requirements:

- .3 [MGN 332](#), **as amended**; and
- .4 BS 7121-2-4:2013 Code of practice for the safe use of cranes.

25.2.1.2 Lifting operations shall be undertaken only where the manufacturer's operating manual and instructions on safety procedures to be followed by the **crew** have been provided, and the **Certifying Authority** is satisfied that any lifting operations<sup>87</sup> do not endanger the **vessel** or any persons on board.

25.2.1.3 Means shall be provided for the **efficient** securing of **cargo** and any loose equipment on board during lifting operations.

25.2.1.4 A lifting system which incorporates counterbalance weight(s) may be specially considered through the **Certifying Authority** by the **Administration**.

25.2.1.5 A non-**decked vessel** shall not be fitted with a crane or other **lifting device(s)**. Exceptions to this may be **approved** by the **Administration** on submission of a proposal detailing that the requirements of [paragraph 5.1.7](#) are met.

## **25.2.2 Safety of Lifting Operations**

25.2.2.1 A risk assessment shall be conducted by the **vessel owner/operator** before any lifting operation or examination or testing of lifting equipment is carried out.

25.2.2.2 An inclinometer or other on board device to display heel angle to the crane or **lifting device** operator shall be provided for guidance when controlling the lifting items of unknown weight.

25.2.2.3 A prominent clear notice shall be displayed on or near the crane or **lifting device** and contain the following information and instructions<sup>88</sup>:

- .1 the maximum permitted load and outreach which satisfy the requirements of section [12B.4.3](#) or the Safe Working Load (SWL), whichever is the lesser; and
- .2 details of all accessways leading below the **weather deck** which shall be securely closed prior to undertaking lifting operations.

25.2.2.4 A crane or **lifting device** with a working load which varies with its operating radius shall have visible means provided to the operator at all times to determine the radius of load lifting attachments and safe working load.

<sup>87</sup> Special consideration shall be given to the risks associated with mobile cranes.

<sup>88</sup> A load radius performance chart for the crane or **lifting device** should be included as appropriate.

25.2.2.5 A hydraulic loader crane may be fitted with a pressure gauge to monitor the pressure in the load bearing cylinder, with a relief valve to prevent overload.

25.2.2.6 Where a saturated load is required to be lifted, prior to the lifting operation taking place, the **Master** shall give due consideration to the additional weight due to the item being saturated. Where a load is being lifted from the seabed consideration shall be given to suction and snagging.

25.2.2.7 **Vessels** fitted with more than one crane and/or **lifting device(s)** shall:

.1 documented procedure(s) in place for safe operation where crane(s) and/or **lifting device(s)** are operated simultaneously;

.2 have stability calculations for safe operation of multiple cranes and/or **lifting device(s)** included in the stability information booklet (See also [section 12](#)).

### 25.2.3 Testing and Maintenance of Lifting Devices

25.2.3.1 Load tests and inspections to verify the safe operation of the **lifting device**, its foundation and supporting structures shall be carried out to the satisfaction of the **competent person** in accordance with [LOLER Regulations](#). Tests shall be conducted in accordance with the manufacturer's recommendations for the installation. Such tests shall be repeated after any **modifications** (including any structural **modifications**).

25.2.3.2 A thorough examination of the **lifting device**, including functional tests, shall be carried out annually.

25.2.3.3 Where a marinised<sup>89</sup> loader crane has been installed, it shall meet the requirements of BS 7121, BS EN 13852<sup>90</sup>, and EN 12999<sup>91</sup>.

25.2.3.4 Where a land-based hydraulic crane that is not supplied with marine environment features is installed, it shall be subject to an enhanced inspection and maintenance schedule suitable for the environment and usage, as per BS 7121, BS EN 13852, EN 12999 and the [PUWER Regulations](#). The enhanced inspection regime shall include inspection of electrical connectors and components, drive train, structural components, fasteners and wire ropes.

### 25.3 Vessels Fitted with Diver Lifts

25.3.1 **Vessels** fitted with a diver lift shall comply with the requirements of [25.2.1.1](#) in addition to the requirements laid in this section.

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<sup>89</sup> Marinised should be understood to mean it is a type originally designed for use ashore, typically lorry mounted, that has been modified to better withstand the rigours of the marine environment. It will have been subject to a marine paint scheme and the hydraulic cylinder rams will either be manufactured of stainless steel, or of mild steel with multiple chrome coatings to reduce the risk of corrosion. In addition the crane will either have been de-rated by a significant amount, typically 30% to take account of the dynamic loading effect of being vessel mounted, or the vessel will be supplied with load charts, based on harbour conditions.

<sup>90</sup> BS EN 13852-1 Cranes – Offshore Cranes – General Purpose Offshore Cranes, BS EN 13852-2 Cranes – Offshore Cranes – Loader Cranes

<sup>91</sup> EN 12999 Cranes - Loader cranes

- 25.3.2 When conducting a heel test, a **vessel** shall be tested in the fully loaded condition with the lift system deployed in the air, with the maximum intended number of fully equipped divers and shall comply with stability requirements of [section 12B.3](#) of this **Code**.
- 25.3.3 A Safe Working Load (SWL) shall be assigned based on the specific diving operations and calculated using a minimum weight of 150 kg per diver. The overload test shall be carried out at 2 x SWL.
- 25.3.4 Where a **vessel** is fitted with a lift system on a transom, it shall not cause a reduction in **freeboard** at the aft end of more than 50% of the minimum permitted **freeboard** when deployed in air with the maximum intended number of fully equipped divers.
- 25.3.5 Precautions shall be taken to ensure safe means of access from the water and that the diver and/or equipment is protected from damage/injury or endangerment<sup>92</sup>, and that the lift is controlled when in motion.
- 25.3.6 All practicable precautions shall be taken during diving operations to minimise the risk of persons in the water receiving injury from rotating equipment. See **MIN XXX**.
- 25.3.7 Where a diver lift is installed or modified, the following shall be re-assessed, subject to approval by the **Certifying Authority**:
- .1 the strength of the **vessel's** construction;
  - .2 the stability of the **vessel**;
  - .3 the integrity of the bulwarks.
- 25.4 High Speed or Planing Mode Operations**
- 25.4.1 A **vessel** intending to operate at **high speed** or in a planing mode shall meet the requirements of [the Merchant Shipping and Fishing Vessels \(Control of Vibration at Work\) Regulations 2007](#) and [MGN 436 \(M+F\) as amended](#)<sup>93</sup>. See also [8.15.2](#).
- 25.4.2 A **vessel owner/operator** shall carry out a risk assessment for all **high speed** or planing mode operations.
- 25.4.3 The **Certifying Authority** shall ensure that **vessels** have individual inboard seating for all persons on board that allow them to effectively brace themselves and provide lateral support, which shall be located so that persons avoid the greatest shock loads.

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<sup>92</sup> The risk of injury or endangerment is greater where means of access to and from the water is from the stern.

<sup>93</sup> The **Administration** has also published [the Code of Practice for Controlling Risks due to Whole body Vibration on Ships \(ISBN No. 9780115530760\)](#) which is the official guide to complying with [the Merchant Shipping and Fishing Vessels \(Control of Vibration at Work\) Regulations 2007](#).

25.4.4 All persons on board should remain seated (or stood over jockey seats, as appropriate) during operations unless moving about the **vessel** for a specific purpose.<sup>94</sup>

25.4.5 On a **rigid inflatable boat, boat with a buoyant collar, inflatable boat or open boat** persons shall only be seated in designated inboard seats (this excludes the gunwale or the tubes of a **boat fitted with a buoyant collar**).

## 25.5 Bow Push Up Operations

25.5.1 Where a **vessel** is intended for operations to transfer any persons or **cargo** over the bow, the bow structure shall be suitably arranged and strengthened for this purpose.

25.5.2 Where a **vessel** is intended for the transfer of persons over the bow, it shall be equipped with suitable foredeck and bow fendering arrangements, including but not limited to, handrails, 'step-across' arrangements and flush deck fittings positioned within walkways.

25.5.3 Bow structures supporting fenders for bow push up operations shall be of suitable strength. Calculations to demonstrate that the bow structures will not yield or buckle under the design loads defined in [25.5.4](#) shall be subject to the approval of the **Certifying Authority**.

25.5.4 The minimum quasi-static design loads on the bow structures shall be:

- .1 0.4 x displacement along the axis of the **vessel**;
- .2 0.2 x displacement vertically;
- .3 0.2 x displacement transversely.

These loads are to be applied as independent loading conditions.

25.5.5 Bow structures shall be designed for contact with a single 350 mm diameter vertical bar.

25.5.6 Main propulsion machinery, shaft bearings, A and P brackets, propellers and rudders shall be suitably arranged and strengthened to take into account contact shock loading and to minimise vibrations.<sup>95</sup>

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<sup>94</sup> Further guidance can be found in the publication "**Passenger** Safety on Small Commercial **High Speed** Craft & Experience Rides, issue 3 - 2019."

<sup>95</sup> Vessels often operate at high engine power with no boat speed during push up operations. Operating this way can lead to high local vibrations from the propeller at zero speed, maximum thrust. This may affect propulsion performance, shorten component life and may expose **crew** to excess vibration.



## 26 Towing and Non-Self-Propelled Vessels

The purpose of this section is to set the minimum additional requirements for vessels engaged in **towing** or the requirements for non-self-propelled **vessels**.

### 26.1 General

26.1.1 The definition of **towing** includes three specific **towing** methods as outlined below:

- .1 by a towline about which the **towing** vessel is free to manoeuvre such that there is a risk of girting, where if the towline is attached towards amidships, it could adopt an angle to the **towing** vessel and provide a capsizing moment;
- .2 side by side with the **towing** vessel firmly attached alongside the towed vessel or floating object, so as to be able to manoeuvre as if one vessel;
- .3 fore and aft with the bow of the **towing** vessel firmly attached to the stern of the towed vessel or floating object, so as to be able to push, pull or manoeuvre as if one vessel.

26.1.2 Vessels with a Stability Information Booklet **towing** another vessel or floating object may use any of the specific **towing** methods outlined in [26.1.1](#).

26.1.3 Vessels without a Stability Information Booklet:

- .1 **towing** another vessel or floating object up to and including twice its displacement may use any of the specific **towing** methods outlined in [26.1.1](#).
- .2 **towing** another vessel or floating object more than twice its displacement may only use the specific **towing** method outlined in [26.1.1.2](#).

26.1.4 A **vessel** engaged in **towing** shall be of a design to ensure safe and effective **towing** operation.

26.1.5 A **vessel** engaged in **towing** shall be issued with a **Workboat Certificate** with a **towing** endorsement.

26.1.6 The requirements of this section do not apply to **vessels towing** in an emergency situation (force majeure).

26.1.7 A **vessel's towing** equipment shall be serviced in accordance with the manufacturer's recommended service schedule but with no more than 12 months between services. Certification of servicing shall be made available for review by the **Certifying Authority** at each **annual examination**.

26.1.8 A **vessel owner/operator** shall carry out a regular detailed examination of the **towing** gear, including but not limited to the winch/posts structure welds and/or retaining bolts. This shall form part of a documented procedure for the inspection, maintenance and routine testing of all **towing** equipment which shall also be made available for review by the **Certifying Authority**.

- 26.1.9 A **vessel owner/operator** shall have a documented procedure for the inspection, maintenance and routine testing of all **towing** equipment.
- 26.1.10 A Towage Survey shall be carried out by a **competent person** prior to the **vessel** undertaking **towing** operations. For the purposes of this section, a **competent person** may be a warranty surveyor, a **Certifying Authority** examiner or another person engaged or employed by the **owner/operator** having the necessary experience and training to carry out such a survey.
- 26.1.11 Where a **vessel** is intended to be engaged in **towing** the safety of the **towing** operation shall be assessed prior to departure.

## 26.2 Towing Arrangements

- 26.2.1 A **vessel** intending to engage in **towing** shall comply with the requirements of [table 26.2.1](#).

Table 26.2.1 – **Towing** Arrangements Requirements

	<b>Vessels towing up to and including twice its displacement</b>	<b>Vessels towing more than twice its displacement</b>
Design of <b>towing</b> arrangements	The design of <b>towing</b> arrangements shall minimise the overturning moment due to the lead of the towline.	
Offshore and sea tows	A <b>vessel</b> shall have an adequate propeller and forefoot immersion to minimise slamming.	
<b>Towing</b> preparation	<p>Whilst undertaking <b>towing</b> a <b>vessel</b> engaged in <b>towing</b> and a towed vessel shall ensure that the following are secured in closed position, blanked or sealed:</p> <ul style="list-style-type: none"> <li>.1 accessways (see section <a href="#">6.2</a> of this <b>Code</b>); and</li> <li>.2 windows (see <a href="#">section 6.3</a> of this <b>Code</b>); and</li> <li>.3 external appliances (see <a href="#">section 6.4</a> of this <b>Code</b>).</li> </ul> <p>All accessways shall be marked 'Not to be opened during towing operations' on both sides.</p>	
<b>Towing</b> equipment	A <b>vessel</b> shall be provided with a towline of not less than the length and diameter of the spare anchor cable. Where practicable, the towline shall be buoyant. <b>Towing</b> at sea by towline shall only be done using a <b>towing</b> hook, <b>towing</b> winch or towline.	
Release mechanism	A <b>vessel</b> engaged in <b>towing</b> shall have a positive means of safe and rapid release in all anticipated operating conditions.	
Emergency release mechanism	A <b>vessel</b> shall have a documented and drilled procedure and means to release the tow which shall be demonstrated to the approval of the <b>Certifying Authority</b> .	

		<p>The release mechanism shall be controlled and tested from all control positions including the winch and hook itself where practicable.</p> <p>Where the release mechanism is able to be operated at the tow hook or winch it shall be:</p> <ol style="list-style-type: none"> <li>.1 of the direct mechanical type; and</li> <li>.2 capable of independent operation from the release mechanism system; and</li> <li>3. independent of normal powered operation.</li> </ol>
<b>Towing arrangements load</b>	The <b>towing</b> arrangements (including any item and equipment of the <b>vessel</b> used for the purpose of <b>towing</b> and any supporting structure) shall be strong enough to withstand the loads imposed during <b>towing</b> operations.	
<b>Towing winch</b>	A <b>towing</b> winch shall be able to withstand a force equal to the breaking load of the tow line acting at its maximum height above the deck, without over-stressing either the winch or the deck connections.	
<b>Towing winch break</b>	The <b>towing</b> winch brake shall be capable of preventing the towline from paying out when the <b>towing vessel</b> is <b>towing</b> at its maximum continuous static bollard pull and shall not release automatically in case of power failure (but shall be capable of release).	
<b>Towing on a line</b>	The winch line shall be secured to the winch drum by methods which allow the tow to be fully released under loads only. The towline shall be connected by a weak-link to the drum to allow it to run free in an emergency	

### 26.3 Risk Assessment of Towing Operations

- 26.3.1 The **owner/operator** of a **vessel** engaged in **towing** operations shall have a risk assessment and plan of **towing** operations for every voyage where **towing** is undertaken and shall include the following:
- .1 weather, sea state and environmental conditions likely to be encountered during the planned voyage, and
  - .2 any restrictions applicable to the towed object that may limit the safe speed, and
  - .3 limitations of **towing** equipment in use at the time of the planned voyage, and
  - .4 adequate towline length and control systems; and
  - .5 effectiveness of communications between vessel undertaking **towing** and a towed vessel or floating object; and
  - .6 Safety of personnel during **towing** operations (see **MIN XXX**);

- .7 The means of safe access to a vessel undertaking **towing**, a towed vessel or floating object, and
- .8 The availability of **safe havens** on the planned route; and
- .9 Adequate accommodation, emergency escape provisions and equipment including life-saving appliances and fire appliances where a towed vessel or floating object is intended to be manned at sea.

26.3.2 Where area(s) of risk not covered by paragraph [26.3.1](#) is identified, mitigating action(s) shall be implemented as part of the risk assessment.

## **26.4 The Towed Vessel or Floating Object**

26.4.1 A **vessel** or floating object which is towed **to sea** from a point of departure in the UK shall be surveyed and issued by the **Administration** with an appropriate conditional Load Line or Load Line Exemption Certificate for the towed voyage, which shall be displayed on board the **vessel**. The Tow Master shall be provided with a copy of the certificate.

26.4.2 Where due to the nature of the **vessel** this is impracticable, this certificate shall be made available on shore for inspection by a relevant authority and by users of the **vessel**. A floating object being towed may require a condition survey.

26.4.3 Towed objects shall not be manned **at sea** unless they have accommodation designed to be occupied **at sea**, appropriate life-saving appliances, fire safety and emergency escape provisions.

A towed object may be boarded **at sea** for the purpose of inspection or maintaining safe navigation. A means of safe access from the vessel engaged in **towing** or a support vessel should be provided to the tow. The location and means of boarding should be suitable for both for **daylight** and night-time operations. Where transfer of **crew** is necessary, appropriate personal protective equipment shall be worn.

26.4.4 A towed **vessel** or floating object shall be provided with:

- .1 two lifebuoys and lines; and
- .2 an anchor and cable suitable for holding the tow in an emergency; and
- .3 a pre-rigged emergency towline suitable for continuing the tow in an emergency.

26.4.5 Where a towed **vessel** in a “dead ship” condition is required to be manned, then proposals shall be submitted to the **Administration** stating the reason, proposed manning, provision of lifejackets, survival suits and direct communication methods with the vessel engaged in **towing**.

26.4.6 A towed **vessel** or floating object shall be assessed to establish a suitable margin of safety on the (positive) stability and **freeboard** for the towed voyage.

26.4.7 Where any quantities of oil and pollutants are carried on board these shall be restricted to the minimum required for safe operation of the voyage.

## **26.5 Non-Self-Propelled Vessels**

### **26.5.1 General**

26.5.1.1 It is permissible for a **Workboat Certificate** to be issued to cover the safety of an unmanned, non-self-propelled **vessel** of defined rigid form<sup>96</sup> which is a working platform for equipment and/or power producing plant. The **vessel** shall be assessed for compliance with the parts of the **Code** which are appropriate to its commercial operation.

26.5.1.2 A non-self-propelled **vessel** which is not covered by section [25.5.1.1](#) may be **approved** by the **Administration** following referral from the **Certifying Authority** for consideration of the safety **standards** and certification to be applied<sup>97</sup>.

26.5.1.3 A jack-up **vessel** falls under the jurisdiction of the Health and Safety Executive when it is jacked up (operating clear of the surface of the water), and shall be equipped and certificated to meet the appropriate requirements.

### **26.5.2 Freeboard**

26.5.2.1 An **existing vessel** that is a non-self-propelled **vessel** with a valid United Kingdom Load Line Exemption Certificate but having an assigned **freeboard** less than that required by [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#), **as amended** shall be accepted for a **Workboat Certificate** under the same conditions given on the Exemption Certificate.

26.5.2.2 A non-self propelled **vessel** shall have Load Line marking in accordance with [section 13.3](#), with exception of scale of draught marks which are not required.

26.5.2.3 A non-self propelled **vessel** shall be marked at the forward end with one or more white bars 2000 mm in length and 150 mm high (or alternative marking which is clearly visible from the **towing vessel**) to the satisfaction of the **Certifying Authority**.

26.5.2.4 An unmanned pontoon barge on which the **freeboard** deck is penetrated only by small access openings which are closed by gasketed watertight covers should have **freeboard** determined in accordance with [the Merchant Shipping \(Load Line\) Regulations 1998 \(SI 1998 No. 2241\)](#), **as amended**, as if it was a Type "A" ship and omitting any correction for minimum bow height. At the discretion of the **Certifying Authority**, having due regard for safe voyages of the unmanned barge under conditions which shall be explicitly recorded on the **Workboat Certificate**, the **freeboard** thus determined may be reduced by **up to 25%**.

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<sup>96</sup> A vessel of defined rigid form includes a vessel which comprises an assembly of separate units held together by an **efficient** engineered joining system appropriate to the mode of operation of the **vessel**.

<sup>97</sup> When the stability standards of [section 12](#), or the **IMO** Intact Stability Code, are not appropriate for assessment of a particular small non-self-propelled **vessel**, the case should be referred to the **Administration** for consideration of stability standards to be applied.

## 27 Dedicated Pilot Boats and Workboats with a Pilot Boat Endorsement

The purpose of this section is to set out the minimum additional or alternative requirements for **dedicated pilot boats** and **workboats** with a **pilot boat** endorsement.

### 27.1 General

27.1.1 A **vessel** engaged in pilotage services can be recognised either as:

- .1 a **dedicated pilot boat** issued with a **Pilot Boat Certificate**; or
- .2 a **workboat** issued with **Workboat Certificate** with **Pilot Boat** Endorsement.

27.1.2 The **Administration** on behalf of the Secretary of State may exempt any **vessel** engaged as a **pilot boat** from any or all of the requirements for **pilot boats**. Applications for exemption shall be submitted through the **Certifying Authority** to the **Administration** for consideration.

### 27.2 Requirements for all pilot boats

27.2.1 All **dedicated pilot boats** shall be certificated even if they do not operate at sea.

27.2.2 Non-seagoing **dedicated pilot boats** operating in:

- .1 **daylight** only shall meet the minimum requirements for a **workboat** issued with a **Pilot Boat** Endorsement operating in **area category of operation 6**;
- .2 at night shall meet the requirements of a **vessel** operating in **area category of operation 3**.

27.2.3 All **dedicated pilot boats** and **workboats** with a **pilot boat** endorsement shall meet the applicable requirements detailed in [Table 27.2.3](#).

Table 27.2.3 – Requirements for all **pilot boats**

Paragraph of this Code	Workboats with Pilot Boat Endorsement	Seagoing dedicated Pilot Boats	Non-seagoing dedicated Pilot Boats
<a href="#">6.2.1.1</a>		An accessway which gives access to any <b>compartment</b> shall not be forward facing	
<a href="#">6.3</a>	Where a <b>vessel</b> is required to have storm shutters for all front and side facing <b>wheelhouse</b> windows, this can be moderated on the basis of recorded safe operating experience of <b>pilot boats</b> in their particular area of operation.		
<a href="#">8.6</a>	A <b>pilot boat</b> shall not be fitted with a petrol engine.		
<a href="#">10.1.2</a>	Pilot boarding activities shall be visible from the <b>control position</b> on the <b>pilot boat</b> .		

<a href="#">12B.6</a>	A <b>pilot boat</b> shall carry an approved Stability Information Booklet which meets the requirements of section <a href="#">12B.6</a> .	
<a href="#">13.3</a>	A <b>dedicated pilot boat</b> is not required to be marked with a <b>freeboard</b> mark.	
<a href="#">14.1</a>	4 parachute white illuminating flares shall be provided for emergency use in rescues at night. 6 red rocket parachute flares shall be provided. 2 line throwing appliances (half a set) shall be provided. Note A	
<a href="#">14.5</a>	<b>Pilot boats</b> shall be provided with <b>immersion suits</b> for all persons on board. See requirements of section <a href="#">14.5</a> .	
<a href="#">14.7</a>	Rescue retrieval equipment shall be provided as follows: .1 Transom steps and/or ladder or equivalent side ladder or scrambling net; .2 At least 2 buoyant lifelines of not less than 18 metres in length, with a quoit secured to one end; .3 A guard to the propeller(s). Where it is impracticable, alternative arrangements for protection of person(s) in the water from injury by the propeller(s) shall be fitted, subject to approval by the <b>Certifying Authority</b> .	
<a href="#">14.12</a>	A searchlight shall be provided which is permanently mounted so as to be capable of illuminating the <b>vessel's</b> side in way of the pilot ladder or the sea area around the boat.	
<a href="#">20.3</a> , <a href="#">20.4</a>	When the <b>Code</b> requirements for anchors and cables are considered inappropriate, the <b>competent harbour authority</b> shall seek the approval of the <b>Certifying Authority</b> for alternative provisions appropriate to the size of <b>vessel</b> and its area of operation.	
<a href="#">22.2</a>	For the safe access of personnel, the minimum width of side deck inboard of the bulwark or rails or toe-rail shall be 400 mm on <b>vessels</b> , the keels of which are laid, or are at a <b>similar stage of construction</b> , on or after 31 December 2018.	
<a href="#">22.2.3</a>	A <b>pilot boat</b> shall be fitted with suitable fall prevention equipment to prevent MOB where bulwarks or guardrails are not fitted in compliance with <a href="#">22.2.3</a> of this <b>Code</b> <sup>Note B</sup>	
<a href="#">23.1</a>	A compact stretcher shall be carried on a <b>pilot boat</b> .	
<a href="#">25.4</a>	Individual shock absorbent seating with headrests, footrests and movable armrests shall be provided for all members of the <b>crew</b> and the pilots to be carried. Seat belts shall be provided for the safety of seated <b>passengers, industrial personnel and crew</b> .	Seating, including seat belts, commensurate with the <b>vessel's</b> expected operating conditions, shall be provided for all <b>passengers, industrial personnel and crew</b> .
<a href="#">26.2</a>	The towline may be the spare anchor rope.	
<a href="#">28.1</a>	A <b>pilot boat</b> shall be manned in accordance with requirements of <a href="#">MGN 50 (M) – Manning of Pilot Boats, as amended</a> .	

Note A – This requirement may be waived for **pilot boats** operating in **categorised waters** only, subject to a satisfactory risk assessment by the operator.

Note B – Where the safety rail system required by [22.2.3](#) of [Table 22.2.3](#) is considered to be inappropriate because of other measures provided to prevent persons on deck from falling overboard (e.g. extent and height of bulwarks or rails), the **Certifying Authority** shall be satisfied that the provisions for the safe movement of pilots and other persons on deck during transfers are adequate.

## 28 Manning

The purpose of this section is to set out the minimum safe manning requirements for the number of the **crew** members and their qualifications necessary to ensure the safe operation of a **vessel**.

### 28.1 Minimum Manning and Qualifications Requirements

28.1.1 A **vessel** shall be safely manned, as a minimum, in accordance with the manning and qualifications requirements indicated in Tables [A5.1](#) and [A5.2](#) of [Appendix 5](#).

28.1.2 Where a **vessel** is operating in an **area category of operation** lower than that for which it is certificated, the **vessel owner/operator** may meet the manning requirements of the lower **area category of operation**.

28.1.3 Anyone employed or engaged in any capacity onboard a **vessel** shall complete the required **Administration-approved** mandatory training courses listed in [Table A5.3](#).  
If completion of the relevant mandatory courses cannot be demonstrated to the satisfaction of the **Administration**, then the **vessel** may be detained.

28.1.4 Anyone employed or engaged in any capacity onboard a **vessel** shall hold a valid medical fitness certificate. See **MIN XXX**.

28.1.5 All licences and **Certificates of Competency** (CoC) shall be appropriate to the **vessel's area category of operation** and type of operation. Qualifications differing from those listed in Tables [A5.1](#) and [A5.2](#) which are of equal standing or specialist application may be considered by the **Administration**.

28.1.6 A **Certificate of Competency** or Service shall not, on its own, be regarded as evidence of the ability to serve in a particular rank on a specific vessel. The **vessel owner/operator** shall ensure that there are sufficient trained personnel on board to work the **vessel** having due regard for the nature and duration of the voyage.

28.1.7 All **Certificates of Competency** shall be revalidated every five years.

28.1.8 A **vessel** shall carry at least one person qualified for distress and safety radio communication. The qualified person shall hold a valid **certificate of competence** appropriate to the **area category of operation** and issued by the relevant authority<sup>98</sup>.

28.1.9 Requirements for qualifications and experience of any person(s) assisting the **Master** in navigational watchkeeping are listed in [Table A5.1](#).

### 28.2 Single Handed Operations

28.2.1 The **Administration** does not recommend **single handed operations**.

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<sup>98</sup> The issue and enforcement of these certificates of competency is the responsibility of OFCOM for UK vessels.



28.2.2 **Single handed operations** are not permitted where:

- .1 a **vessel** is operating in **area category of operation** 0, 1 or 2; or
- .2 the duration of the voyage exceeds 8 hours; or
- .3 a watch system is necessary to maintain the safe navigation of the **vessel**; or
- .4 a **vessel** is operating in conditions of restricted visibility; or
- .5 a **vessel** is engaged in **towing**; or
- .6 a **vessel** is a **Dedicated Pilot Boat** or holds a **Pilot Boat** Endorsement, and is undertaking **Pilot Boat** duties; or
- .7 a **vessel** is involved in the transfer of personnel **at sea**; or
- .8 a **vessel** is used as a diving platform.

In some cases, because of the size and arrangement of the **vessel**, the **Certifying Authority** may deem the **vessel** to not be suitable for **single handed operations**.

28.2.3 Where necessary a **vessel** may be permitted by the **Certifying Authority** to undertake **single handed operations** if the following requirements are met:

- .1 the conditions of [28.2.2](#) do not apply, and
- .2 a **vessel** is restricted to **area category of operation** 3, 4, 5 or 6; and
- .3 during **single handed operation** a **vessel** shall only operate in **favourable weather** conditions, subject to favourable official weather forecasts for the area throughout the period of operation.

28.2.4 Where a **vessel** is permitted to undertake **single handed operations**, a **vessel's Workboat Certificate** shall be endorsed with the following: "Suitable for **single handed operation**".

28.2.5 Where a **workboat** with a **Pilot Boat** Endorsement is permitted to undertake **single handed operations**, the conditions on the **Certificate** shall be endorsed so that it is clear that the **vessel** shall not be used for **single handed operations** when undertaking **pilot boat** duties.

28.2.6 In all cases where **single handed operations** take place the **vessel owner/operator** and the **Master** shall be satisfied that it is safe to do so and shall at a minimum meet the following requirements:

- .1 a lifejacket which meets the requirements of [14.4](#) shall be worn at all times by the **Master**; and

- .2 a 406 MHz personal locator beacons (PLB)<sup>99,100</sup> with GPS and a light shall be worn by the **Master** whilst on the open deck **at sea**; and
- .3 no overside working shall take place whilst the **vessel** is being operated single handed; and
- .4 details of the time and point of departure, voyage plan and the Expected Time of Arrival (ETA) of every single handed voyage shall be left with a person ashore who shall be notified of the safe arrival on completion of each voyage; and
- .5 communication shall be made with the person ashore or with a **vessel** in company at agreed regular intervals; and
- .6 all **inflatable boats, boats fitted with a buoyant collar, rigid inflatable boats and open boats** that achieve planning speed (including tenders) shall meet the requirements of [8.8](#).

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<sup>99</sup> This has a global range and alerts the nearest Coastguard Station to a Man Overboard situation. It will typically take 5 minutes for the Coastguard to be aware of your position and they can then locate a casualty in the water to an accuracy of 100m.

<sup>100</sup> Registration of Devices. 406MHz PLBs should be registered with the EPIRB Registry, details of which are given in [MSN 1816 \(M+F\) 406 MHz Beacons: registration requirements](#).

## 29 Carriage and Transfer of Dangerous Goods

The purpose of this section is to set out additional requirements for **vessel** which are engaged in the carriage of **dangerous goods** and transfer arrangements for Marine Gas Oil (MGO).

### 29.1 General

For the purposes of the [section 29](#) all goods carried on board which are not included as part of **ship's stores** are considered to be **cargo**.

29.1.1 A **vessel** which is engaged in the carriage of **dangerous goods** shall comply with the following:

- .1 [the Merchant Shipping \(Dangerous Goods and Marine Pollutants\) Regulations 1997 \(SI 1997 No. 2367\)](#); and
- .2 [the Merchant Shipping \(Carriage of Cargo\) Regulations \(SI 1999 No 336\)](#); and
- .3 the International Maritime Dangerous Goods (IMDG) Code.

29.1.2 A **vessel** may carry the following United Nations (UN) Hazard Classes of **dangerous goods**<sup>101</sup> in gross total quantities not exceeding 30 kg or 30 litres, or less if stated by **IMDG Code**, without being issued with a Document of Compliance for the Carriage of **Dangerous Goods** (DoC DG) by the **Administration**:

- .1 Class 1.4 S;
- .2 Classes 2.1, 2.2;
- .3 Class 3;
- .4 Class 6.1, 6.2;
- .5 Class 8;
- .6 Class 9.

29.1.3 A **vessel** which carry **dangerous goods** in excess of limited quantities permitted to be carried in **IMDG Code** shall be issued with a DoC DG by the **Administration**.<sup>102</sup>

29.1.4 The details of the DoC DG shall be recorded on the **Certificate**.

29.1.5 For the current list of **dangerous goods** see the latest version of **IMDG Code**

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<sup>101</sup> Guidance including segregation requirements on the stowage and use of **dangerous goods** can be found in [MGN 497 Storage and use of dangerous goods onboard ship](#).

<sup>102</sup> The **owner/operator** of a **vessel** which is permitted by the **Administration** to carry **dangerous goods** or be engaged in oil fuel transfer, and which is engaged on a voyage outside the United Kingdom continental shelf shall contact the relevant Coastal/Port State(s) to confirm whether the DoC DG will be accepted.

and **MIN XXX**).

29.1.6 A **vessel** where bulk **cargo** is loaded into and carried in the **vessel's** hold or tanks is considered to be a small tanker or a bulk carrier and shall not be certified under the provisions of this **Code**.

29.1.7 A **vessel** is permitted to carry Class 1.4 compatibility group S (explosives).

29.1.8 A **vessel** is only permitted by the **Administration** to carry Class 1 explosives on a case-by-case basis (except where meets the requirements of [29.1.7](#)) where the following criteria are met:

- .1 no other **dangerous goods** shall be carried; and
- .2 a qualified military or explosive expert shall be present when explosives are being loaded, carried, unloaded or handled on board the **vessel**.

## **29.2 Document of Compliance for the Carriage of Dangerous Goods**

29.2.1 **Vessel** owners/operators wishing to carry **dangerous goods** shall undertake a safety assessment of the **vessel** before applying to the **Administration** for a DoC DG examination. This examination shall include at least the following: the carriage of additional safety equipment, number of persons on board, structural fire protection, fire suppression, separation between **dangerous goods** and accommodation, stability, positioning of life saving appliances, assembly stations and emergency exit routes.

29.2.2 Upon satisfactory completion of the examination, the DoC DG shall be issued by the **Administration** to be valid for a maximum of 5 years and shall be harmonised with the **Certificate** or Load Line Exemption Certificate, as appropriate.

29.2.3 **Vessel** owners/operators wishing to undertake fuel transfer are not required to be issued with Doc DG for the fuel to be transferred.

29.2.4 Conditions listed on the DoC DG Schedule 2 shall be confirmed as part of the **annual examination** by the **Certifying Authority**.<sup>103</sup>

29.2.5 The DoC DG shall detail the Class(es) of **dangerous goods** permitted to be carried and required safety equipment.

29.2.6 Carriage of both **dangerous goods** and **passengers** on board a **vessel** at the same time may only be considered on a case-by-case basis, subject to the approval of the **Administration**.

## **29.3 Documentation**

29.3.1 A **vessel** owner/operate shall identify a designated person on shore who shall be aware of details of the voyage, have a list of contact numbers for the emergency services and hold sufficient details of all the **dangerous goods** being carried on board so to assist the emergency services in being able to respond to any incident involving the **vessel**.

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<sup>103</sup> The **annual examination** shall include but not be limited to fire hoses, sprinkler systems and structural arrangements.

- 29.3.2 The designated person shall be employed by the **vessel owner/operator**.
- 29.3.3 Prior to accepting any **cargoes**, the designated person shall ensure that their carriage will be in compliance with this **Code**.
- 29.3.4 A **vessel** owner or designated person shall retain on shore a manifest of the **dangerous cargo** being carried, and shall at a minimum include:
- .1 the UN Number; and
  - .2 Proper Shipping Name; and
  - .3 Packing Group; and
  - .4 quantity of each **dangerous good** being carried.

#### **29.4 Stowage and Segregation Requirements**

- 29.4.1 **Dangerous goods**, with the exception of fuel stored in **vessel's** tank(s) for the purpose of fuel transfer, shall be carried on the **weather deck** only. Stowage and segregation requirements are detailed in [Table 29.4](#) and shall be read in conjunction with the **IMDG Code**.
- 29.4.2 **Dangerous goods** shall be secured firmly to avoid movement either during normal conditions, or when the **vessel** is subjected to sudden acceleration, deceleration, or a large angles of heel or trim.
- 29.4.3 Where a **vessel** carrying **dangerous goods** is subject to additional stowage and segregation requirements set out in the **IMDG Code** this shall overrule requirements of the table On Deck Space listed in Schedule 1 of DoC DG.
- 29.4.4 **Dangerous goods** shall be packed in accordance with the **IMDG Code**.

Table 29.4 – Stowage Segregation Requirements

CLASS		1.1	1.3	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
		1.2	1.5															
Explosives	1.1, 1.2, 1.5	*	*	*	4	2	2	4	4	4	4	4	4	2	4	2	4	X
Explosives	1.3, 1.6	*	*	*	4	2	2	4	3	3	4	4	4	2	4	2	2	X
Explosives	1.4	*	*	*	2	1	1	2	2	2	2	2	2	X	4	2	2	X
Flammable gases	2.1	4	4	2	X	X	X	2	1	2	2	2	2	X	4	2	1	X
Non-toxic, non-flammable gases	2.2	2	2	1	X	X	X	1	X	1	X	X	1	X	2	1	X	X
Toxic gases	2.3	2	2	1	X	X	X	2	X	2	X	X	2	X	2	1	X	X
Flammable liquids	3	4	4	2	2	1	2	X	X	2	2	2	2	X	3	2	X	X
Flammable solids (including self-reactive substances and solid desensitized explosives)	4.1	4	3	2	1	X	X	X	X	1	X	1	2	X	3	2	1	X
Substances liable to spontaneous combustion	4.2	4	3	2	2	1	2	2	1	X	1	2	2	1	3	2	1	X
Substances which, in contact with water, emit flammable gases	4.3	4	4	2	2	X	X	2	X	1	X	2	2	X	2	2	1	X
Oxidizing substances (agents)	5.1	4	4	2	2	X	X	2	1	2	2	X	2	1	3	1	2	X
Organic peroxides	5.2	4	4	2	2	1	2	2	2	2	2	2	X	1	3	2	2	X
Toxic substances	6.1	2	2	X	X	X	X	X	X	1	X	1	1	X	1	X	X	X
Infectious substances	6.2	4	4	4	4	2	2	3	3	3	2	3	3	1	X	3	3	X
Radioactive material	7	2	2	2	2	1	1	2	2	2	2	1	2	X	3	X	2	X
Corrosive substances	8	4	2	2	1	X	X	X	1	1	1	2	2	X	3	2	X	X
Miscellaneous dangerous substances and articles	9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

The numbers and symbols in the [Table 29.4](#) have the following meanings<sup>104</sup>:

1	" <b>away from</b> " means "Effectively segregated so that the incompatible goods cannot interact dangerously in the event of an accident but may be transported in the same <b>compartment</b> or hold or on deck, provided a minimum horizontal separation of 3 m, projected vertically, is obtained."
2	" <b>separated from</b> " means "In different <b>compartments</b> or holds when stowed under deck. Provided the intervening deck is resistant to fire and liquid, a vertical separation, i.e. in different <b>compartments</b> , may be accepted as equivalent to this segregation. For on deck stowage, this segregation means a separation by a distance of at least 6 m horizontally."
3	" <b>separated by a complete compartment or hold from</b> " means "Either a vertical or a horizontal separation. If the intervening decks are not resistant to fire and liquid, then only a longitudinal separation, i.e. by an intervening complete <b>compartment</b> or hold, is acceptable. For on deck stowage, this segregation means a separation by a distance of at least 12 m horizontally. The same distance has to be applied if one package is stowed on deck, and the other one in an upper <b>compartment</b> ."
4	" <b>separated longitudinally by an intervening complete compartment or hold from</b> " means "Vertical separation alone does not meet this requirement. Between a package under deck and one on deck, a minimum distance of 24 m, including a complete <b>compartment</b> , must be maintained longitudinally. For on deck stowage, this segregation means a separation by a distance of at least 24 m longitudinally."
X	- the <b>Dangerous Goods</b> List has to be consulted to verify whether there are specific segregation provisions
*	- see 7.2.7.1 of <b>IMDG Code</b> for the segregation provisions between class 1 substances or articles

## 29.5 Scuppers and Drains

29.5.1 Scupper and drainage arrangements shall be directed overboard with no connections to internal spaces.

## 29.6 Electrical Equipment

29.6.1 Electrical equipment and their installation located in the area(s) of the **vessel** where **dangerous goods** are carried shall be either of a certified **standard** appropriate for the **dangerous goods** being carried, or shall be securely isolated during the carriage of **dangerous goods**.

## 29.7 Structural Fire Protection

29.7.1 Where **dangerous goods** are stowed within 3 metres of bulkheads and decks which form boundaries containing fuel tanks, **machinery** and **accommodation spaces** they shall be insulated to A-60 standard. See also [section 15](#).

29.7.2 Where a **vessel** constructed of aluminium is required to be fitted with A-60 insulation it shall be of an approved '**A**' **Class** type tested under Part 3 of the **FTP Code** and be fitted in accordance with the conditions stated in the approval certificate.

<sup>104</sup> **IMDG Code** 7.6.3.2 Segregation of packages containing **dangerous goods** and stowed in the conventional way

29.7.3 Where a **vessel** constructed of fibre reinforced **plastic** (FRP) is required to be fitted with A-60 insulation it shall meet the performance standard detailed in [MGN 407](#), **as amended**.

29.7.4 Alternatively to the insulation requirements of [29.7.2](#) and [29.7.3](#) the insulation and structure shall be type approved to Annex 1 Part 11 of the **FTP Code 2010** – Test for fire resisting divisions for HSC (see **MIN XXX**). Acceptable insulations will have the notation of ‘Fire-resisting divisions 60’. The approval shall state the orientation of the division and whether the division is load bearing or non-load bearing.

## **29.8 Fire Fighting Equipment**

29.8.1 A **vessel** shall be fitted with an engine driven fire pump or a power driven self-priming fire pump. A second powered fire pump shall be provided.

29.8.2 Each fire pump shall be capable of supplying two hoses and nozzles. One of the nozzles shall be of a spray or jet type.

29.8.3 A minimum of two portable dry powder extinguishers with a minimum fire rating of 34B (in addition to the requirements of [section 16](#)) shall be provided and be readily accessible for the **dangerous cargo** area.

## **29.9 First Aid Kit Requirements**

29.9.1 A **vessel** carrying **dangerous goods** or their residues shall comply with the **IMDG Code** and the guidance in the **IMO Medical First Aid Guide** for use in accidents involving **Dangerous Goods** (MFAG) (Current Edition) and the guidance in Annex 4 of [MSN 1905 \(M+F\)](#) **as amended**.

29.9.2 A **vessel** carrying **dangerous goods** or their residues in quantities exceeding those defined in column 7 of the **Dangerous Goods** list of the **IMDG Code**, as whole or part of the **cargo**, the **Master** must ensure the correct antidote to the substance (plus the necessary ancillary equipment e.g. syringes) is carried. The correct antidote can be found in the **IMO Medical First Aid Guide** for use in accidents involving Dangerous Goods (MFAG), **as amended**.

## **29.10 Transfer Arrangements of Marine Gas Oil (MGO)**

For the purpose of this section Marine Gas Oil is defined as:

- .1 UN1202 gas oil or **diesel** fuel or heating oil;
- .2 Light oil fuel as defined in Regulation 12A.3.1 of **MARPOL Annex I**. Where light oil fuel is being transferred it is considered to be **dangerous goods** under the **IMDG Code**.



## 29.10.1 Oil Spillage Prevention

- 29.10.1.1 A **vessel** shall carry on board an up to date plan of provisions to deal with oil spillage during the transfer of oil within the **vessel** and from the **vessel** to the receiving facilities. <sup>105</sup> The plan shall be approved by the **Certifying Authority**.
- 29.10.1.2 A **vessel owner/operator** shall carry out a risk assessment for transfer of oil operations. The risk assessment shall include but not be limited to: the hose not breaking free, pollution, fire safety and training.
- 29.10.1.3 A **vessel owner/operator** shall have documented procedures which detail the loading, discharging, handling and transferring of fuel. The documented procedures shall be kept on board at all times.
- 29.10.1.4 All fuel, and products posing a risk to the environment shall be documented in a record book or log book.
- 29.10.1.5 A **vessel** shall carry suitable clean up equipment which shall be readily available when transferring fuel. Drains and scuppers shall be plugged during fuel transfer operation(s) to prevent oil entering the water.
- 29.10.1.6 Fuel pump(s) for transfer of oil shall have an emergency shut-down button which is easily accessible from a permanently manned position during fuel transfer operation(s).
- 29.10.1.7 A **vessel** shall have suitable stowage provided for fuel transfer hoses.
- 29.10.1.8 Fuel transfer hose(s) shall meet the following requirements:
- .1 have a dry break coupling fitted to ensure that no spillage occurs; and
  - .2 shall comply with an acceptable **standard** (see **MIN XXX**); and
  - .3 shall be bonded; and
  - .4 shall be of a suitable type for the product being transferred, system pressure and height of usage.
- 29.10.1.9 Fuel transfer hose(s) shall be maintained in good condition and shall be inspected at minimum on an annual interval or as per manufacturer's recommendations, whichever is more frequent. Worn or damaged hoses shall be replaced.
- ## 29.10.2 Vessels Engaged in MGO Transfer from the vessel's own fuel tank(s)
- 29.10.2.1 A **vessel** which is engaged in MGO transfer from the vessel's own fuel tank(s) shall comply with **MARPOL** requirements. See [Appendix 7](#).
- 29.10.2.2 A **vessel owner/operator** shall keep a record of MGO transfers including times, start and finish, quantities on board and quantities transferred.
- 29.10.2.3 A **vessel** which is engaged in transfer of MGO from the vessel's own fuel tank(s) shall have metering or equivalent arrangements and documented

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<sup>105</sup> **IMO** Resolution MEPC.54(32) **as amended** by Resolution MEPC.86(44) and MEPC.85 (44) may be used in developing the plan.

procedure(s) in place to ensure that sufficient fuel remains on board for all normal and emergency operations.

29.10.2.4 All **crew** on vessels engaged in MGO transfer operation(s) shall be trained in bunkering and transferring operations. The training shall at the minimum include the following:

- .1 safe use of the equipment to minimise fire risks and pollution; and
- .2 identifying the appropriate weather conditions in which to use the equipment required to undertake the operation; and
- .3 use of an up to date Material Safety Data Sheet (MSDS) provided by the fuel supplier, and which is specific to the fuel carried on board the **vessel**.

29.10.2.5 A **vessel** permitted to be engaged in transfer of MGO operation(s) shall:

- .1 meet the relevant requirements of this section and be subject to the satisfactory examination by the **Certifying Authority**; and
- .2 have the **Certificate** endorsed to permit this operation; and
- .3 be reported by the **Certifying Authority** to the **Administration**

### 29.10.3 **Vessels Engaged in Transfer of MGO and Other Products Posing a Risk to the Environment from a Portable Tank(s) or Portable and Fixed Intermediate Bulk Container(s) (IBC)**

For the purpose of this **Code**, a portable tank is one that is not permanently attached to the vessel and which is not used as the vessel's own fuel tank(s). Portable tanks and IBCs shall be considered as **cargo** and meet the relevant requirements of section [25.1](#).

This section applies to **vessels** engaged in transfer of MGO and other products posing a risk to the environment in a portable tank(s) or IBCs of less than 1000 litres. Vessels engaged in transfer of more than 1000 litres shall meet the requirements of [29.10.2](#).

For the purpose of this section products other than MGO posing a risk to the environment are defined as:

- .1 other oils (UN 3038);
- .2 any other product identified to cause or have the potential to cause harm to the environment" (e.g. lubricating oils).

29.10.3.1 A portable tank or IBC shall meet the constructional requirements of the **IMDG Code** for the carriage of MGO, UN1202 or oils classified as **dangerous goods** or products posing a risk to the environment.

29.10.3.2 A portable tank or IBC which is intended to be lifted shall meet the requirements of MSC.1/Circ.860 - Guidelines for the Approval of Offshore Containers Handled in Open Seas.

- 29.10.3.3 A stowage location of a portable tank or IBC shall be subject to approval of the **Certifying Authority** who shall assess that the **vessels** structure is suitable for the carriage of **cargo** and that the loads encountered are within design limits of the deck. The **Certifying Authority** shall assess the expected dynamic forces imposed whilst operating in the intended **area category of operation** and during landing of the tank units on board.
- 29.10.3.4 Where filling operation of portable tank(s) is carried out on board, the filling and transfer equipment shall be subject to the satisfaction of the **Certifying Authority** and shall at a minimum meet the following requirements:
- .1 fuel transfer hoses used for filling tanks shall meet the requirements of [29.10.1.7](#) – [29.10.1.9](#);
  - .2 filling and transfer equipment shall be fitted with an automatic shut off function to prevent overfilling and the tank filling and venting arrangements shall be compatible with this functionality and prevent water ingress;
  - .3 a portable tank shall be fitted with continuous level gauging of a type, which if damaged, will not result in leakage;
  - .4 powered pumps shall be provided with a remote stop in a suitable location;
  - .5 portable tank shall be provided with a suitable receptacle to prevent spillage of MGO over board.
- 29.10.3.5 If not considered within a **vessel's** stability assessment a separate stability assessment on the impact of the tanks on the **vessel's** stability (including free surface effect) shall be carried out.

## **29.11 Carriage of Dangerous Goods by Industrial Personnel or Passengers**

- 29.11.1 Where **dangerous goods** are carried by **industrial personnel** or **passengers**, it shall be declared to a member of the **crew** at the point of embarkation.
- 29.11.2 Any **dangerous goods** shall be included in the quantities permitted under [29.1.2](#) and the **crew** shall take the appropriate action for safe stowage.
- 29.11.3 A **vessel owner/operator** shall bring this requirement to the attention of all persons on board i.e. by providing relevant signage posted at the point of embarkation.

## 30 Prevention of Pollution

The purpose of this section is to set out the minimum requirements to satisfy appropriate national and international regulations and **standards** to ensure prevention of marine pollution from **vessels**. All **vessels** shall additionally comply with applicable regional and local prevention of pollution requirements.

### 30.1 Port Waste Reception Facilities

30.1.1 All **vessels** operating in UK or EU ports and harbours shall comply with [The Merchant Shipping \(Port Waste Reception Facilities Regulations\) 2003 \(SI 2003/1809\), as amended](#). See **MIN XXX**.

### 30.2 Sewage

30.2.1 [The Merchant Shipping \(Prevention of Pollution by Sewage from Ships\) Regulations 2020 \(MARPOL Annex IV\), \(SI 2020/620\)](#) (see **MIN XXX**) applies to the following vessels:

- .1 all **vessels** over 400 GT which are engaged on an international voyage; or,
- .2 all **vessel** of less than 400 GT which are certified to carry more than 15 persons and which are engaged on an international voyage.

30.2.2 A **vessel** which is not required to comply with [30.2.1](#) and operates in an area(s) where the direct overboard discharge from a water closet is prohibited shall be fitted with a 'holding tank' of sufficient capacity to store waste for discharge to shore facilities.

### 30.3 Garbage

30.3.1 All **vessels** shall comply with [The Merchant Shipping \(Prevention of Pollution by Garbage from Ships\) Regulations 2020 \(MARPOL Annex V\), \(SI 2020/621\)](#). See **MIN XXX**.

30.3.2 All **vessels** are prohibited from discharging garbage into the sea, with limited exceptions, as detailed in [Table 30.3.2](#). Under certain conditions discharge into the sea of food wastes, animal carcasses, cleaning agents and additives contained in hold washwater, deck and external surface washwater and **cargo** residues which are not considered to be harmful to the marine environment is permitted.

Table 30.3.2 – Summary of restrictions to the discharge of garbage into the sea under **MARPOL Annex V**

(Note: [Table 30.3.2](#) is intended as a summary reference. The provisions in **MARPOL Annex V** and the Polar Code, not [table 30.3.2](#), prevail.)

Garbage type <sup>1</sup>	All ships except platforms <sup>4</sup>		Offshore platforms located more than 12 nm from nearest land and ships
	Outside special areas and Arctic waters Regulation 4	Within special areas and Arctic waters	

	<b>(Distances are from the nearest land)</b>	<b>Regulation 6 (Distances are from nearest land, nearest ice-shelf or nearest fast ice)</b>	<b>when alongside or within 500 m of such platforms<sup>4</sup> Regulation 5</b>
Food waste comminuted or ground <sup>2</sup>	≥3 nm, en route and as far as practicable	≥12 nm, en route and as far as practicable <sup>3</sup>	Discharge permitted
Food waste not comminuted or ground	≥12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
<b>Cargo residues<sup>5,6</sup> not contained in washwater</b>	≥12 nm, en route and as far as practicable	Discharge prohibited	Discharge prohibited
<b>Cargo residues<sup>5,6</sup> contained in washwater</b>		≥12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)	
Cleaning agents and additives <sup>6</sup> contained in <b>cargo</b> hold washwater	Discharge permitted	≥12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2 and paragraph 5.2.1.5 of part II-A of the Polar Code)	Discharge prohibited
Cleaning agents and additives <sup>6</sup> in deck and external surfaces washwater		Discharge permitted	
Animal Carcasses (should be split or otherwise treated to ensure the carcasses will sink immediately)	Must be en route and as far from the nearest <b>land</b> as possible. Should be >100 nm and maximum water depth	Discharge prohibited	Discharge prohibited
All other garbage including <b>plastics</b> , synthetic ropes, fishing gear, <b>plastic</b> garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse	Discharge prohibited	Discharge prohibited	Discharge prohibited

- 1 When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.
- 2 Comminuted or ground food wastes must be able to pass through a screen with mesh no larger than 25 mm.
- 3 The discharge of introduced avian products in the Antarctic area is not permitted

unless incinerated, autoclaved or otherwise treated to be made sterile. In polar waters, discharge shall be made as far as practicable from areas of ice concentration exceeding 1/10; in any case food wastes shall not be discharged onto the ice.

4 Offshore platforms located 12 nm from nearest **land** and associated ships include all fixed or floating platforms engaged in exploration or exploitation or associated processing of seabed mineral resources, and all ships alongside or within 500 m of such platforms.

5 **Cargo** residues means only those **cargo** residues that cannot be recovered using commonly available methods for unloading.

6 These substances must not be harmful to the marine environment.

30.3.3 [Table 30.3.3](#) details vessel requirements for placards, garbage management plans and garbage record keeping.

Table 30.3.3 – **Vessel** requirements for placards, garbage management plans and garbage record keeping

Requirements	Applicability
Placards	All <b>vessels</b> >12 m LOA (see <a href="#">the Guidelines for the implementation of MARPOL Annex V Resolution MEPC.295(71), as amended</a> )
Garbage Management Plan	All <b>vessels</b> of 100GT or more; or All <b>vessels</b> carrying 15 persons or more
Garbage Record Book	All <b>vessels</b> over 400 GT and engaged on an international voyage; or All <b>vessels</b> certified to carry 15 or more persons.

### 30.4 Anti Foul Systems

30.4.1 All **vessels** shall comply with [The Merchant Shipping \(Anti-fouling Systems\) Regulations 2009 \(SI 2009 No. 2796\) as amended](#). See **MIN XXX**.

### 30.5 Air Pollution

30.5.1 All **vessels** installed with marine **diesel** engines constructed after 1st January 2000 with a power output greater than 130 kW shall be issued with an Engine International Air Pollution Prevention (EIAPP) Certificate and a Technical File, a copy of which shall be presented to the **Certifying Authority** and shall remain on the **vessel's** file. See **MIN XXX**.

30.5.2 All **vessels** with **diesel** and hybrid **propulsion systems** installed on or after 1st January 2021 operating in the Baltic and North Sea NOx emission control areas shall comply with The Merchant Shipping (Prevention of Air Pollution from Ships) (Amendment) Regulations 2021 (SI 2021/1108), **as amended**.

30.5.3 All **vessels** with **diesel** and hybrid **propulsion systems** installed on or after 1st January 2021 which do not meet the requirements of The Merchant Shipping (Prevention of Air Pollution from Ships) (Amendment) Regulations

2021 (SI 2021/1108), **as amended**, shall not operate in the Baltic and North Sea NOx emission control area<sup>106</sup>. This limitation shall be noted on the vessel's certificate.

### 30.6 Oil Pollution Prevention

30.6.1 All **vessels** shall comply with [The Merchant Shipping \(Prevention of Oil Pollution\) Regulations 2019 \(SI 2019 No. 42\), as amended](#)<sup>107</sup>.

30.6.2 All **vessels** shall meet the requirements for oil pollution prevention as set out in [Appendix 7](#) of this Code.

30.6.3 The **vessel owner/operator** shall develop and implement a Shipboard Oil Pollution Emergency Plan (SOPEP) to the same standard as the garbage management plan and to integrate it with the Health and Safety Protection Policy (see also [section 4](#) of [Appendix 8](#)).

### 30.7 Oil Filtering Equipment<sup>108</sup>

30.7.1 **Vessels** shall, as far as practicable, retain on board oil or oily mixtures or discharge in accordance with [30.8.4](#), or discharge them in accordance with the requirements of [30.8.1](#) and [30.8.2](#).

### 30.8 Control of Discharge of Oil<sup>109</sup>

30.8.1 In respect of the Antarctic area, any discharge into the sea of oil or oily mixtures from any ship shall be prohibited.

30.8.2 In the case of a **vessel** of less than 400 gross tonnage, oil and all oily mixtures shall either be retained on board for subsequent discharge to reception facilities or discharged into the sea in accordance with the following provisions:

- .1 the **vessel** is proceeding en route; and
- .2 the **vessel** has in operation equipment approved by that **Administration** that ensures that the oil content of the oil or oily mixture without dilution does not exceed 15 parts per million (ppm)<sup>110</sup>.

30.8.3 The **Administration** may consider accepting equipment approved in accordance with the IMO's relevant Resolutions for type approval of the filter, the 15-ppm alarm and the automatic stopping device in meeting the requirement of [30.8.2.2](#).

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<sup>106</sup> MARPOL Annex VI, Regulation 13.6

<sup>107</sup> The Annex to the International Maritime Organisation (IMO) MEPC.1/Circ 642 provides "Revised Guidelines For Systems For Handling Oily Wastes In Machinery Spaces Of Ships Incorporating Guidance Notes For An Integrated Bilge Water Treatment System (IBTS)".

<sup>108</sup> MARPOL Annex I, Regulation 14.4.

<sup>109</sup> MARPOL Annex I, Regulation 15.3

<sup>110</sup> MARPOL Annex I, Regulation 15.6

- 30.8.4 No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of the allowed discharge<sup>111</sup>.
- 30.8.5 The oil residues which cannot be discharged into the sea in compliance with this regulation shall be retained on board for subsequent discharge to reception facilities<sup>112</sup>.
- 30.8.6 Compliance with [30.8.1](#), [30.8.2](#) and [30.8.4](#) shall be documented, kept on board and made available for inspection upon request by the **Certifying Authority**. The **Certifying Authority** shall verify that the **vessel** complies with these requirements by, at a minimum, making a record of the following:
- .1 the size of the **vessel's** holding tank;
  - .2 documentation attesting to the approval of equipment;
  - .3 a record is kept of all related operations, maintenance and repair.

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<sup>111</sup> **MARPOL** Annex I, Regulation 15.8

<sup>112</sup> **MARPOL** Annex I, Regulation 15.9



## 31 Safety Management

The purpose of this section is to outline the Safety Management System requirements which are appropriate and applicable for **workboats**. A number of these requirements set out to protect **vessels** and **crew** from risks associated with cyber-attacks.

### 31.1 General

31.1.1 All **vessels** certificated under this **Code** shall, after a maximum of 3 years following entering into force of the Workboat Code Edition 3, fully phase-in to the requirements of sections [31.2](#) and [31.3](#).

### 31.2 Safety Management System

31.2.1 All **vessels** operating under this **Code** shall implement a Safety Management System (SMS) which complies with the principles of the International Safety Management (ISM) Code but is commensurate with the size and complexity of the **vessels** and company's operations. The SMS shall consider both terrestrial and marine aspects as appropriate to the **vessels** and company's operations. See [Appendix 8](#) for details of the areas which should be addressed by a SMS.

### 31.3 Cyber Security

31.3.1 A **vessel owner/operator** shall implement cyber security measures to protect the **vessel** and **crew** from risks associated with cyber-attacks.

31.3.2 The required extent of cyber security measures shall be commensurate with the size, complexity and type of operation of the **vessel**, and shall be determined by the **vessel owner/operator** and shall be to the satisfaction of the **Certifying Authority**.

Cyber security measures shall include at a minimum the following<sup>113, 114</sup>:

- .1 the systems, assets, data and capabilities which would impact **vessel** operations if disrupted;
- .2 roles and responsibilities of those managing cyber-risks. This shall be documented and made available to the **Certifying Authority** on request;
- .3 measures to minimise risks and defend against cyber-attacks;
- .4 means to successfully detect a cyber-attack in a timely manner;

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<sup>113</sup> MSC.428(98) Maritime Cyber Risk Management in Safety Management Systems.

<sup>114</sup> Cyber-secure connectivity, interface methods and management are detailed in IEC 61162-420 Maritime navigation and radiocommunication equipment and systems – digital interfaces. Part 420: Multiple talkers and multiple listeners – ship systems interconnection – companion standard requirements and basic companion standards; and IEC 63154 Maritime navigation and radiocommunications equipment and systems – cybersecurity – general requirements, methods of testing and required test results.

- .5 resilient means to restore key systems;
- .6 means to ensure critical back-up systems maintain functionality during a cyber-attack;
- .7 measures to successfully back-up and restore critical systems following a cyber-attack.

31.3.3 A **vessel owner/operator** shall carry out a cyber-security risk assessment which shall at a minimum include the following:

- .1 IT (information technology) systems;
- .2 OT (operation and control technology) systems; and
- .3 remotely operable equipment; and
- .4 communication systems; and
- .5 **crew** responsibilities in event of a cyber-attack.

This risk assessment shall be carried out where alterations are made to any of the above, or at least every five years.

It is strongly recommended, where no alterations are made, to renew the risk assessment at least every two years.

31.3.4 Where a cyber security system identifies an attack or potential risk(s) it shall be alerted at the **control position(s)**.

31.3.5 An electronic log shall be kept by the **vessel owner/operator** of:

- .1 systems which are permitted to be remotely accessed; and
- .2 all occurrences of remote access.

31.3.6 **Vessel owner/operator** shall have a suitable back-up plan which will allow the **vessel** to reach a **safe haven** in a safe and responsible manner following a cyber-attack. Where practicable, back-up files required to resume safe operations following a cyber-attack shall be located on board the **vessel**.

## APPENDIX 1

### ALTERNATIVE COMPLIANCE STANDARDS FOR MANNED RIGID INFLATABLE BOATS AND OPEN BOATS WISHING TO OPERATE OUTSIDE THE HOURS OF DAYLIGHT WITHIN AREA CATEGORY 3 OR 5

For the purposes of this Appendix, the following definitions are provided for use when applying [Figure A1.1](#) (see also [section 5.9](#)):

'full risk assessment' means a written risk assessment that fully considers all risks that the **vessel** and persons on board could reasonably expect to encounter during the operation outside of the hours of **daylight**. Mitigation to reduce the risks to the **vessel**, where possible, shall be provided.

'wearing of a lifejacket' means that all persons on board shall wear an approved lifejacket in accordance with the requirements of the **Code**. Where additional personal exposure protection clothing is worn, the lifejacket shall be suitable to be worn with that clothing. The lifejacket shall be fitted with a light.

'carrying of personal exposure protection clothing' means all persons on board shall have available on board a dry suit, a floatation suit meeting EN ISO 15027-1 or other suitable foul weather clothing. The **Administration** strongly recommends that this shall not include the use of an **immersion suit** which is designed only for emergency situations – for example, **SOLAS immersion suits** are not considered appropriate for this purpose. Warm head wear shall be provided and where the protective clothing is not insulated but is waterproof, warm clothing shall also be available to wear beneath it.

#### 1. Certification

1.1 “Area Category 3 Restricted” is an endorsement to a **vessel** already certificated to an existing **area category of operation** and not an area category of operation in its own right.

1.2 The **vessel** shall meet all the requirements of, and be certificated to, an **area category of operation**. This **Certificate** shall then be endorsed with “Area Category 3 Restricted”. The additional operational limitations and requirements as per [Figure A1.1](#), and any further conditions considered necessary by the **Certifying Authority**, shall be included within the ‘conditions’ section of the **Certificate**.

#### 2. Manning

2.1 The minimum **Master** qualification for operation outside the hours of **daylight** or where the **vessel** is used in accordance with [section 25.4 High Speed and Planing Operations](#), is a commercially endorsed RYA/DfT Advanced Powerboat Certificate with suitable experience of relevant operation. Minimum manning requirements shall be endorsed within the ‘conditions’ section of the **Certificate** for clarity to the **vessel owner/operator**.

Figure A1.1 Acceptance Matrix for Restricted Area Category 3 **Rigid Inflatable Boats** and **Open Boats** without a **Permanent Substantial Enclosure**

Daylight & Favourable Weather (Lower Area Category of Operation)		RESTRICTED CATEGORY 3 24/7 (without a Permanent Substantial Enclosure)			
		Distance from a safe haven	Favourable Weather & Seasonal Restrictions <sup>115</sup>	Favourable Weather & NO Seasonal Restrictions	NO Weather Restriction & NO Seasonal Restrictions
From a Safe Haven CATEGORY 4		Up to 20nm	<b>NOT PERMITTED</b>	<b>NOT PERMITTED</b>	<b>NOT PERMITTED</b>
		Up to 10nm	<ol style="list-style-type: none"> <li>1. Carrying of personal exposure protection clothing. To be worn at the discretion of the Master.</li> <li>2. Wearing of lifejackets.</li> </ol>	<ol style="list-style-type: none"> <li>1. All vessels to have a secondary means of propulsion with totally independent systems.</li> <li>2. Full Risk Assessment.</li> <li>3. Carrying of personal exposure protection clothing. To be worn at the discretion of the Master.</li> <li>4. Wearing of lifejackets.</li> </ol>	<b>NOT PERMITTED</b>
From a Point of Departure CATEGORY 6	From a Point of Departure CATEGORY 5	Up to 3nm	<ol style="list-style-type: none"> <li>1. Carrying of waterproof and warm clothing. To be worn at the discretion of the Master.</li> <li>2. Wearing of lifejackets.</li> </ol>	<ol style="list-style-type: none"> <li>1. Carrying of waterproof and warm clothing. To be worn at the discretion of the Master.</li> <li>2. Wearing of lifejackets.</li> </ol>	<ol style="list-style-type: none"> <li>1. All vessels to have a secondary means of propulsion with totally independent systems.</li> <li>2. Full Risk Assessment.</li> <li>3. Carrying of personal exposure protection clothing. To be worn at the discretion of the Master.</li> <li>4. Wearing of lifejackets.</li> </ol>

<sup>115</sup> Seasonal Restrictions – Restricted to operation between 1st April and 31st October.

## APPENDIX 2A

### LIQUID PETROLEUM GAS INSTALLATION FOR DOMESTIC MARINE USE

#### 1. General

- 1.1 A liquid petroleum gas system shall be constructed to ISO 10239. Alternatively, an equivalent **standard** will be acceptable where suitable gas detection equipment is fitted.

#### 2. Stowage of Gas Cylinders

- 2.1 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 **vessels** interior and fitted with a vent and drain, so that gas which may leak can disperse overboard.

- 2.2 The vent shall be installed near the top of the gas cylinder storage locker.

- 2.3 The drain shall:

- .1 be located at the bottom of the gas cylinder storage locker; and
- .2 run to the outside of the craft and terminate 75 mm or more above the 'at rest' waterline; and
- .3 be not less than 19 mm in diameter.

The drain and locker ventilation shall be 500 mm or more from any opening to the **vessel's** interior.

- 2.4 The cylinders and associated fittings shall be secured against movement and protected from damage in any foreseeable event.

- 2.5 Any electrical equipment located in cylinder lockers shall be certified to recognised **standard** for use in a potentially explosive atmosphere (See **MIN XXX**).

#### 3. Cylinders and Attachments

- 3.1 The supply pressure part of a liquid petroleum gas system shall be fitted with a readily accessible, manually operated isolation valve.

- 3.2 Where a liquid petroleum gas system utilises multiple cylinder installations, each cylinder shall be fitted with a shutoff valve and non-return valves located 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 empty cylinder.

- 3.3 Where multiple cylinders can supply a liquid petroleum gas system, the system shall not be used with a cylinder removed unless the unattached pipe is fitted with a suitable gas tight plug arrangement.

- 3.4 Cylinders not in use or not being fitted into an installation shall have the protecting cap in place over the cylinder valve.
- 3.5 It is strongly recommended to fit a bubble leak detector in the gas outlet pipe as close to the cylinder as possible.

#### 4. Fittings and Pipework

- 4.1 Systems shall comprise rigid pipes made from solid drawn copper alloy or stainless steel tubing. Steel tubing, aluminium or any materials having a low melting point shall not be used.
- 4.2 Connections between rigid pipe sections shall be made with hard solder (minimum melting point 450 degrees centigrade).
- 4.3 Compression or screwed fittings of an appropriate **standard** are recommended for use in LPG pipework installations.
- 4.4 Where a flexible hose is used it shall:
- .1 meet the requirement of EN 1763 class 2, 3 or 4 or equivalent; and
  - .2 not exceed 1m in length; and
  - .3 be installed in a manner that gives access for inspection along its whole length; and
  - .4 be protected from inadvertent damage where appropriate.
- 4.5 Pipework which passes through the following areas shall be solid and without joints: dedicated accommodation sleeping areas, **machinery spaces** and high fire risk spaces.
- Where the sleeping accommodation is adjacent to the **wheelhouse** or galley joints in the system shall be kept to a minimum.
- 4.6 Pipework which passes through bulkhead(s) shall not compromise bulkhead integrity and shall be fitted with a gas tight gland(s).

#### 5. Appliances

- 5.1 All appliances shall be secured to avoid movement.
- 5.2 All unattended appliances shall be of the room sealed type, i.e. where the gas flames are totally isolated and where the air supply and combustion gas outlets are piped to open air.
- 5.3 For the purpose of the **Code**, **cookers** and hobs are not classed to be unattended appliances.
- 5.4 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.

5.5 **Heaters** of a catalytic type shall not be used.

## 6. **Ventilation**

6.1 Spaces containing gas consuming appliances and storage containers shall be adequately ventilated.

6.2 The ventilation requirements of a space containing an LPG appliance shall be assessed against an appropriate **standard** (e.g. Annex B of ISO 10239).

6.3 LPG appliances which are used intermittently and have ventilators that can be closed, shall have appropriate signage warning of the need for ventilators to be opened before the appliance is used.

## 7. **Gas Detection**

7.1 Any **compartment** containing, or space adjoining, a gas-consuming appliance shall be equipped with means for detecting any leakage of gas.

7.2 It is strongly recommended to have means for detecting accumulation of gas in areas where an explosive atmosphere can potentially form.

7.3 Gas detectors heads shall be securely fixed in the lowest practicable 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. **machinery space bilge**) the detector head shall at least be fitted below the lowest point of ignition.

7.4 A gas detector system shall be activated 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 gas detector system shall incorporate a visible and audible alarm, which can be heard in the space concerned and the **control position(s)**.

7.5 Gas detection system components likely to be in an explosive atmosphere shall not be capable of igniting that atmosphere.

7.6 The gas detection system shall be tested frequently and maintained in accordance with the manufacturer's instructions.

7.7 It is strongly recommended to not sleep in spaces where gas-consuming open-flame appliances are left burning, because of the risk of carbon monoxide poisoning.

## 8. **Response to suspected or detected gas leakage**

8.1 A notice(s) detailing the action to be taken when an alarm is given by the gas detection system shall be displayed prominently in the **vessel**, and shall as a minimum set out the following instructions as appropriate:

.1 Where gas leakage is detected or suspected, all gas-consuming appliances shall be shut off at the main supply from the cylinder (s); and

- .2 No smoking or naked lights shall be permitted until the gas leakage has been eliminated and the spaces have been fully ventilated; and
- .3 The use of switches or other potential means of generating a spark shall not be permitted until the gas leakage has been eliminated and the spaces have been fully ventilated; and
- .4 Naked lights shall never be used as a means of locating gas leakage.

## **9. Testing and Maintenance**

- 9.1 LPG systems shall be tested regularly for leakage. See also [section 15.2.7](#).
- 9.2 Personnel involved in the installation, maintenance, servicing or repairing of gas systems on vessels must be Gas Safe Registered and hold a marine technician qualification, or equivalent if outside the UK.
- 9.3 All LPG system connections shall be checked by using the following procedure:
  - .1 routine observation of the bubble leak detector (if fitted); and
  - .2 visual inspection; and
  - .3 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); and
  - .4 manual leak testing (without breaking into the system); and
  - .5 testing with soapy water or non-ammonia based detergent solution (with appliance-burner valves closed, and cylinder and system valves open).
- 9.4 Where gas leakage is present, cylinder valves shall be closed and the system repaired before any further use.



## APPENDIX 2B

### ON BOARD INSTRUCTIONS AND INFORMATION FOR FIRED HEATING APPLIANCES

1. Instructions and information for a **vessel's** fired **heating appliances** shall be stowed on board, and shall as a minimum set out and include the following:
  - .1 fired **heating appliance** manual; and
  - .2 instructions for turning off **heater** fuel supply if a manual valve is fitted; and
  - .3 instructions to ensure **heater's** cool down cycle is not interrupted; and
  - .4 instructions for refuelling and type of fuel used; and
  - .5 specify required service intervals; and
  - .6 instructions on action to be taken in the event of carbon monoxide alarm being initiated.
  
2. As a minimum the following information shall be clearly displayed in the immediate vicinity of the appliance(s):
  - .1 **Heater** exhaust components may be hot during and directly after **heater** operation;
  - .2 Ensure exhaust outlets are not obstructed while **heater** is in operation;
  - .3 The air temperature at **heater** outlet may be hot;
  - .4 Ensure all **heater** outlets or intakes are kept clear during **heater** operation.

## APPENDIX 3

### STABILITY INFORMATION BOOKLET CONTENTS

A template Stability Information Booklet is available in **MGN XXX**. A **vessel owner/operator** shall use the applicable guidance in this Appendix to create a suitable Stability Information Booklet.

It may be acceptable, subject to the discretion of the **Certifying Authority**, to not include a GZ curve and GZ-based stability analysis for each example loading condition for the following:

- .1 where limiting KG curves or data is provided, including instructions on their use; and
- .2 the **vessel** is of an acceptable type (e.g. pontoon barges with no below deck tankage or loadable spaces; propelled **vessels** with limited loading options; or **dedicated pilot boat**).

In such cases it shall be acceptable to provide data on all deadweight items, locations and free surface moments etc. used in the loading condition to:

- .1 calculate the final draught trim and heel; and
- .2 demonstrate the condition is compliant with the limiting KG requirements; and
- .3 demonstrate the size of margin required; and
- .4 crane conditions shall be compliant with KG requirements (upright) and the resulting heel angle and minimum **freeboard**.

Section	Schedule of Contents	
	<b>Front Cover</b>	
	Name of <b>vessel</b>	It shall cover all essential items to assess the provenance and applicability of the SIB
	Intact Stability Information Booklet (or intact and damaged, if applicable)	
	Date of issue	
	Version number	
	Name and address of Naval Architect	
	<b>Contents</b>	
	Contents with page numbers	Reports without page numbers shall not be accepted
	<b>General Particulars</b>	
	<b>Vessels's</b> name	General particulars to confirm applicability of the book to the <b>vessel</b> , assess the operational envelope and identify
	Official number	
	Port of registry	
	<b>Certifying Authority</b>	
	Number of persons carried	

	Maximum weight of <b>cargo</b>	responsible persons in the build and operation.
	<b>Area category of operation</b>	
	Name and address of owners	
	Class	
	Material of construction	
	Yard number	
	Builder's name and address	
	Fitted out by (if different)	
	Date of build	
	Date of commissioning	
	Dimensions	
	<b>Length</b> overall	
	Length BP	
	Moulded beam	
	Depth	
	Rake of keel	
	Displacements: fully laden, lightship	
	Draughts: fully laden, lightship	
	Minimum <b>freeboard</b> : lightship <b>freeboard</b>	
	Gross and net tonnage	
	Nomenclature/abbreviations/glossary	Desirable but not essential if definitions are included
<b>General arrangement</b>		
	Profile drawing – including definition of FP, AP, midships, base line (when not included above), protocol for positive and negative trims	Datums used throughout shall be clearly indicated
	Plan drawing. Downflooding openings can be included here or in another section	
<b>Arrangement of tanks and ballast</b>		
	Plan and profile views showing tank positions and position of any permanent ballast. May be included in general arrangement or tank usage sections	
<b>Arrangement of sections</b>		
	An explanation of how the booklet is arranged	Booklet arranged in sections so that the most essential matters are brought to the user's attention first. The criteria against which stability is assessed shall be referenced
	Section 1 – operational/stability information	
	Section 2 – technical data and loading conditions	
	Section 3 – reference information including lightship and VCG derivation	
	Basic information: name and version number of stability software used; responsible agent/agency for carrying out the inclining experiment (or VCG weight estimate in the case of some multihulls) and supplying the dimensions/drawings for modelling	
<b>Section 1 – Stability information</b>		

1.1	Special notes regarding the stability of the ship, including the intact (and damaged, if applicable) standard code reference criteria i.e. 12B.3.8 or 12B.3.9	
	Example of static stability curve with details of Area A, Area B, Area C, Point of X, Maximum GZ and Initial GM	
	Pass or fail status of the <b>vessel</b> and where 12B.3.9 is used as an alternative criteria	
1.2	General instructions for the <b>Master</b> : Keeping a copy of the SIB on board and in date; loading conditions not to be exceeded; <b>freeboard</b> marks not to be immersed; records of minor <b>modifications</b>	Any <b>modifications</b> , minor or otherwise, shall be advised to the <b>Certifying Authority</b> . If necessary a SIB addendum to the approved SIB can be issued
1.3	Tank usage and free surface moments and effect on stability (where not included above)	
1.4	General precautions against capsizing and downflooding: <b>area category of operation</b> , stability criteria, weather, reference to location of downflooding openings	
1.5	<b>Cargo</b> condition summary, maximum load, height and position. Reference to limiting KG data for non-standard conditions	
1.6	Sample load condition table and instructions for use	
1.7	Maximum VCG (KG) curve/table with appropriate range of displacement and trim and instructions for use. Example showing the use of the maximum KG curve and trim calculation	Blank calculation page(s) are recommended. Other copies can be made
1.8	Statement on maximum crane load (kg) and maximum outreach (m), if applicable, and any other relevant advice regarding crane operation, such as the provision and use of an inclinometer	
1.9	GZ curve – condition 1, fully laden departure including <b>critical downflooding</b> angle. Data including DISP, draft FP, draft AP	GZ curve may be omitted from load the condition where KG curves/data and instructions for their use. It is desirable but not essential to include WSA, WPA, LCB, VCB, GZ, LCF, TCF TCP against heel angle 0 to 90 degrees
	GZ data and assessment against criteria – condition 1	

	Stability summary detailing required criteria, achieved criteria, margin and pass/fail for following	Or as modified by the alternative criteria followed (e.g. 11.6.7 of <b>MGN 280</b> )
	Area 0° to 30°	
	Area 0° to 40° or downflooding angle	
	Area 30° to 40° or downflooding angle	
	GZ at 30° or greater	
	Angle at GZ max	
	GM	
	Downflooding angle	
1.10	GZ curve – condition 2 – arrival 10% consumables including <b>critical downflooding</b> angle. Data including DISP, draft FP, draft AP	GZ curve may be omitted from loading condition where KG curves/data and instructions for their use is included. It is desirable but not essential to include WSA, WPA, LCB, VCB, GZ, LCF, TCF, TCP against heel angle 0 to 90°
	Stability summary, detailing required criteria, achieved criteria, margin and pass/fail for following	Or as modified by the alternative criteria followed (e.g. 11.6.7 of <b>MGN 280</b> )
	Area 0° to 30°	
	Area 0° to 40° or downflooding angle	
	Area 30° to 40° or downflooding angle	
	GZ at 30° or greater	
	Angle at GZ max	
	GM	
	Downflooding angle	
1.11	GZ curve, GZ data and assessments against criteria for any other relevant load condition, for instance different load/ <b>passenger</b> combinations. Limiting conditions which define the operational envelope shall be included. Operational conditions including any crane usage and a condition showing the maximum deck <b>cargo</b>	
	Summary of pass/fail margins and stability category for each load condition	
1.12	<b>Freeboard</b> and draught marks	
	Depth from baseline to top of deck at midships (m)	
	Maximum fully laden draught at midships (m)	
	Minimum <b>freeboard</b> at midships (m)	

	Position of midships (metres aft of foreside of stem at deck level)	
	Diagram showing location and dimensions of <b>freeboard</b> mark	
	Where <b>freeboard</b> must be calculated by reference to <a href="#">the Merchant Shipping (Load Line) Regulations 1998 (SI 1998 No. 2241)</a> , <b>as amended</b> , the calculation summary shall be either included here or in an appendix and referenced here	
<b>Section 2 – Technical data and loading conditions</b>		
2.1	Draught marks and hydrostatic datum	
	Drawing identifying draught marks and datum	
	Determination of draughts at AP and FP relative to baseline from draughts read at marks	
2.2	Angles of deck edge immersion and downflooding	
	Drawing identifying downflooding openings	
	Table listing each downflooding point, the area of each opening, the angle of immersion in each loadcase	
2.3	Arrangement of tanks and ballast	
	Drawing showing tanks and ballast fitted	
	Table listing tank capacities, soundings, fluid, location, weight, LCG, VCG, TCG and maximum FSM	
	Notes on the use of free surface moments	
	Include calculation of maximum free surface moment	
	Details of ballast weight and location	
	Reference to baseline, forward perpendicular, transverse origins and positive and negative trim	
2.4	Loading condition – departure 100% consumables	
	Weights and centres table of lightship and deadweight items, referenced to LCG, VCG, TCG and free surface	
	Include draught at AP, draught at FP, mean draught, trim, GM solid, free surface correction GM fluid	
2.5	Loading condition – arrival 10% consumables	
	Weights and centres table of lightship and deadweight items, referenced to LCG, VCG, TCG and free surface	
	Include draught at AP, draught at FP, mean draught, trim, GM solid, free surface correction GM fluid	
	Make-up of all other load conditions which are presented in Section 2 with weights and centres table of lightship and deadweight items, referenced to LCG, VCG, TCG and free surface	

<b>Section 3 – Reference information including lightship and VCG derivation</b>		
3.1	Hydrostatic – trim forward (maximum envisaged in the operational envelope)	
	For an appropriate range of draughts: displacement, LCB, LCF, KB, KMT, KML, TPC, MTC (WPA, WSA, dimensionless coefficients as desired may be included though are not necessary)	
3.2	Hydrostatic data – level trim	
	For an appropriate range of draughts: displacement, LCB, LCF, KB, KMT, KML, TPC, MTC (WPA, WSA, dimensionless coefficients as desired may be included though are not necessary)	
3.3	Hydrostatic data – trim aft (maximum envisaged in the operational envelope)	
	For an appropriate range of draughts: displacement, LCB, LCF, KB, KMT, KML, TPC, MTC (WPA, WSA, dimensionless coefficients as desired may be included though are not necessary)	
3.4	Intermediate trims shall be included where maximum trim is over 0.3m, to enable reasonably accurate interpolations	
3.5	KN data – trim forward (maximum envisaged in the operational envelope)	
	For an appropriate range of displacement vs. appropriate range of heel angle	
3.6	KN data – level trim	
	For an appropriate range displacement vs. appropriate range of heel angle	
3.7	KN data – trim aft (maximum envisaged in the operational envelope)	
	For an appropriate range displacement vs. appropriate range of heel angle	
	Intermediate KN data shall be included where maximum trim is over 0.3m, to enable reasonably accurate interpolations	
3.8	Notes on the use of KN data	
	Insert hull section drawing illustrating the relative positions of K, M, G, GZ and B	
3.9	Inclining experiment report	
	List vessel, type, location, date and time, weather, sea state, SG of water, condition of vessel	
	Tank ullages, persons present, inclining weights, pendulum length(s)	
	Forward and aft draughts, mean draught, trim	
	Lists of weights and centres (VCG, LCG) to come off and go on	

	Inclined displacement derived from draughts and trims	Where lightship particulars of a sister vessel are based on a lightship check the inclining report for the 'lead' sister vessel shall be included in the stability information of the subsequent sister(s)
	List of pendulum readings	
	GM calculation (averaged)	
	Displacement, LCG, KMT, GMT, free surface correction, VCG (KG) in inclined condition	
3.10	Lightship derivation	
	Weights and centres table of items to be removed	
	Weights and centres table of items to be added	
	Weights and centres summary	
3.11	Record of <b>modifications</b> to lightship	
3.12	Crane	
	Crane model	
	Crane position	
	Load radius diagram	
	Including <b>freeboard</b> and angle of heel at maximum heeling moment, compliance with KG requirement	
	All personnel to be on deck when lifting	
	All principal openings to remain closed when lifting	
	Restriction on lifting over "crane" side	
	<b>Vessel</b> to have no residual heel prior to lift	
	Variation from standard load-radius diagram for crane	
	Any additional load and outreach data that may be relevant particularly if crane off centreline	
3.13	Damaged stability condition	
	Summary of worst damaged <b>compartment</b> condition and criteria assessed against, together with pass (or fail) margins and a sketch showing the equilibrium waterline	
	Equilibrium conditions of other damaged <b>compartment</b> conditions may also be included if relevant or pass fail margins are similar to the worst condition	
3.14	Beaufort scale of wind speeds and corresponding pressures	
3.15	Metric/imperial conversion	
N/A	Appendix for <b>freeboard</b> calculation to Load Line Regulations where required by <a href="#">the Merchant</a>	



	<a href="#">Shipping (Load Line) Regulations 1998 (SI 1998 No. 2241)</a> , <b>as amended</b> , under <a href="#">Section 13</a> of the <b>Code</b> .	
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## APPENDIX 4

### USE OF ISO “FIRST OF TYPE” RIGHTING MOMENT CURVE FOR STABILITY ASSESSMENT

#### 1. Introduction

- 1.1 Where the stability of a **vessel** is assessed using the righting moment curve prepared to show compliance of the design with ISO 12217, this curve shall be subject to verification and, if necessary, correction, as set out below.
- 1.2 ISO 12217 normally requires the stability to be assessed in the Minimum Operating Condition. However, where the Loaded Displacement Mass is more than 15% greater than the former, the stability shall also be assessed in the heavier condition.
- 1.3 Where data is available for both conditions, the heavier shall be used for the purposes of this **Code**.

#### 2. Stability Verification Test

- 2.1 A **vessel** shall be subjected to the stability verification test where loaded, as close as is practicable, to the loading condition required for the righting moment curve (as defined in ISO 12217) to be checked. The purpose of the stability verification test is to verify that the **vessel** is adequately described by the righting moment curve of the “First of Type” used for ISO 12217 assessment. Where this is not adequately demonstrated, this curve shall be corrected as described in [2.2](#) – [2.7](#) before reassessment of the stability compliance.
- 2.2 The stability verification test shall be conducted in calm conditions. The **vessel** shall be heeled to both port and starboard as much as is practicable by the application of a heeling moment sufficient to produce a heel angle of:
- .1 at least three degrees in either direction; and
  - .2 at least five degrees in either direction i.e. in total two heeling moments and four heel angles.

The heeling moments and angles of heel shall be recorded as precisely as is practicable.

- 2.3 The heeling moments shall be applied using weights that are part of the loaded condition of the **vessel** and moved through a known amount. The righting lever deduced for that angle of heel is given by:

$$GZ = (w \cdot h \cdot \cos \Phi) / (\Delta)$$

Where:

GZ = righting lever (m)

w = mass moved to produce the heel angle (kg)

$h$  = distance parallel to design waterline mass was moved through to produce heeling moment (m)

$\Phi$  = angle of heel produced (degrees)

$\Delta$  = displacement of vessel as used to derive the GZ curve in question (kg)

- 2.4 Where weights need to be moved vertically from their normal location in order to generate the necessary heeling moment, the resulting measured righting moment shall be corrected for the change in the **vessel's** vertical centre-of-gravity.

The correction  $GG_1 \sin \Phi$  shall be added to the measured GZ when the weights were raised during the heeling test.

$GG_1$  = the shift in **vessel** vertical centre of gravity due to the weights moved.

- 2.5 The "First of Type" righting moment curve shall be considered acceptable for stability assessment if the average deviation of the four values ([see 2.3](#)) and corrected ([see 2.4](#)) below the righting moment curve is equal to, or less than, 5%. If the deviation is above the righting moment curve no limit shall apply.

- 2.6 Where the average deviation for the four values ([see 2.3](#)) above the righting moment curve is more than 5%, the "First of Type" righting moment curve shall be corrected throughout the range of heel angles by an amount equal to  $GG_1 \sin \Phi$

$\Phi$  = any heel angle

The value of  $GG_1$  used for this correction shall be obtained as follows:

$$GG_1 = \{(\delta_1/\sin\Phi_1) + (\delta_2/\sin\Phi_2) + (\delta_3/\sin\Phi_3) + (\delta_4/\sin\Phi_4)\}/4$$

$\delta_n$  = difference in measured GZ from "First of Type" GZ curve at angle  $\Phi_n$  for the four values obtained and calculated (see [2.2](#)– [2.4](#)).

- 2.7 Where the righting moment curve is modified according to [2.1](#) – [2.6](#) the **vessel's** stability shall be reassessed in accordance with the requirements of [Section 12](#).

## APPENDIX 5

### SAFE MANNING

#### 1. General

- 1.1 **Vessels** to which this **Code** applies and which comply with its requirements, will be exempt from the need to comply fully with [the Merchant Shipping \(Standards of Training, Certification and Watchkeeping\) Regulations 2015, as amended](#), and [the Merchant Shipping \(Safe Manning, Hours of Work and Watchkeeping\) Regulations 1997, as amended](#), provided the manning of the **vessel** is in accordance with the standards and **area categories of operation** given in sections [3.10](#) and [28.1](#) of this **Code**.

#### 2. Minimum Manning and Qualification Requirements

- 2.1 The minimum manning and qualifications requirements are indicated in Tables [A5.1 Minimum Deck Manning Requirements](#) and [A5.2 Minimum Engineering Manning Requirements](#).

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Table A5.1 – Minimum Deck Manning Requirements

Area Category of Operation		6	5	4	3	2	1	0
MASTER QUALIFICATION ACCEPTABLE FOR GIVEN AREA CATEGORY OF OPERATION	STCW <b>Master</b> ( <b>Workboat</b> less than 500GT unlimited area)	Note G	√	√	√	√	√	√
	STCW <b>Master</b> (Code Vessels less than 200GT unlimited area)	Note E	√	√	√	√	√	√
	RYA/ <b>MCA</b> Yachtmaster Ocean Certificate of Competency	Note A	√	√	√	√	√	√
	STCW <b>Master</b> (Code Vessels less than 200GT limited to 150 miles from a <b>safe haven</b> )	Note E	√	√	√	√	√	
	RYA/ <b>MCA</b> Yachtmaster Offshore Certificate of Competency or Service	Note A	√	√	√	√	√	
	<b>MCA</b> Boatmasters Licence	Note B	√	√	√	√		
	RYA/ <b>MCA</b> Yachtmaster Coastal Certificate of Competency or Service	Note A	√	√	√	√		
	RYA/ <b>MCA</b> Powerboat Advanced Certificate of Competency	Note F Note A	√	√	√	√		
	RYA/ <b>MCA</b> Powerboat Advanced Practical Certificate (only if issued before 1 <sup>st</sup> January 2005)	Note F Note A	√	√	√	√		
	Certificate of competency for appropriate area issued by Competent Authority	Note A Note C	√	√	√	√		
	RYA/ <b>MCA</b> Powerboat Intermediate Certificate	Note H Note A	√		√			
	RYA/ <b>MCA</b> Day Skipper Theory & Practical Certificate ( <b>Daylight</b> Operation Only)	Note A	√		√			
Local Authority Licence for appropriate area	Note A Note D	√						
ADDITIONAL REQUIREMENTS	There shall also be on board a second person deemed by the <b>vessel owner/operator</b> to be experienced and competent.		√	√	√	√		
	There shall also be on board a second person holding at least an RYA/ <b>MCA</b> Certificate of Competency or Service as Yachtmaster Coastal.						√	√
	There shall also be on board another person holding at least an RYA/ <b>MCA</b> Certificate of Competency as either Yachtmaster Offshore, STCW <b>Master</b> (Code Vessels less than 200GT limited to 150 miles from a <b>safe haven</b> ), Yachtmaster Ocean or STCW <b>Master</b> (Code Vessels less than 200GT unlimited)							

- Note 1 Qualifications differing from those tabled, but of equal standing or specialist application will be considered by the **Administration**. [MGN 411](#), **as amended** provides accepted alternatives.
- Note 2 **Vessels** regularly engaged on near coastal voyages from ports outside the UK, have to abide by the manning requirements of the **Administration** regulating that coastal area.
- Note 3 RYA certificates of competency and/or service shall carry the endorsement – “valid for commercial use on vessels subject to the Codes of Practice published by the **Maritime and Coastguard Agency**”. To receive such a commercial endorsement, holders of certificates of competency shall hold a valid Medical Fitness Certificate ([see 28.1.4](#)), the Basic Sea Survival Course or the Personal Survival Technique course (see [Table A5.3](#)) as appropriate, and the Professional Practices and Responsibilities.
- Note 4 Relevant experience of the type and size of vessel, the machinery on the vessel, and the type of operation in which the vessel is engaged,.
- Note A This qualification shall be undertaken in **motor vessels**. For **high speed** operations, the training shall be undertaken in planing vessels and this shall be noted on the **Certificate**.
- Note B Holders of **MCA** Boatmaster's Licences are accepted for use on **workboats** and **pilot boats**, limited to the area of the licence and any endorsements on it. Such licences must be re-validated as appropriate. Refer to [MSN 1853\(M\)](#), **as amended**.
- Note C Competent Authority in respect of manning requirements means either the **Administration** or an organisation that issues Certificates of Competency which has applied for and granted recognition by the **Administration** as having the appropriate technical and administrative expertise.
- Note D Local Authority Licence - only those Local Authorities that have the approval of the **Administration** may issue Licences under this **Code**.
- Note E Only valid for use on **vessels up to 200GT**, and under this **Code** this restriction is further limited to **vessels** to which this **Code** is applicable. **MCA** qualification, for details refer to [MSN 1858](#).
- Note F Where the **vessel** is used in accordance with [26.1.5 \(Towing\)](#) or [25.4 \(High Speed and Planing Mode Operations\)](#), the **Master** must have a minimum of an RYA/**MCA** Advanced Powerboat Certificate and suitable experience of relevant operation. For **high speed** operations, this qualification shall be done in a **high speed vessel** and this noted on the **Certificate** as appropriate.
- Note G **MCA** qualification, for details refer to [MGN 496](#) (or subsequent amendment).
- Note H RYA/**MCA** Powerboat Intermediate Certificate is only valid for use on **open boats, rigid inflatable boats, inflatable boats, boats fitted with a buoyant collar** in **area category of operation 4 and 6**. For **high speed** operations, this qualification shall be done in a **high speed vessel** and this noted on the **Certificate** as appropriate.

Table A5.2 – Minimum Engineering Manning Requirements

Area Category of Operation <sup>Note 1, 5, 10</sup>	6-3	2	1	0
Approved Engine Course (Part 1) or satisfied the <b>Maritime and Coastguard Agency</b> as to their appropriate engineering experience and competency <sup>Note 2, 3, 4</sup>		Power Vessel W <sup>Note 6</sup>	Power Vessel SL <sup>Note 7</sup>	Power Vessel SL <sup>Note 7</sup>
Marine Engine Operators Licence (MEOL) or other equivalent certification including STCW 111/4 Engine Ratings or AEC (Part 1 and 2) <sup>Note 7</sup>			Power Vessel W	Power Vessel W <1500 kW
Senior Marine Engine Operators Licence (SMEOL), STCW C/Eng (Y4) / <sup>Note 9, 7</sup>				Power Vessel W >=1500 kW < 3000 kW
<b>Small Vessel</b> Second Engineer Certificate of Competency <sup>Note 9,7</sup>				Power Vessel W >=1500 kW < 3000 kW
STCW III/2 <b>Small Vessel</b> Chief Engineer				<9000KW <3000GT

- Note 1 Qualifications differing from those tabled, but of equal standing or specialist application may be considered by the **Administration**.
- Note 2 The person holding the engineering requirement may be a **crew** member listed in [Table A7.1](#).
- Note 3 Persons who are able to demonstrate to the satisfaction of the **Administration** that they have the appropriate engineering experience and competency may be granted exemption from the requirement to attend an Approved Engine Course. The syllabus for these courses are published on the www.gov.uk website.
- Note 4 In addition to Note 3, it is strongly recommended that for **vessels** where there is installed propulsion power greater than 1500 kW or the **vessel** is fitted with equipment, essential to its operation, that is not included in the syllabus of the engineering qualification held, an applicable manufacturer's, or equivalent, course shall be attended.
- Note 5 In all cases, one of the **crew** shall be sufficiently familiar with the operation and maintenance of the **vessel's** machinery to ensure safe passage.
- Note 6 Power Vessel W is a Power Vessel employed in **towing** operations, lifting operations or carriage of **cargo** greater than 1000 kg.
- Note 7 Power Vessel SL is a Power Vessel other than Power Vessel designated by Power Vessel W.
- Note 8 Over 3,000 kW and less than 6,000 kW registered propulsion power: the certificate holder is also required to have attended an approved engine manufacturer's course appropriate to the engine type and power range.
- Note 9 MEOL / SMEOL applies to less than 750 kW registered power vessels of 24 m or more in **Load Line length**, in the case of **small vessels** <24 m **Load Line length**, this qualification can be used on more than 750 kW registered power vessels shown above.
- Note 10 The **vessel owner/operator** shall consider the risk of power sources and ensure that the **crew** are appropriately trained.

### 3. Mandatory Training Courses

Table A5.3 – Mandatory training courses requirements

Mandatory Training Course	Application	Requirements
Personal Survival Techniques or RYA Basic Sea Survival	All <b>vessels</b>	All operators following the STCW <b>Certificate of Competency</b> route shall complete Personal Survival Techniques course. RYA Basic Sea Survival for all other operators.
First Aid Training	<b>MLC compliant vessels</b>	Minimum one person on board who is in charge of medical care and administering medicine as part of their regular duties or minimum one person on board competent to provide medical first aid and hold the relevant STCW certificate
	<b>Non-MLC vessels</b> operating in <b>area category of operation 0 or 1</b>	<b>Master</b> shall hold Proficiency in Medical Care Certificate (or the Ship Captain's Medical Certificate) unless another member of the <b>crew</b> holds a medical or nursing qualification of an equivalent or a higher standard.
	<b>Non-MLC vessels</b> operating in <b>area category of operation 2, 3, 4, 5 or 6</b>	Minimum one person on board shall hold <b>MCA approved</b> Elementary First Aid Certificate (or the First Aid at Sea Certificate or Medical First Aid Certificate), or an RYA First Aid Certificate, or a SeaFish Basic First Aid Certificate, provided the use of Category 'C' <b>medical stores</b> is covered in the course)
Fire Fighting Training	<b>Vessels up to 15m</b>	Minimum one <b>crew</b> member shall complete an <b>MCA approved</b> one day firefighting course, or STCW Fire Fighting and Fire Prevention course, or the equivalent Royal Navy course
	<b>Vessels 15m and over</b>	All <b>crew</b> members shall complete an <b>MCA approved</b> one day firefighting course, or STCW Fire Fighting and Fire Prevention course, or the equivalent Royal Navy course
Radar Training	<b>Vessels</b> carrying radar	All <b>crew</b> likely to use radar shall complete the Small Ships Navigation and Radar Course, or the MSQ unit 'Use of Radar for Safe Navigation and Collision Avoidance on Domestic and Code Vessels', or other course subsequently <b>approved by the MCA</b> .
Stability Training	<b>Vessels</b> required to be provided with a Stability Information Booklet	At least <b>Master</b> shall complete an <b>MCA approved</b> stability course.
Electronic Chart Plotters Training	<b>Vessels</b> carrying Electronic Chart Plotters	All <b>crew</b> responsible for navigation shall complete the training appropriate to the type of equipment on the vessel. <sup>Note A</sup>
Training for Navigation Equipment in Excess of Code Requirements	Where navigation equipment is carried in excess of the <b>Code</b> requirements	Any <b>crew</b> likely to use the equipment shall undertake appropriate training in the use of that equipment. e.g. ECDIS. <sup>Note B</sup>
Catering Training	Where appropriate	All <b>crew</b> engaged in the preparation of food shall undertake a 'Basic Food Hygiene' or 'Food Safety' course, level 2.

Note A The MSQ unit 'Operate non-ECDIS marine Electronic Chart Systems', developed by the Workboat Association has been **approved** by the **Administration** as meeting this requirement.

Note B See **MIN XXX**



## **4. Dangerous Goods Training**

### **4.1 General**

4.1.1 A **vessel owner/operator** shall keep a record of all **dangerous goods** training received in accordance with sections [4.2](#) and/or [4.3](#). This shall be available to the employee, competent authority or **Administration** upon request, for **up to** five years.

4.1.2 The **owner/operator** of a **vessel** engaged in the transport of **dangerous goods**, shall ensure that the **crew** receive the appropriate carriage of **dangerous goods** training in accordance with Chapter 1.3 of the **IMDG Code**.

### **4.2 IMDG Carriage of Dangerous Goods Training**

4.2.1 It is responsibility of the **vessel owner/operator** to determined:

- .1 members of **crew** required to be trained as detailed in [4.1.2](#); and
- .2 the required level of training; and
- .3 appropriate training methods.

4.2.2 Where a **crew** have not yet received an appropriate carriage of **dangerous goods** training, they are only permitted to perform functions under the direct supervision of a trained person.

4.2.3 The carriage of **dangerous goods** training shall be periodically supplemented with refresher training to take account of changes in regulations and practice. The **Administration** may audit the **vessel owner/operator** to verify the effectiveness of the system in place, in providing training of **crew** commensurate with their role and responsibilities.

### **4.3 General awareness/familiarization training in transport of dangerous goods**

4.3.1 All **crew** shall receive a general awareness/familiarization training in transport of **dangerous goods**, which shall at a minimum included the following:

- .1 description of the classes of **dangerous goods** (see [Appendix 6](#)); and
- .2 associated labelling, marking, placarding, packing, stowage, segregation and compatibility provisions; and
- .3 description of the purpose and content of the **dangerous goods** transport documents; and
- .4 procedure(s) for responding to emergency situations; and
- .5 format and on-board location of the appropriate emergency response documentation; and
- .6 any additional **dangerous goods** transport provisions which are applicable to the specific function(s) performed by the **crew**

member(s).

**5. Training for lithium-ion batteries used as a source of power for propulsion**

5.1 Training requirements for the safe operation of **lithium-ion batteries** used as a source of power for propulsion shall be detailed in the **vessel's** operating manual and shall cover, at a minimum:

- .1 normal operation;
- .2 maintenance; and
- .3 how to rectify common faults and issues.

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## APPENDIX 6

### UNITED NATIONS HAZARD CLASSES AND IMDG CODE LABELS AND PLACARDS

This Appendix gives information relating to the United Nations (UN) Hazard Classes and labelling information of the various classes of **dangerous goods**.

Section 1 - UN Hazard Classes  
Section 2 - **IMDG Code** Labels and Placards.

#### 1. UN Hazard Classes

**Dangerous Goods** are divided into nine UN classes based on the major danger presented by the substance, other risks may be present and these are known as subsidiary risks. The numbering system is not ordered in level of risk.

**Vessel** owners/operators and **crew** shall be aware of the **dangerous goods** classes. The title of the **dangerous good** classes is given below – for fuller descriptions the **IMDG Code** shall be consulted.

Class 1	Explosives (six sub-divisions 1.1, 1.2, 1.3, 1.4, 1.5 and 1.6)
Class 2	Gases
Class 2.1	Flammable gases
Class 2.2	Non-flammable, non-toxic gases
Class 2.3	Toxic gases
Class 3	Flammable Liquids
Class 4	Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water emit flammable gases
Class 4.1	Flammable solids
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances which, in contact with water, emit flammable gases
Class 5	Oxidising substances and organic peroxides
Class 5.1	Oxidising substances
Class 5.2	Organic peroxides
Class 6	Toxic and infectious substances
Class 6.1	Toxic substances
Class 6.2	Infectious substances
Class 7	Radioactive material
Class 8	Corrosive Substances
Class 9	Miscellaneous dangerous substances and articles

## 2. IMDG Code Labels and Placards

The minimum dimensions of labels shall measure 100mm x 100mm.

Placards are large labels and shall measure 250mm x 250mm.

### Class 1 – Explosive substances or articles



(No. 1)  
**Divisions 1.1, 1.2 and 1.3**

Symbol (exploding bomb): black. Background: orange. Figure '1' in bottom corner.



(No. 1.4)  
**Division 1.4**



(No. 1.5)  
**Division 1.5**



(No. 1.6)  
**Division 1.6**

Background: orange. Figures: black. Numerals shall be about 30 mm in height and be about 5 mm thick (for a label measuring 100 mm x 100 mm). Figure '1' in bottom corner.

\*\* Place for division - to be left blank if explosive is the subsidiary risk.

\* Place for compatibility group - to be left blank if explosive is the subsidiary risk.

### Class 2 – Gases



(No. 2.1)  
**Class 2.1**  
**Flammable gases**



Symbol (flame): black or white  
(except as provided for in 5.2.2.2.1.6.4).  
Background: red. Figure '2' in bottom corner.



(No. 2.2)  
**Class 2.2**  
**Non-flammable, non-toxic gases**

Symbol (gas cylinder): black or white  
Background: green. Figure '2' in bottom corner.



(No. 2.3)  
**Class 2.3**  
**Toxic gases**

Symbol (skull and crossbones): black.  
Background: white. Figure '2' in bottom corner.

### Class 3 – Flammable liquids



(No. 3)

Symbol (flame): black or white.  
Background: red. Figure '3' in bottom corner.

### Class 4 – Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water emit flammable gases



(No. 4.1)  
**Class 4.1**  
**Flammable solids**

Symbol (flame): black.  
Background: white with seven vertical red stripes.  
Figure '4' in bottom corner.



(No. 4.2)  
**Class 4.2**  
**Substances liable to spontaneous combustion**

Symbol (flame): black.  
Background: upper half white, lower half red.  
Figure '4' in bottom corner.



(No. 4.3)  
**Class 4.3**  
**Substances which, in contact with water, emit flammable gases**

Symbol (flame): black or white.  
Background: blue.  
Figure '4' in bottom corner.

## Class 5 – Oxidising substances and organic peroxides



(No. 5.1)  
**Class 5.1**  
***Oxidizing substances***  
Symbol (flame over circle): black; Background: yellow.  
Figure '5.1' in bottom corner.



(No. 5.2)  
**Class 5.2**  
***Organic peroxides***  
Symbol (flame): black or white;  
Background: upper half red; lower half yellow;  
Figure '5.2' in bottom corner.

## Class 6 – Toxic and infectious substances



(No. 6.1)  
**Class 6.1**  
***Toxic substances***  
Symbol (skull and crossbones): black.  
Background: white. Figure '6' in bottom corner.



(No. 6.2)  
**Class 6.2**  
***Infectious substances***

The lower half of the label may bear the inscriptions **INFECTIOUS SUBSTANCE** and **In case of damage or leakage immediately notify Public Health Authority.**

Symbol (three crescents superimposed on a circle) and inscriptions: black.  
Background: white. Figure '6' in bottom corner.

## Class 7 – Radioactive material

Category I – White



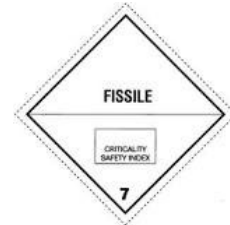
Category II - Yellow



Category III - Yellow



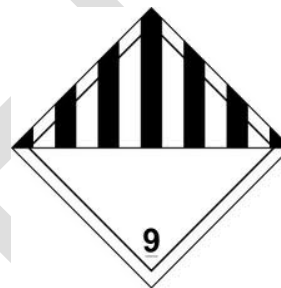
Fissile Material



## Class 8 – Corrosive substances



## Class 9 – Miscellaneous Dangerous



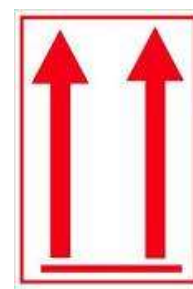
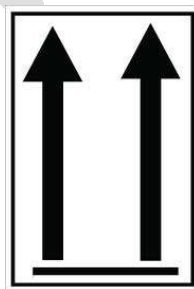
## Marks including Limited Quantities

Marks, in this context, are everything else which appears on the exterior surface of a package, IBC or large packaging, examples are given below:

**Marine Pollutants**

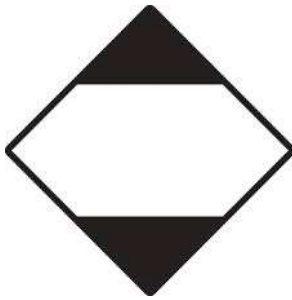


**Orientation Labels**



Packages containing Limited Quantities shall be marked with the following symbol:

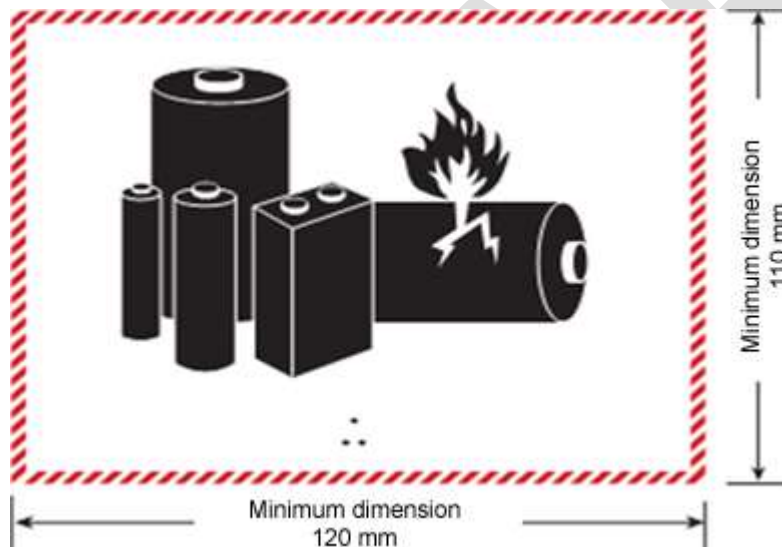
## Limited Quantities



### Note:

The term Limited Quantities has a specific meaning within the **IMDG Code** and refers to the inner receptacle/package and cannot not exceed the size limit set out in Column 7a of the **IMDG Code Dangerous Goods List**. The term Limited Quantity does not refer to the quantity allowed to be carried on board a ship.

## Lithium Battery Mark





## APPENDIX 7

### OIL POLLUTION PREVENTION

#### 1. Special Areas (Annex I of MARPOL, Regulation 1)

1.1 For the purposes of this Annex, the **special areas** are defined as follows:

- .1 the Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41° N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 5°36' W;
- .2 the Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8' N;
- .3 the Black Sea area means the Black Sea proper with the boundary between the Mediterranean Sea and the Black Sea constituted by the parallel 41° N;
- .4 the Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°28.5' N, 43°19.6' E) and Husn Murad (12°40.4' N, 43°30.2' E);
- .5 the Gulfs area means the sea area located north-west of the rhumb line between Ras al Hadd (22°30' N, 59°48' E) and Ras al Fastej (25°04' N, 61° 25' E);
- .6 the Gulf of Aden area means that part of the Gulf of Aden between the Red Sea and the Arabian Sea bounded to the west by the rhumb line between Ras si Ane (12°28.5'N, 43°19.6' E) and Husn Murad (12°40.4' N, 43°30.2' E) and to the east by the rhumb line between Ras Asir (11°50' N, 51°16.9' E) and the Ras Fartak (15°35' N, 52°13.8' E);
- .7 the Antarctic area means the sea area south of latitude 60°S;
- .8 the North West European waters include the North Sea and its approaches, the Irish Sea and its approaches, the Celtic Sea, the English Channel and its approaches and part of the North East Atlantic immediately to the west of Ireland. The area is bounded by lines joining the following points:  
  
48° 27' N on the French coast  
  
48° 27' N; 6° 25' W  
  
49° 52' N; 7° 44' W  
  
50° 30' N; 12° W  
  
56° 30' N; 12° W

62° N; 3° W

62° N on the Norwegian coast

57° 44.8' N on the Danish and Swedish coasts.

- .9 The Oman area of the Arabian Sea means the sea area enclosed by the following co-ordinates:

23°50.897' N 60°50.261' E

21°50.009' N 63°27.044' E

17°52.188' N 61°10.207' E

14°22.727' N 57°22.670' E

15°46.062' N 54°10.143' E

16°38.619' N 53°15.882' E. (Reg 1.11)

- .10 The Southern South African waters means the sea area enclosed by the following co-ordinates:

31°14' S; 017°50' E

31°30' S; 017°12' E

32°00' S; 017°06' E

32°32' S; 016°52' E

34°06' S; 017°24' E

36°58' S; 020°54' E

36°00' S; 022°30' E

35°14' S; 022°54' E

34°30' S; 026°00' E

33°48' S; 027°25' E

33°27' S; 027°12' E

## 2. Exceptions (Annex I of MARPOL, Regulation 4)

- 2.1 Requirements detailed in Section 4 Control of Discharge of Oil of this Appendix shall not apply to:

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

- .2 the discharge into the sea of oil or oily mixture resulting from damage to a **ship** or its equipment:
- .1 provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and
  - .2 except if the owner or the **Master** acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or
  - .3 the discharge into the sea of substances containing oil, **approved** by the **Administration**, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

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## APPENDIX 8

### SAFETY MANAGEMENT SYSTEM

The purpose of this Appendix is to provide guidance on how to develop and implement an appropriate and proportionate Safety Management System based on the requirements that can be found within the International Safety Management Code.

#### 1. General

1.1 A Safety Management System shall include the following:

- .1 A Safety and Environmental Protection Policy; and
- .2 Risk Assessment for Safe Working; and
- .3 Health and Safety Protection Policy; and
- .4 Responsibilities of the **Master** and Personnel; and
- .5 Training of Personnel; and
- .6 Procedures to ensure safe operation of a **vessel**; and
- .7 Emergencies; and
- .8 reporting of accidents;
- .9 maintenance of the **vessel** and equipment;
- .10 review.

#### 2. A Safety and Environmental Protection Policy

2.1 A Safety and Environmental Protection Policy must address the issues of:

- .1 health; and
- .2 safety; and
- .3 working environment; and
- .4 the environment

as they affect the company and its staff, both on shore and on board.

#### 3. Risk Assessment(s) for Safe Working

3.1 The **vessel owner/operator** shall produce an effective Risk Assessment(s) which shall identify risks to personnel, **vessels** and the environment.<sup>116</sup> The outcomes from the risk assessment(s) shall inform the development of safe

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<sup>116</sup> Further guidance can be found in Chapter 1, [Code of safe working practices for merchant seafarers \(COSWP\) amendment 6 2021](#)

systems of work.

#### 4. Health and Safety Protection Policy

4.1 The **vessel owner/operator** shall produce a Health and Safety Protection Policy. It is the responsibility of the **vessel owner/operator** to ensure that the policy is complied with, and that the responsibilities are understood.

4.2 A competent person(s) shall be delegated to take responsibility for health and safety, and that person(s) shall be clearly identifiable to all personnel.

4.3 The **vessel owner/operator** shall develop and uphold a policy on prevention of alcohol and drug abuse.

#### 5. Responsibilities of the Master and Personnel

5.1 Clear lines of responsibility and authority shall be established for all personnel.

5.2 The **Master** must have authority at all times to make decisions with regard to the safety of the **vessel** and the persons on board. There shall be a written statement confirming the authority of the **Master**.

5.3 All personnel have a duty to take care of themselves and any other persons who may be affected by their acts or omissions.

#### 6. Person Ashore

6.1 A company shall, in relation to each **vessel** owned by it or for which it has operational responsibility, designate a person ashore who shall be responsible for monitoring the safe operation of the **vessel** and, so far as it may affect safety, the **efficient** operation of the **vessel**.

6.2 The person ashore shall:

- .1 take such steps as are necessary to ensure compliance with the Safety Management System; and
- .2 ensure that proper provision is made for the **vessel** to be adequately manned, equipped and maintained, relating to safety applicable to the **vessel**.

6.3 The company shall ensure that the person ashore:

- .1 is provided with sufficient authority and resources; and
- .2 has appropriate knowledge and sufficient experience of the operation of **vessels**; and
- .3 shall have access to the appropriate level of management resource(s) within the company to fulfil the role.

#### 7. Training of Personnel

7.1 All personnel shall receive training appropriate to the tasks they undertake. See [section 28](#). It is the responsibility of the **vessel owner/operator** to ensure that

this training is given, and that the personnel have an understanding of the relevant regulations and rules.

7.2 Prior to the first occasion of working on the **vessel**, each employee must receive appropriate familiarisation training and proper instruction in on board procedures. This shall at the minimum include:

- .1 emergency drills and MOB recovery (see [section 14.7](#)); and
- .2 mooring and unmooring; and
- .3 launching and recovery of survival craft (see also sections [14.2](#) and [14.8](#)); and
- .3 evacuation from all areas of the **vessel** (see also [10.5 Emergencies](#)); and
- .4 donning of lifejackets (see also [section 14.4](#)); and
- .5 use and handling of fire-fighting equipment (see also [section 16](#)).

## 8. Procedures to ensure safe operation of a vessel

8.1 Procedures shall be developed and documented for the operation of the **vessel**. These shall at the minimum include:

- .1 testing of equipment, including steering gear, prior to commencing a passage; and
- .2 navigation and handling of the **vessel**; and
- .3 maintenance routines; and
- .4 bunkering operations; and
- .5 **watertight/weathertight** integrity; and
- .6 stability of the **vessel**; and
- .7 conduct of **passengers** and **crew** while on board; and
- .8 emergency **towing**.

## 9. Safety Briefing

9.1 Before commencing any voyage the **Master** shall ensure that all persons on board are briefed, as a minimum on the:

- .1 stowage and use of personal safety equipment such as lifejackets, thermal protective aids and lifebuoys; and
- .2 procedures to be followed in emergencies.

9.2 In addition to the requirements of [9.1](#) the **Master** shall brief at least one other person on board on the following:

- .1 location of liferafts and the method of launching; and
- .2 procedures for the recovery of a person from the sea; and
- .3 location and use of pyrotechnics; and
- .4 procedures and operation of radios carried on board; and
- .5 location of navigation and other light switches; and
- .6 location and use of firefighting equipment; and
- .7 method of starting, stopping and controlling the main engine; and
- .8 method of navigating to a suitable port of refuge; and
- .9 location of Stability Guidance Booklet and Stability Information Booklet, where applicable.

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

## **10. Emergencies**

10.1 Clear procedures for responding to emergency situations shall be understood by all personnel, and shall at the minimum include:

- .1 fire; and
- .2 flooding; and
- .3 collision; and
- .4 grounding; and
- .5 violent act; and
- .6 main propulsion or steering failure; and
- .7 man overboard; and
- .8 abandon ship; and
- .9 medical emergency; and
- .10 aid to other vessels; and
- .11 enclosed space rescue if applicable.

10.2 The roles and responsibilities of all personnel in an emergency situation shall be clearly defined.

10.3 All **vessels** shall be equipped with a continuously available communication system (including during emergency situations) which shall enable communication with the emergency services via a shore base. A shore base

may be the company office ashore, the local Coastguard, Police or Fire Station, or another office as may be agreed between the **vessel** and the shore base.

10.4 Emergency situations likely to be encountered by the **vessel** shall be considered.

10.5 Exercises shall be carried out in the handling of the identified emergency situations and evacuation from the **vessel**. The exercises shall be recorded. The names of those who participated shall also be recorded.

10.6 Where possible, all personnel shall be involved in these exercises, both on shore and on board.

## 11. Reporting of Accidents

11.1 A clear procedure for reporting of accidents shall be understood by all personnel.

11.2 The **vessel owner/operator** shall report any accidents to the **Administration** and the company must therefore have a procedure in place. See [section 3](#) and **MIN XXX**.

11.3 All accidents and near-misses shall be recorded and reported to the **vessel owner/operator** who shall implement corrective action.

## 12. Maintenance of the Vessel and Equipment

12.1 A **vessel** and its equipment shall be maintained in accordance with the requirements of [section 3.5](#).

12.2 The **vessel owner/operator** shall develop documented procedures for a more detailed inspection and maintenance programme for the **vessel** and its equipment. The frequency of the required inspection and maintenance shall be determined by the **vessel owner/operator**. All inspections and maintenance activities shall be recorded.

## 13. Review

13.1 The **vessel owner/operator** shall undertake a review of the safety management system at least once every three years.



## APPENDIX 9

### SAVING AND TRANSITIONAL ARRANGEMENTS FOR EXISTING VESSELS

1. This Appendix provides further details of the transitional arrangements set out in Schedule 3 of the 2023 Regulations required for **existing vessels** to comply with the **Code**.
2. **Existing vessels** that are certificated under the Workboat Code Edition 1 (the “Brown Code”), its equivalent standard published in the technical Annex to **MGN 280 (M)**, or Workboat Code Edition 2, Amendment 1 may continue operating in compliance with those previous standards but shall follow the transitional arrangements outlined in the table below.
3. To the extent necessary for the operation of this Appendix, the Brown Code, **MGN 280(M)**, the Workboat Code Industry Group Technical Standard 2014 (the “2014 Standard”) and Workboat Code Edition 2, Amendment 1 are incorporated into the **Code**. These standards shall no longer be recognised for **new vessel** certifications after the entry into force date of the Workboat Code Edition 3.
4. The transitional requirements for **existing vessels** are outlined in the table below. Such vessels may continue operating in compliance with the previous standards until the date or examination shown, after which they shall comply with the requirements set out in the Workboat Code Edition 3. Where sections of the **Code** refer to further details in appendices, it shall be taken that compliance with the requirements set out in these appendices is also required:

Workboat Code Edition 3 Transitional Arrangements			
Section	Requirement/s	Transitional Arrangements	
		Workboat Code Ed. 2, Amendment 1	Brown Code, MGN 280(M), 2014 Standard
2 - Definitions	All	At date of entry into force	
3 - Application and Interpretation	All	At date of entry into force	
4 – Certification and Examinations	All	At date of entry into force	
5 - Construction and Structural Strength	5.1 General Requirements	At date of entry into force	
	5.2 Structural Strength	See <a href="#">5.3.5</a>	
	5.3 Certificate of Construction	See <a href="#">5.3.5</a>	
	5.4 Construction Materials	At date of entry into force	
	5.5 Decks	At date of entry into force	

<b>Workboat Code Edition 3 Transitional Arrangements</b>			
<b>Section</b>	<b>Requirement/s</b>	<b>Transitional Arrangements</b>	
		<b>Workboat Code Ed. 2, Amendment 1</b>	<b>Brown Code, MGN 280(M), 2014 Standard</b>
	<b>5.6 Watertight Bulkheads</b>	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later. Where this is impracticable, the <b>watertight</b> collision bulkhead shall be positioned between 5% and 20% of the <b>vessel length</b> , from the bow.
	<b>5.7 Offshore Energy Service Vessels</b>	At date of entry into force	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
	<b>5.8 Lifting and Towing</b>	At date of entry into force	
	<b>5.9 Boats with a Buoyant Collar, Inflatable Boats and Rigid Inflatable Boats</b>	At date of entry into force	
<b>6 – Weathertight Integrity</b>	All	At date of entry into force	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
<b>7 – Water Freeing Arrangements</b>	All	At date of entry into force	
<b>8 – Machinery, Propulsion and Fuel Systems</b>	All	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later	
<b>9 – Electrical Installations</b>	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	
<b>10 – Steering, Rudder and propulsion Systems</b>	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	
<b>11 – Bilge Pumping</b>	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
<b>12 – Stability</b>	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later

<b>Workboat Code Edition 3 Transitional Arrangements</b>			
<b>Section</b>	<b>Requirement/s</b>	<b>Transitional Arrangements</b>	
		<b>Workboat Code Ed. 2, Amendment 1</b>	<b>Brown Code, MGN 280(M), 2014 Standard</b>
13 - <b>Freeboard</b> and <b>Freeboard</b> Marking	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
14 – Life Saving Appliances	All	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later	
15 – Fire Safety	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
16 – Fire Appliances	All	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later	
17 – Radiocommunications Equipment	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
18 – Navigation Lights, Shapes and Sounds	All	At date of entry into force	
19 - Navigation	All	At date of entry into force	
20 – Anchors and Cables	All	At date of entry into force	
21 - Accommodation and Recreational Facilities	All	At date of entry into force	
21A - Accommodation and Recreational Facilities for all vessels to which the <b>MLC</b> does not apply	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
21B - Accommodation and Recreational Facilities for all vessels to which the <b>MLC</b> applies	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
22 – Protection of Personnel	All	At date of entry into force	
23 – Medical Care	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
24 – Tenders and Daughter Craft	All	At date of entry into force	

<b>Workboat Code Edition 3 Transitional Arrangements</b>			
<b>Section</b>	<b>Requirement/s</b>	<b>Transitional Arrangements</b>	
		<b>Workboat Code Ed. 2, Amendment 1</b>	<b>Brown Code, MGN 280(M), 2014 Standard</b>
25 – <b>Cargo</b> Carrying, Lifting, <b>High Speed</b> and Bow Push Up Operations	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
26 – <b>Towing</b> and Non-Self-Propelled Vessels	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
27 – <b>Dedicated Pilot Boats</b> and <b>Workboats</b> with a <b>Pilot Boat</b> Endorsement	All	At first <b>annual examination</b> , or one year after date of entry into force, whichever is later	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later
28 - Manning	All	At date of entry into force	
29 – Carriage and transfer of Dangerous Goods	29.1 General	At date of entry into force	
	29.2 Document of Compliance for the Carriage of Dangerous Goods	At date of entry into force	
	29.3 Documentation	At date of entry into force	
	29.4 Stowage and Segregation Requirements	At date of entry into force, or first renewal of any existing DG DoC after date of entry into force, whichever is later	
	29.5 Scuppers and Drains	At date of entry into force	
	29.6 Electrical Equipment	At date of entry into force	
	29.7 Structural Fire Protection	At date of entry into force, or first renewal of any existing DG DoC after date of entry into force, whichever is later	
	29.8 Fire Fighting Equipment	At date of entry into force	
	29.9 First Aid Requirements	At date of entry into force	
	29.10 Transfer Arrangements of Marine Gas Oil (MGO)	At date of entry into force, or first renewal of any existing DG DoC after date of entry into force, whichever is later	
	29.11 Carriage of <b>Dangerous Goods</b> by <b>Industrial Personnel</b> or <b>Passengers</b>	At date of entry into force	
30 – Prevention of Pollution	All	At date of entry into force	

<b>Workboat Code Edition 3 Transitional Arrangements</b>			
<b>Section</b>	<b>Requirement/s</b>	<b>Transitional Arrangements</b>	
		<b>Workboat Code Ed. 2, Amendment 1</b>	<b>Brown Code, MGN 280(M), 2014 Standard</b>
31 – Safety Management	All	At first <b>renewal examination</b> , or three years, after date of entry into force, whichever is later	

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## **APPENDIX 10**

### **SAMPLE CERTIFICATES**

See sample certificates on the following pages.

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# PILOT BOAT CERTIFICATE

“NAME OF VESSEL”

Unique Number

Issued under the authority of the Maritime & Coastguard Agency, an Executive Agency of the United Kingdom  
Department for Transport



Certifying Authority authorised by the MCA

Name of Owner/Managing Agent	
Address	

Type Of Vessel	
Use of Vessel	<b>Dedicated Pilot Boat</b>
Official Number	
Port of Registry	
Gross Tonnage	
Hull Identification Number	
Maximum number of persons on board	
Length Overall	
Load Line Length (if LOA > 24M)	
Date of Build	

This is to certify that the above named vessel was examined by (CA) Approved Examiner, (Name) at (Place) from (Date) to (Date) and found to be in accordance with the requirements of the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency, an Executive Agency of the Department for Transport.

This certificate will remain valid until (date) subject to the vessel, its machinery and systems and equipment being efficiently maintained, with examinations and manning as required by the Code of Practice and that any modifications or damage to the vessel is reported to the Certifying Authority and any repair is approved as required and considered rectified by the Certifying Authority as required by the relevant part of the Code.  
**For limitations & Conditions please see the reverse of the certificate**

Maximum loading condition	<b>Total loading of persons and equipment is not to exceed (load or refer to SIB) in kg</b>
---------------------------	---

Permitted area of operation	(Category)	(GMDSS Area)
-----------------------------	------------	--------------

Intermediate examination by a (CA) Authorised Examiner due before	(Date)
---	--------

This certificate was issued at (CA Office) on: (Date)	
This certificate expires on: (Date)	
Name (Name) for and on behalf of (CA) Technical Committee.	
Signature:	(CA) Official Stamp

**This certificate is equivalent to a UK Load Line Exemption Certificate**

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## Conditions and limitations: -

- To comply with the Documentation of Compliance SWB2.
- When the vessel is sold this certificate is automatically cancelled and must be returned to the (CA) Office
- All vessels that require stability information, must carry the relevant stability information on board the vessel

### **MLC Compliance Statements**

This certificate is only valid for commercial operation on international voyages or voyages of more than 60 miles from a UK safe haven with seafarers on board if

- (a) The vessel is certificated for category 0, 1 or 2; and
- (b) The certificate is accompanied by a valid MLC inspection report demonstrating compliance.

# WORKBOAT CERTIFICATE

(WITH PILOT BOAT ENDORSEMENT)

“NAME OF VESSEL”

Unique Number

Issued under the authority of the Maritime & Coastguard Agency, an Executive Agency of the United Kingdom  
Department for Transport

 Maritime & Coastguard Agency

Certifying Authority authorised by the MCA

Name of Owner/Managing Agent	
Address	

Type Of Vessel	
Use of Vessel	
Official Number	
Port of Registry	
Gross Tonnage	
Hull Identification Number	
Maximum number of persons on board	
Length Overall	
Load Line Length (if LOA > 24M)	
Date of Build	
Date of last out of water examination	

This is to certify that the above named vessel was examined by (CA) Approved Examiner, (Name) at (Place) from (Date) to (Date) and found to be in accordance with the requirements of the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency, an Executive Agency of the Department for Transport.

This certificate will remain valid until (date) subject to the vessel, its machinery and systems and equipment being efficiently maintained, with examinations and manning as required by the Code of Practice and that any modifications or damage to the vessel is reported to the Certifying Authority and any repair is approved as required and considered rectified by the Certifying Authority as required by the relevant part of the Code.

**For limitations & Conditions please see the reverse of the certificate**

Maximum loading condition	<b>Total loading of persons and equipment is not to exceed</b> (load or refer to SIB) in kg
---------------------------	---

Permitted area of operation	(Category)	GMDSS Area
-----------------------------	------------	------------

Midterm examination by a (CA) Authorised Examiner due before	(Date)
--	--------

This certificate was issued at (CA Office) on: (Date)

This certificate expires on: (Date)

Name (Name) for and on behalf of (CA) Technical Committee.

Signature:

(CA) Official Stamp

**This certificate is equivalent to a UK Load Line Exemption Certificate**

DRAFT

**MLC Compliance Statements**

This certificate is only valid for commercial operation on international voyages or voyages of more than 60 miles from a UK safe haven with seafarers on board if

- (a) The vessel is certificated for category 0, 1 or 2; and
- (b) The certificate is accompanied by a valid MLC inspection report demonstrating compliance.

**Conditions and limitations: -**

1. To comply with the Documentation of Compliance SWB2.
2. When the vessel is sold this certificate is automatically cancelled and must be returned to the (CA) Office
3. All vessels that require stability information, must carry the relevant stability information on board the vessel

In addition to the general requirements of the Safety of Small Workboats and Pilot Boats – A Code of Practice, this vessel has been examined with regard to section 4 of the Code and has been found satisfactory for use as a pilot boat in ..... (name of harbour).  
With the carriage of not more than ..... persons (including crew)

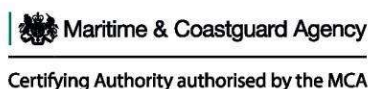
CA Stamp/Signature/date

# WORKBOAT CERTIFICATE

“NAME OF VESSEL”

Unique Number

Issued under the authority of the Maritime & Coastguard Agency, an Executive Agency of the United Kingdom  
Department for Transport



Name of Owner/Managing Agent	
Address	

Type Of Vessel	
Use of Vessel	
Official Number	
Port of Registry	
Gross Tonnage	
Hull Identification Number	
Maximum number of persons on board	
Length Overall	
Load Line Length (if LOA > 24M)	
Date of Build	
Date of last out of water examination	

This is to certify that the above named vessel was examined by (CA) Approved Examiner, (Name) at (Place) from (Date) to (Date) and found to be in accordance with the requirements of the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency of the Department for Transport.

This certificate will remain valid until (date) subject to the vessel, its machinery and systems and equipment being efficiently maintained, with examinations and manning as required by the Code of Practice and that any modifications or damage to the vessel is reported to the Certifying Authority and any repair is approved as required and considered rectified by the Certifying Authority as required by the relevant part of the Code.

**For limitations & Conditions please see the reverse of the certificate**

Maximum loading condition	<b>Total loading of persons and equipment is not to exceed</b> (load or refer to SIB) <b>in kg</b>
---------------------------	--

Permitted area of operation	(Category)	GMDSS Area
-----------------------------	------------	------------

Midterm examination by a (CA) Authorised Examiner due before	(Date)
--	--------

This certificate was issued at (CA Office) on: (Date)  
This certificate expires on: (Date)

Name (Name) for and on behalf of (CA) Technical Committee.

Signature:

(CA) Official Stamp

**This certificate is equivalent to a UK Load Line Exemption Certificate**

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### MLC Compliance Statements

This certificate is only valid for commercial operation on international voyages or voyages of more than 60 miles from a UK safe haven with seafarers on board if

- (a) The vessel is certificated for category 0, 1 or 2; and
- (b) The certificate is accompanied by a valid MLC inspection report demonstrating compliance.

### Transfer of Marine Gas Oil Endorsement

In addition to the general requirements of the Safety of Small Workboats and Pilot Boats – a Code of Practice, this vessel has been examined with regard to section 29.10 of the Workboat Code Edition 3 and has been found satisfactory to undertake Transfer of Marine Gas Oil from Designated Fuel Oil Tanks from (name tanks)

CA Stamp / signature / date

### Conditions and limitations: -

- To comply with the Documentation of Compliance SWB2.
- When the vessel is sold this certificate is automatically cancelled and must be returned to the (CA) Office
- All vessels that require stability information, must carry the relevant stability information on board the vessel

# WORKBOAT STATEMENT OF COMPLIANCE

“NAME OF VESSEL”

**Unique Number:**

Issued to confirm compliance with the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency, an Executive Agency of the UK Department for Transport.

Name of Owner/Managing Agent	
Address	

Type Of Vessel	
Use of Vessel	
Official Number	
Port of Registry	
Gross Tonnage	
Hull Identification Number	
Maximum number of persons on board	
Length Overall	
Load Line Length (if LOA > 24M)	
Date of Build	
Date of last out of water examination	

This is to certify that the above named vessel was examined by (CA) Approved Examiner, (Name) at (Place) from (Date) to (Date) and found to be in accordance with the requirements of the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency of the Department for Transport.

This statement of compliance will remain valid until (date) subject to the vessel, its machinery and systems and equipment being efficiently maintained, with examinations and manning as required by the Code of Practice and that any modifications or damage to the vessel is reported to the Certifying Authority and any repair is approved as required and considered rectified by the Certifying Authority as required by the relevant part of the Code.

**For limitations & Conditions please see the reverse of the certificate**

Maximum loading condition	<b>Total loading of persons and equipment is not to exceed</b> (load or refer to SIB) <b>in kg</b>
---------------------------	--

Permitted area of operation	(Category)	(GMDSS Area)
-----------------------------	------------	--------------

Midterm examination by a (CA) Authorised Examiner due before	(Date)
--	--------

This statement of compliance was issued at (CA Office) on: (Date)	
This statement of compliance expires on: (Date)	
Name (Name) for and on behalf of (CA) Technical Committee.	
Signature:	(CA) Official Stamp



## Conditions and limitations: -

- To comply with the Documentation of Compliance SWB2.
- When the vessel is sold this statement of compliance is automatically cancelled and must be returned to the (CA) Office.
- All vessels that require stability information, must carry the relevant stability information on board the vessel.

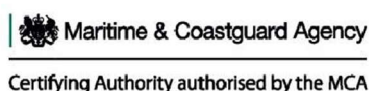
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# LIGHT DUTY WORKBOAT CERTIFICATE

“NAME OF VESSEL”

Unique Number

Issued under the authority of the Maritime & Coastguard Agency, an Executive Agency of the United Kingdom  
Department for Transport



Name of Owner/Managing Agent	
Address	

Type Of Vessel	
Use of Vessel	
Official Number	
Port of Registry	
Gross Tonnage	
Hull Identification Number	
Maximum number of persons on board	
Length Overall	
Load Line Length (if LOA > 24M)	
Date of Build	
Date of last out of water examination	
Small Commercial Vessel Code or other that the vessel is certificated to.	

This is to certify that the above named vessel was examined by (CA) Approved Examiner, (Name) **at** (Place) **from** (Date) **to** (Date) and found to be in accordance with the requirements of the small commercial vessel code which the vessel is primarily certificated under, and the conditions and restrictions described in 3.9 Light Duty Workboat Certificates of the 3<sup>rd</sup> Edition of *The Safety of Small Workboats and Pilot Boats – A Code of Practice*, published by the Maritime and Coastguard Agency of the Department for Transport.  
This certificate (may also be used for / may satisfy the requirements of) vessels issued with a certificate under The Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) **Regulations 202X (SI 202X No XXXX)** and section 3.9 Light Duty Workboat Certificates of the Code named above.

This certificate will remain valid until (date) subject to the vessel, its machinery and systems and equipment being efficiently maintained, with examinations and manning as required by the Code of Practice, subject to the continued validity of the vessels existing certification, and that any modifications or damage to the vessel is reported to the Certifying Authority and any repair is approved as required and considered rectified by the Certifying Authority as required by the relevant part of the Code.

**For limitations & Conditions please see the reverse of the certificate**

Maximum loading condition	<b>Total loading of persons and equipment is not to exceed</b> (load or refer to SIB) <b>in kg</b>
---------------------------	--

Permitted area of operation	(Category)	GMDSS Area
-----------------------------	------------	------------

Midterm examination by a (CA) Authorised Examiner due before	(Date)
--	--------



## Annex 1

### Battery-Hybrid and Battery-Electric Vessels

This Annex, in conjunction with **MGN 550 as amended**, aims to provide all the additional information needed for **vessels** that use **lithium-ion batteries** as a source of power for propulsion (whether exclusively, or in conjunction with **diesel** fuel in a **battery-hybrid propulsion system**) and shall be referred to alongside the main body of the **Code**.

Where a **Certifying Authority** considers it does not have the necessary expertise to deal with **vessels** which use batteries as a source of power for propulsion, the **Administration** shall be consulted with regard to the procedures to be adopted.

#### 1 Ventilation

The purpose of this section of this Annex is to provide the additional ventilation equipment and component requirements for **battery-hybrid** or **battery-electric** powered **vessels**, including thresholds for effective ventilation of **battery boxes** and **battery rooms** relevant to battery capacity.

##### 1.1 General Requirements

1.1.1 See [section 9.3.2.3](#) in the main body of the **Code** for general ventilation arrangements and requirements.

1.1.2 Active or passive ventilation of **battery boxes** and **battery rooms** shall be separate from other on-board heating, ventilation or air conditioning systems.

1.1.3 Any failure or fault in a ventilation system shall activate an auditory and visual alarm at the **control position(s)**.

1.1.4 Positive isolation devices shall be designed to remain operable in event of equipment failure or emergency conditions.

1.1.5 All batteries used for a source of power for propulsion shall be stored in **battery boxes** or **battery rooms** (see [section 3.1.1](#) of this Annex). **Battery boxes** and **battery rooms** shall be adequately ventilated, by either passive or active ventilation, to prevent the build-up of explosive or toxic gases.

1.1.6 A power-driven active ventilator shall be connected to a back-up power source which automatically activates if the primary power source fails, ensuring that ventilation can continue even during emergency conditions.

##### 1.2 Ventilation Equipment

1.2.1 Exhaust ducts shall, during normal operations, prevent exhaust gases or seawater from being drawn through air intakes.

1.2.2 Ventilators and ventilation fans located within, or feeding, **battery boxes** and **battery rooms** shall be composed of Ex-rated and non-static materials and components, and shall be of a construction suitable for the **battery box** or **battery room**, and for any corrosive gases which may be produced by the batteries.

1.2.3 Dedicated active ventilation ducting shall be used to discharge off-gassing from batteries to the open air and shall be located at a height above deck sufficient to prevent inadvertent downflooding if the **vessel** is heeled (see **MIN XXX**).

1.2.4 Back-up batteries that power active ventilators during emergency conditions shall be stored separately from the area(s) they ventilate.

### 1.3 Ventilation of Battery Boxes and Rooms

1.3.1 Ventilation of **battery boxes** and **battery rooms** shall be appropriate to risks, battery size and battery storage location:

.1 batteries located in a **battery box** may be ventilated by either:

.1 passive ventilation, where battery off-gas would not produce an explosive atmosphere; or

.2 active ventilation;

.2 batteries located in a **battery room** shall be ventilated by active ventilation.

1.3.2 The number of air changes per hour required for a **battery box** or **battery room** shall be calculated using, at a minimum, the following variables:

.1 **battery box** or **battery room** volume;

.2 distance between vent and **battery box** roof or **battery room** ceiling;

.3 maximum volume of battery gas released during a **thermal runaway** event;

.4 battery size(s); and

.5 design pressure of the bulkhead or deck.

1.3.3 If a fire is detected ventilators shall stop automatically, except in the presence of an explosive atmosphere. Ventilators shall be able to continue operating safely in the presence of an explosive atmosphere.

1.3.4 For active ventilation, air inlet(s) and an exhaust outlet(s) shall be positioned to ensure effective distribution of air through the space.

1.3.5 Where the required ventilation or battery storage location cannot be met due to being impracticable or unsafe, alternative arrangements providing an equivalent level of safety may be considered on a case-by-case basis by the **Administration**.

## 2 Battery-Electric Propulsion

The purpose of this section of this Annex is to provide requirements and standards for the operation, monitoring, charging, and replacement of **lithium-ion batteries** used as a source of power for propulsion, and requirements for battery management, power management and cooling systems which manage and stabilise battery conditions.

### 2.1 Approval of Battery-Electric Propulsion Systems

2.1.1 The design and installation of the **propulsion system** and batteries shall be suitable for marine use with due consideration of humidity, temperature, degradation due to a saltwater environment and vibration.

### 2.2 Testing and Assessment of Batteries and Associated Systems

2.2.1 A risk assessment shall be carried out by the **vessel** manufacturer, and shall be submitted via the **Certifying Authority** to the **Administration** for consideration and approval. The risk assessment shall, at a minimum, assess all risks associated with the following components and systems:

- .1 batteries;
- .2 **battery management system**;
- .3 **battery box** or **battery room**;
- .4 spaces surrounding **battery boxes** or adjoining **battery rooms**;
- .5 charging system;
- .6 fuses and cables;
- .7 switchgear
- .8 alarms and shutdowns;
- .9 sensors and detectors (see [section 3.2](#) of this Annex);
- .10 fire suppression system;
- .11 passive or active ventilation;
- .12 fire extinguishers (if appropriate);
- .13 cooling system (if installed);
- .14 hybrid **power management system** (if installed);
- .15 interfaces with other **vessel** systems; and

.16 any sensors, detectors, safety measures or other equipment installed in excess of the requirements of the **Code**.

The risk assessment shall consider the components of the batteries and connected systems both individually and as an entire operating unit, and shall be carried out either as part of, or in addition to, the risk assessment required in [section 3.14](#) of the **Code**.

2.2.2 **Lithium-ion batteries** intended to power a **vessel's** engine shall comply with a recognised **standard** (see **MIN XXX**).

2.2.3 **Lithium-ion batteries** intended to be used as a source of power for propulsion shall be tested at **cell**, module and system levels meeting a recognised **standard** to the approval of the **Administration** (see **MIN XXX**).

2.2.4 An intention to test **lithium-ion batteries** shall be notified to the **Certifying Authority** and **Administration** in good time, and the **Certifying Authority** may require that a surveyor witness the battery tests.

2.2.5 The **MCA** reserves the right to have an **MCA** surveyor, or other designated person, witness battery tests.

### 2.3 **General Requirements**

2.3.1 A **battery-electric** powered **vessel** shall be provided with sufficient charged capacity for its intended **area category of operation**. A **battery-hybrid** powered **vessel** shall be provided with a combination of sufficient charged capacity and fuel for its intended area of operation.

2.3.2 The components of batteries, connected systems and installations shall be designed to protect the **vessel**, other equipment and any persons on board against electrical hazards, and shall be suitable for marine use (see [section 2.2.1](#)).

2.3.3 Fuses, cables and circuit breakers shall comply with a recognised **standard** (see **MIN XXX**).

2.3.4 **Vessel owner/operators** shall keep a copy (whether a hard-copy or electronic) of the battery manufacturer's instructions for use. Where it is not practicable to keep the instructions on board, it may be retained on shore.

2.3.5 Batteries and its connections shall have ingress protection with a minimum IP44 rating which is appropriate to the risks associated with the:

.1 location in which the batteries are installed; and

.2 risk of ingress.

2.3.6 The following information shall be clearly displayed in both the **battery box** or **battery room** (see [section 2.7.2](#)) and in its immediate vicinity. Internationally recognised signage shall be used where appropriate (see also [Appendix 6](#) of the **Code**):

- .1 battery **cell** chemistry;
- .2 fire suppression system requirements and method of operation;
- .3 maximum charging and discharging characteristics;
- .4 safe upper and lower ambient temperature;
- .5 what protective device(s) and/or safety feature(s) are installed, if applicable;  
and
- .6 battery manufacturer's name.

## 2.4 Installation of batteries and electrical equipment

2.4.1 **Battery boxes** and **battery rooms** shall be located away from high risk factors including, but not limited to, critical components, fuel tanks, fire hazards, escape routes and life-saving apparatus, and shall not be located in front of a collision bulkhead. Where, due to the size of the **vessel**, this is not practicable alternative arrangements providing an equivalent level of safety may be considered on a case-by-case basis.

2.4.2 **Lithium-ion batteries** approved by the battery manufacturer to be safely co-located with other equipment within a **battery box** or **battery room** may be co-located with the following:

- .1 **critical equipment;**
- .2 fuel tanks;
- .3 fire hazards; and
- .4 electrical equipment

subject to completion of a risk assessment carried out by the **vessel owner/operator**, and submitted via the **Certifying Authority** to the **Administration** for consideration and approval.

2.4.3 Batteries and the **BMS** shall be located in a position not likely to flood during normal operation, or in the event of minor damage (see [section 9.3.2.1](#) of the **Code**).

2.4.4 Batteries shall be secured firmly (such as within mounting frames) to avoid movement either during normal conditions, or when the **vessel** is subjected to sudden acceleration, deceleration, or a large angle of heel or trim.

2.4.5 Batteries shall be positioned and secured to minimise exposure to mechanical damage or excessive vibration.

2.4.6 Battery casing shall be composed of flame-retardant and moisture resistant materials.



- 2.4.7 Batteries and the **BMS** shall:
- .1 be fully compatible with the electromagnetic emissions they will be exposed to during a **vessel's** anticipated range of operating conditions; and
  - .2 not produce electromagnetic emissions that will affect the operation of all other equipment on board the **vessel**.
- 2.4.8 Batteries shall be positioned so that all parts requiring inspection or replacement whilst in service can be safely accessed.
- 2.4.9 Consideration shall be given to protecting against the risks of overheating of batteries even when disconnected from a power source or isolated.
- 2.4.10 Means shall be provided to fully isolate a battery, and to electrically isolate a battery at the pack level for maintenance, or to address a fault, with means to lock the system off or otherwise ensure that it cannot be reactivated during maintenance.
- 2.4.11 Outgoing circuits from batteries shall have switchgear or equivalent means to electrically isolate the circuits.
- 2.4.12 An emergency power-off circuit shall be installed to allow isolation and remote stopping of batteries from outside, or remotely to, the **battery box** or **battery room**.
- 2.4.13 Batteries and connected systems shall be designed to remain in a safe state in event of exposure to seawater.
- 2.4.14 All electrical equipment associated with batteries and connected systems shall (see [section 9](#) of the **Code**):
- .1 operate in all expected operating conditions;
  - .2 be **watertight**;
  - .3 minimise the risk of initiating fire or explosion;
  - .4 enable maintenance and repair; and
  - .5 shall be appropriately protected against humidity, temperature, and degradation due to seawater and vibration.
- 2.4.15 Equipment and spares used for maintenance of batteries, connected systems and electrical equipment shall be manufacturer approved and to the satisfaction of the **Certifying Authority**.
- 2.5 Battery Replacement**
- 2.5.1 A battery module or system shall be replaced where:
- .1 it needs to be replaced for safety reasons;

- .2 it has reached an end-of-life state; or
  - .3 the battery's state of health (**SOH**) or C-rate capability has declined below the minimum level needed to deliver the required **vessel** performance.
- 2.5.2 Where batteries used as a source of power for propulsion are replaced they must be of an equivalent type, including full compatibility all on-board systems.
- 2.5.3 Where batteries used as a source of power for propulsion are replaced with a type which is not equivalent it must be treated as a new installation, and a survey shall be carried out to the satisfaction of the **Certifying Authority** (see [3.14.2](#) of the **Code**).
- 2.5.4 Requirements for end-of-life disassembly and recycling of **lithium-ion batteries** are detailed in [MGN 550](#), as amended.
- 2.6 Battery Boxes and Battery Rooms**
- 2.6.1 Batteries used as a source of power for propulsion, as part of a **battery-electric** or **battery-hybrid** system shall be located in **battery boxes** or **battery rooms** as appropriate (see section [1.3.1](#) of this Annex).
- 2.6.2 Ventilation requirements for **battery boxes** and **battery rooms** are detailed in section [1.3](#) of this Annex.
- 2.6.3 Electrical equipment shall, as far as practicable, be located in non-hazardous areas. Only electrical equipment required either for operational reasons or for lighting within the space itself may be installed within **battery boxes**, **battery rooms** or ventilation exhaust ducts, and shall not contribute any additional overall fire risk (see **MIN XXX**). Such equipment shall be Ex-rated and IIC atmosphere certified.
- 2.6.4 **Lithium-ion batteries** which meet the safe co-location requirements of [section 2.4.2](#) of this Annex are not required to meet the requirements of [section 2.6.3](#) of this Annex.
- 2.6.4 Where size allows, electrical equipment shall not be located within 1.5 m of **battery box** or **battery room** ventilation outlets.
- 2.6.5 Light fittings in a **battery box** or **battery room** shall be appropriately protected (e.g. by glass) to reduce the risk of sparking. Light fittings shall be isolated if the protection fails.
- 2.6.6 Openings to **battery boxes** or **battery rooms** where exhaust gas build-up is a risk shall be gas-tight. Openings shall not be located next to spaces containing combustible or flammable materials.
- 2.6.7 **Battery boxes** and **battery rooms** shall be kept clean and clear of oily waste.
- 2.6.8 The ambient temperature of a **battery box** or **battery room** shall be monitored by the **Battery Management System**, **Energy Management System** and **Power**

**Management System**, as appropriate, to allow management of the battery system and also shall be displayed at the **control position(s)**.

2.6.9 A walk-in **battery room** shall meet the means of escape requirements set out in [section 15.7](#) of the **Code**.

2.6.10 **Battery boxes** and **battery rooms** shall not form a means of access to any other **compartment**, or form part of an escape route.

2.6.11 Where battery modules or systems are contained within gastight containers, a safety pressure relief valve or weak point must be included within the container design.

2.6.12 Person(s) working in in a **battery room**, or in a space containing a **battery box**, shall carry an emergency escape breathing device (EEBD).

## 2.7 Signage and Training

2.7.1 Safety warning signs shall be displayed outside **battery boxes** and **battery rooms** detailing that:

- .1 appropriate precautions are to be taken when opening or entering this space;
- .2 naked lights, smoking and sources of ignition are not permitted within or outside the entrance of a **battery box** or **battery room** or ventilation discharge points; and
- .3 no unauthorised personnel are permitted to enter or open **battery boxes** or **battery rooms**.

2.7.2 Batteries, **high voltage** equipment, battery systems and compartments shall be adequately labelled using internationally recognised symbols, where available.

2.7.3 A record of the battery, **Battery Management System**, **Power Management System** and **Energy Management System** specifications for operation (e.g. maximum temperature or discharge rates) shall be stored in a known accessible location.

2.7.4 The following documents shall be stored at the **control position(s)**:

- .1 manual detailing standard operating, maintenance and emergency procedures for the batteries and connected systems; and
- .2 management plan for the lifetime of the batteries (including disposal).

2.7.5 There shall be at least one person on board the **vessel** who is trained in the range alarms produced by the battery, **BMS** and **PMS/EMS**, the meaning of the alarms and any required action(s). For **Remotely Operated Unmanned Vessels** this person(s) shall be in the **Remote Operation Centre**.

2.7.6 All **crew** on board a **vessel**, and all **Remote Operators** at a **Remote Operation Centre** shall have an awareness of the **vessel's** emergency procedures relating to batteries and associated systems.

## 2.8 Starting and Stopping of Propulsion Systems

2.8.1 Where the sole means of starting the **propulsion system** is by batteries there shall be a spare battery to provide back-up power for starting of the **propulsion system**. Charging facilities for the spare battery shall be available.

2.8.2 The **vessel owner/operator** shall have a contingency plan in place which details actions to be taken if the designated back-up power source fails.

## 2.9 Battery and Power Management Systems

2.9.1 All **vessels** which use batteries as a source of power for propulsion shall have a **Battery Management System** and a **Power Management System/Energy Management System** installed, details of which shall be submitted via the **Certifying Authority** to the **Administration** for consideration and approval. If a **Battery Management System** is replaced, or has its programming significantly altered, details of the replacement or reprogramming shall be submitted via the **Certifying Authority** to the **Administration** for reconsideration and approval.

2.9.2 A **Battery Management System** shall be required to detect, monitor, respond and produce alarms to, at a minimum, the following operational conditions:

- .1 voltage (at **cell**, module and system level);
- .2 temperature (at module and system level); and
- .3 current (at string level).

2.9.3 A **Battery Management System** shall, at a minimum, calculate, transmit and display the following at key locations (including the **control position(s)**):

- .1 State of Charge (**SOC**); and
- .2 State of Health (**SOH**) estimate.

2.9.4 An alarm shall be produced at the **control position(s)** if any of the following occurs:

- .1 loss of communication between the **Battery Management System** and **Energy Management System** or **Power Management System**;
- .2 **Battery Management System** failure;
- .3 the cooling system (if installed) develops a fault or fails;
- .4 the **Battery Management System** has disconnected a battery pack(s);

- .5 low remaining battery charge;
- .6 ambient temperature in the **battery box** or **battery room** exceeds a specified level; or
- .7 a build-up of explosive gases are detected (as per the requirements of [section 3.2.2](#) of this Annex).

2.9.5 It is strongly recommended that a **Battery Management System** records atypical event data and diagnostic information, and reports the occurrence of such an event to the **control position(s)**.

2.9.6 A **Battery Management System** shall be tested and inspected as per the manufacturer's requirements. The **Battery Management System** manufacturer must supply testing and inspection requirements for annual maintenance.

2.9.7 A **Battery Management System**, including all its components, shall be protected against impact or falling objects.

2.9.8 A **Battery Management System** shall provide an indication at the **control position(s)** when servicing of the batteries, ventilation, fire suppression and connected systems is due.

2.9.9 A **Battery Management System** shall maintain balancing of **cell** voltage at module and system levels.

2.9.10 Where a **Battery Management System** acts to isolate a battery string(s) or module(s) this shall be communicated with the **Energy Management System** or **Power Management System** to ensure that:

- .1 the battery system is not overloaded; and
- .2 the correct remaining range is displayed at the **control position(s)**.

2.9.11 It is strongly recommended that a **Battery Management System** shall log battery usage history, warnings and faults.

2.9.12 For **battery-hybrid propulsion systems** the **Power Management System** shall balance both the **diesel** and battery power sources to ensure system stability and effective load-sharing.

## 2.10 Charging of Lithium-ion Batteries

2.10.1 A **vessel** with a **battery-electric propulsion system** shall charge its **lithium-ion batteries**:

- .1 using **shore charging**;
- .2 from a mother vessel; or
- .3 from a platform-based facility.

- 2.10.2 A **vessel** with a **battery-hybrid propulsion system** shall charge its **lithium-ion batteries** by:
- .1 **shore charging**; and/or
  - .2 charging from a mother vessel; and/or
  - .3 charging from a platform-based facility; and/or
  - .4 a self-charging **battery-hybrid propulsion system**.
- 2.10.3 A **vessel** is not permitted to be charged by another **vessel**, except where a tender is charged by a mother vessel (see [section 24](#) of the **Code**).
- 2.10.4 Charging cables and associated equipment for charging of **lithium-ion batteries** used for propulsion shall either:
- .1 be carried on board the **vessel** being charged; and/or
  - .2 be provided by the **shore charging** facilities, mother vessel or platform-based facility.
- 2.10.5 Batteries shall be charged in accordance with manufacturer's instructions.
- 2.10.6 Battery charging systems shall have overcurrent and overcharge protection, and must constantly communicate with, and remain within set limits defined by the **Battery Management System**.
- 2.11 Shore Charging**
- 2.11.1 A **vessel** which uses batteries as a source of power for propulsion, and can be charged by an on-shore mains power source, shall have a sufficient number of electric **charging points** installed on the **vessel**.
- 2.11.2 Electric **charging points** shall be:
- .1 located at a height above deck sufficient to prevent inadvertent downflooding if the **vessel** is heeled;
  - .2 sealed with a **watertight** cap when not in use; and
  - .3 constructed of non-sparking materials.
- 2.11.3 A **vessel** with a **battery-hybrid propulsion system** shall not have an electric **charging point** located adjacent to a ventilation or exhaust vent.
- 2.11.4 The charging system shall be included within the **high voltage interlock loop**. Any break of the loop shall stop charging and isolate the charger from the battery terminals.

2.11.5 A **vessel** shall, at a minimum, have the following installed to monitor charging from an on-shore mains power source:

- .1 voltmeter; and
- .2 current meter.

## 2.12 **Vessels with a Self-Charging Battery-Hybrid Propulsion System**

2.12.1 **Vessels** with a self-charging **battery-hybrid propulsion system** shall be designed to safely charge the **lithium-ion batteries** whilst operating in a **diesel** mode of propulsion. This shall be demonstrated to the satisfaction of the **Certifying Authority**.

## 2.13 **Cooling Systems**

2.13.1 Batteries shall be cooled by either:

- .1 passive or active ventilation of the **battery box** or **battery room** (see [section 1.3.1 of this Annex](#)); or
- .2 direct cooling (such as liquid cooling) from a dedicated battery cooling system.

2.13.2 Battery cooling systems shall be able to maintain battery **cells** within their required operational temperature range, including during fault events where **cell** temperature spikes but remains within operational limits.

2.13.3 Auditory and visual alarms shall be activated at the **control position(s)** if the cooling system fails or develops a fault, including where the following are detected:

- .1 high coolant temperature; or
- .2 reduced coolant flow.

### 3 Fire Safety and Appliances

The purpose of this section is to provide a level of fire safety for **vessels**, which is designed to extinguish minor battery fires, prevent minor battery fires from becoming major fires, and in the event of a major battery fire permit enough time for the evacuation of the **vessel**. Where a minor battery fire has occurred, this section provides structural integrity requirements of **battery boxes** and **battery rooms** to enable the **vessel** to remain habitable.

#### 3.1 Construction Standards for Battery Boxes and Battery Rooms

3.1.1 Batteries shall, in accordance with the battery manufacturer's recommendations, be located within either a:

- .1 steel, or equivalent, plated **battery box**; or
- .2 dedicated steel, or equivalent, plated **battery room** with A0 fire integrity.

3.1.2 A risk assessment shall be carried out as per the requirements of [section 2.2.1 of this Annex](#).

3.1.3 Any penetrations through **battery box** or **battery room** insulation shall be of an equal fire rating to the insulation it passes through.

3.1.4 If a risk of static in the **battery box** or **battery room** is identified, and cannot be suitably mitigated, it is strongly recommended that the walls of the box or room shall be painted with anti-static paint.

#### 3.2 Battery Fault and Fire Detection

3.2.1 **Battery rooms** and every space containing a **battery box** shall be fitted with suitable detectors in relation to the:

- .1 battery size;
- .2 battery power;
- .3 ventilation system;
- .4 cooling system; and
- .5 fixed fire extinguishing system.

These shall include smoke, heat and flame detectors, and these shall activate auditory and visual alarms in the affected space and at the **control position(s)**.

3.2.2 Gas detector(s) able to detect gases likely produced by the battery's specific chemistry, or type, shall be fitted in **battery boxes** and **battery rooms**. If the concentration of gas in the **battery box** or **battery room** reaches 60% Lower Explosive Limit (**LEL**) the battery shall be automatically disconnected, all electrical



circuits in the space shall be de-energised, and auditory and visual alarms shall be emitted in the affected space and at the **control position(s)**.

- 3.2.3 Gas detectors in **battery boxes** and **battery rooms** shall be located where gas may accumulate and in the ventilation outlets. A gas dispersal analysis or physical smoke test may be used to identify the most suitable locations for gas detectors.
- 3.2.4 Gas detectors in **battery room(s)** large enough to be entered shall have gas detectors positioned at breathing height.
- 3.2.5 It is the responsibility of the **vessel owner/operator** to ensure that **crew** are protected from toxic gases. The **vessel owner/operator** shall develop a risk assessment (see [Appendix 8 – Section 3](#) of the **Code**) which informs the development of safe systems of work.

### **3.3 Battery Fires**

- 3.3.1 Hand fire pumps and fire buckets shall not be used to extinguish battery fires.
- 3.3.2 Fire extinguishing medium(s) shall be able to penetrate the casing of batteries to extinguish a potential fire.

### **3.4 Fixed Fire Suppression Systems**

- 3.4.1 All **vessels** shall have a fixed fire suppression system installed for **battery boxes** and **battery rooms** in accordance with the battery manufacturer's requirements, and shall be designed in consideration of the potential size and specification of the installed batteries.<sup>117</sup>
- 3.4.2 A fixed fire suppression system shall be of an **MCA**, or equivalent, **approved** type appropriate to the **battery box** or **battery room**, and shall be able to prevent heat propagation at battery pack level. For further requirements see [section 16.4](#) of the **Code**. The fixed fire suppression system shall be tested to the satisfaction of the **Administration**.
- 3.4.4 A powered fixed fire suppression system shall be powered by both main and emergency power. The emergency power source shall not be located in the space(s) it serves.
- 3.4.5 A fixed fire suppression system shall meet the manufacturer's installation and maintenance requirements and shall be serviced at minimum on an annual interval or as per manufacturer's recommendations, whichever is more frequent.
- 3.4.6 Control and power, where appropriate, for a fixed fire suppression system shall be located outside of the **battery box** or **battery room**.
- 3.4.7 Where practicable, due to the design of the fire suppression system, visual and audio alarms shall be activated in the affected space and at the **control position(s)** prior to release of suppression material.

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<sup>117</sup> Recommended fixed fire suppression system media are high pressure water mist, sprinklers and foam.

3.4.8 During a **thermal runaway** event active ventilation, where installed, shall continue operating if an explosive atmosphere is present.

### **3.5 Portable Fire Extinguishers**

3.5.1 Portable fire extinguishers may only be used as an alternative if installation of a fixed fire suppression system would constitute a safety risk. Any portable fire extinguishers intended for use in **battery boxes** or **battery rooms** shall be suitable for such purposes, and provide an equivalent level of safety to the satisfaction of the **Administration**.

3.5.2 A minimum of two portable fire extinguishers with a minimum fire rating of 34B (in addition to the requirements of [section 16](#) of the **Code**) shall be readily accessible for the **battery box** or **battery room**. **Vessel** owners/operators shall follow the battery manufacturer's requirements regarding the types of portable fire extinguishers permitted to be used in **battery boxes** and **battery rooms**.

3.5.3 Fire ports designed to allow discharge of hand-held extinguishers into a **battery box** or **battery room** shall be of an equivalent structural standard to the **battery box** or **battery room**. Any opening(s) shall only be used in an emergency and shall be clearly labelled.

## Annex 2

### Remotely Operated Unmanned Vessels

This Annex aims to provide all additional information needed for a **Remotely Operated Unmanned Vessel** of <24m **Load Line Length** operating as a **Workboat**. For **vessels** intending to operate as a **Remotely Operated Unmanned Vessel** both this Annex and the main body of the **Code** shall be referred to and complied with.

#### 1 Foreword

##### 1.1 General Requirements

1.1.1 This Annex applies to **Remotely Operated Unmanned Vessels** (ROUVs) operating as **workboats** that operate **to sea**. It applies to such **vessels** that are **United Kingdom (UK) vessels** wherever they may be, and to non-United Kingdom vessels operating from United Kingdom ports whilst in United Kingdom waters.

1.1.2 **Vessel owners/operators** wishing to operate a **vessel** with a level of autonomy different to that of **Remotely Operated Unmanned Vessels** may be considered on a case-by-case basis by the **Administration**.

1.1.3 **Vessel owners/operators** wishing to operate a **Remotely Operated Unmanned Vessel** which is not able to meet the requirements of this Annex and **Code** may be considered on a case-by-case basis by the **Administration**.

##### 1.2 Sections of the Workboat Code disappplied for Remotely Operated Unmanned Vessels

Section 11 Stability:

- Section 11.2 Damage Survivability; and
- Section 11.5.5 Person Recovery Stability Test

Section 13 Life Saving Appliances

Section 15 Fire Appliances:

- Section 15.1 Protection of Accommodation Spaces;
- Section 15.5.2 Fire Ports;
- Section 15.3 Portable Fire Extinguishers; and
- Section 15.5 Fire Blanket.

Section 21 (including 21 A and 21 B) Accommodation and Recreational Facilities

Section 22 Protection of Personnel

Section 23 Medical Care

Section 25 Cargo Carrying, Lifting, High Speed or Bow Push Up Operations:

- Section 25.5 Lifting Operations; and
- Section 25.6 Vessels Fitted with Diver Lifts

Section 26 Towing and Non-Self-Propelled Vessels:

- Section 26.1 General;
- Section 26.2 Towing Arrangements;
- Section 26.5 Non-Self-Propelled Vessels

Section 27 Dedicated Pilot Boats and Workboats with a Pilot Boat Endorsement

Section 29 Carriage and Transfer of Dangerous Goods

Appendix 4 Alternative Safety Standards for Vessels Operating in Protected Waters and/or a Restricted Service:

- Section 3 Specific Guidance for Vessels Involved in Group Working

Appendix 8 Alternative Compliance Standards for Manned Rigid Inflatable Boats and Open Boats Wishing to Operate Outside the Hours of Daylight Within Area Category 3 or 5.

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## 2 Application and Interpretation

The purpose of this section is to clearly summarise functional limitations and additional requirements for **Workboats** specifically operating as a **Remotely Operated Unmanned Vessel**.

### 2.1 General Requirements

2.1.1 A **Remotely Operated Unmanned Vessel** shall not:

- .1 be fitted with a deck crane or other **lifting device**;
- .2 carry a spare portable petrol container;
- .3 have an engine which can only be hand-started;
- .4 have open flame appliances or gas installations;
- .5 have **liquid fuelled galley cookers** or heating appliances installed;
- .6 be recognised as either a **d** or be a certified **workboat** with a **pilot boat** endorsement;
- .7 be fitted with a diver lift or be used as a diving platform;
- .8 transfer **passengers** or **industrial personnel**;
- .9 carry **dangerous goods**; or
- .10 operate as a mother vessel (see [section 24](#) of the **Code**).

2.1.2 A **Remotely Operated Unmanned Vessel** shall not be permitted to tow.<sup>118</sup> Where necessary, a **Remotely Operated Unmanned Vessel** may be permitted by the **Certifying Authority** to undertake **towing** of survey equipment. Applications for **towing** operations other than for survey equipment may be considered on a case-by-case basis subject to the approval of the **Administration**.

2.1.3 A **Remotely Operated Unmanned Vessel** shall not be permitted to be fitted with a **lifting device**. Where necessary, a **Remotely Operated Unmanned Vessel** may be permitted by the **Certifying Authority** to be fitted with a **lifting device(s)** for the lifting of survey equipment. Applications for lifting operations other than for survey equipment may be considered on a case-by-case basis subject to the approval of the **Administration**.

2.1.4 A **Remotely Operated Unmanned Vessel** shall not be permitted to carry **dangerous goods**. Where necessary, a **Remotely Operated Unmanned Vessel** may be permitted by the **Certifying Authority** to carry the following **dangerous goods** exclusively for the use of the **vessel**:

- .1 Class 3 – paint or paint related material; and

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<sup>118</sup> A **Remotely Operated Unmanned Vessel** is permitted to be the towed vessel.

- .2 Class 2 – aerosols (for lubricants).
- 2.1.5 Where a fire bucket(s) is located on board a **Remotely Operated Unmanned Vessel** it shall be adequately secured prior to departure.
- 2.1.6 A **Remotely Operated Unmanned Vessel** shall comply with the pollution prevention requirements of [section 30](#) of the **Code**.
- 2.2 Official Log Book and Voyage Data Recorder**
- 2.2.1 All **Remotely Operated Unmanned Vessels** shall have an Official Log Book which is completed and kept at the **control position**.
- 2.2.2 Information recorded within an Official Log Book shall, at a minimum, include:
  - .1 course (including accuracy and compass error);
  - .2 weather (including wind, swell and visibility);
  - .3 speed in knots;
  - .4 overboard discharges (if applicable);
  - .5 weight of **cargo**;
  - .6 duration, time and location of any signal loss, or circumstances where contact could not be re-established with the **Remotely Operated Unmanned Vessel**;
  - .7 loss of steering, including duration of any steering loss;
  - .8 occurrence of engineering or navigational alarms;
  - .9 impairment of situational awareness (e.g. failed camera or sensor);
  - .10 completed maintenance activities;
  - .11 a record of test results for critical systems (see [section 3.6](#) of the **Code**);
  - .12 a record of all accidents involving the **Remotely Operated Unmanned Vessel**;
  - .13 a record of any near-misses. Supporting information to prove that any departure from the **COLREGs** was necessary to avoid immediate danger shall also be recorded. All near-misses shall be reported;
  - .14 handover information (including watchkeeper's initials and handover time); and
  - .15 a record of when a **Remotely Operated Unmanned Vessel's** control is switched between **Remote Operation Centres**, or if the **vessel** transitions to manned operation.

2.2.3 The following **Remotely Operated Unmanned Vessel** data, at a minimum, shall be retained at the **Remote Operation Centre**:

- .1 **vessel** location; and
- .2 data from cameras and sensors.

All data shall be retained for a minimum of two years.

## 2.3 **Safety of Operations**

2.3.1 The **vessel owner/operator** shall produce a list of **critical equipment** and systems.

2.3.2 A **Remotely Operated Unmanned Vessel** shall have redundancies installed for **critical equipment** and systems installed for safe operation.

2.3.3 The **vessel owner/operator's** contact details shall be clearly displayed on the external of a **Remotely Operated Unmanned Vessel**.

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### 3 Bilge Pumping, Fire Appliances and Alarms

The purpose of this section is to provide a level of safety against the risks of fire or build-up of bilge water. Bilge pumping systems shall be able to drain any space where bilge water is likely to occur. It is not intended to drain flooded spaces where there has been a hull or structural failure. Fire appliances shall be designed to extinguish fires. See sections [11](#), [15](#) and [16](#) of the **Code**.

#### 3.1 Bilge Pumps

3.1.1 All bilge pumps on a **Remotely Operated Unmanned Vessel** shall be power driven and automatic starting, and all alarms shall be audibly and visually displayed and audible at the **control position(s)**.

3.1.2 A **Remotely Operated Unmanned Vessel** shall either have:

- .1 oily water separators fitted to bilge pumps; or
- .2 oil sensors fitted to bilge pumps.

Where oil is detected by an oil sensor, pumping of bilge water shall automatically stop and a visual and audible alarm shall be displayed and audible at the **control position(s)**.

#### 3.2 Fire Containment

3.2.1 Critical areas and systems of a **Remotely Operated Unmanned Vessel**, as per [section 2.3.1](#) of this Annex, except where this is impracticable due to the size of the **vessel**, shall be compartmentalised to aid in fire containment.

#### 3.3 Fixed Fire Extinguishing Systems

3.3.1 A **Remotely Operated Unmanned Vessel** shall have a suitable fixed fire extinguishing system installed. It shall be:

- .1 an **MCA**, or equivalent, **approved** type appropriate to the space to be protected;
- .2 of appropriate volume to complete two releases of extinguishing medium; and
- .3 shall be installed and maintained in accordance with the manufacturer's requirements (see [section 16.4](#) of the **Code**).

An alternative arrangement which has an equivalent standard of safety may be considered on a case-by-case basis to the satisfaction of the **Administration**.

3.3.2 A fixed fire extinguishing system shall be self-activating or fully operable from the **Remote Operation Centre**.

3.3.3 A **Remotely Operated Unmanned Vessel** which meets the requirements of [section 3.3.1](#), which is fitted with a self-activating fixed fire extinguishing system shall either have a delay, or an ability to manually switch off the system, and all alarms from the fixed fire extinguishing system shall provide an on board audible and visual warning.



- 3.3.4 All alarms from the fixed fire extinguishing system shall be: audibly and visually displayed and audible at the **control position(s)**.
- 3.3.5 Where the fixed fire extinguishing system has been activated, or a space has been compromised, an audible and visual alarm shall be activated on board the **Remotely Operated Unmanned Vessel**.
- 3.3.5 A fixed fire extinguishing system shall be designed and installed to extinguish fires, and to prevent a fire from spreading to other areas.
- 3.3.6 In event of a fire, a **Remotely Operated Unmanned Vessel** shall either:
- .1 remain responsive to commands from the **Remote Operation Centre**;  
or
  - .2 automatically enter a defined **safe state**.
- 3.3.7 Where size allows, critical systems shall be protected from areas identified as being of high risk from fire.
- 3.3.8 Emergency power and critical back-up systems shall be located separately from main systems, located above the damage waterline and shall be protected from fire.
- 3.3.9 Cameras and sensors shall be installed within engine, machinery and **battery spaces** to provide adequate situational awareness during emergency situations such as a fire, except where it is impracticable due to the size of the **vessel**. Outputs from cameras and sensors shall be displayed and audible at the **control position(s)**.
- 3.3.10 All fuel shut-offs and ventilation closures shall be fully operable from the **Remote Operation Centre**.

### **3.4 Alarms and Alerts**

- 3.4.1 All navigational and engineering alerts shall be audibly and visually displayed and audible at the **control position(s)** in a timely manner and shall be classed appropriately as:
- .1 emergency alarms;
  - .2 alarms;
  - .3 warnings; or
  - .4 cautions.<sup>119</sup>
- 3.4.2 Navigational or engineering alerts shall be reported as specific alerts.
- 3.4.3 Sufficient alerts, monitoring, diagnostic tools and controls shall be available in the **Remote Operation Centre** to aid identification and resolution of engineering faults, failures or unexpected events.

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<sup>119</sup> MSC.302(87) Adoption of performance standards for bridge alert management.

3.4.4

Alarms and warnings for anchoring or dynamic positioning systems shall be audibly and visually displayed and audible at the **control position(s)**.

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## 4 Connectivity, Pre-Departure Checks and Responding to Distress

The purpose of this section is to set carriage requirements for radiocommunications and **vessel** locating appliances, including installation, operation, testing and maintenance specific for **workboats** operating as **Remotely Operated Unmanned Vessels**. See sections [14](#) and [17](#) of the Code.

### 4.1 Pre-Departure Checks

4.1.1 Pre-departure checks including, at a minimum, the following shall be carried out for a **Remotely Operated Unmanned Vessel** prior to each voyage:

- .1 propulsion and steering;
- .2 fuel and power;
- .3 communications;
- .4 navigational lights and sounds;
- .5 situational awareness; and
- .6 system(s) to stop the **propulsion system** in an emergency.

4.1.2 The **weathertight** integrity of a **Remotely Operated Unmanned Vessel**, including doorways, hatchways, accessways, windows and port lights as appropriate, shall be secured prior to departure for the duration of the voyage.

### 4.2 Connectivity between a Remotely Operated Unmanned Vessel and Remote Operation Centre

4.2.1 A **Remotely Operated Unmanned Vessel** shall meet the carriage requirements for radiocommunication equipment set out in [section 17](#) of the Code. All radiocommunication information shall be displayed and audible at the **Remote Operation Centre** via a reliable communications link.

4.2.2 A continuous radio watch shall be carried out in the vicinity of the **Remotely Operated Unmanned Vessel** (as per the requirements of [section 17.8](#) of the Code) by replicating radiocommunication signals at the **Remote Operation Centre**.

4.2.3 The communications link shall enable the **Remote Operation Centre** operator(s) to use the radiocommunications equipment on-board the **Remotely Operated Unmanned Vessel** for both incoming and outgoing communications in a timely manner in the following directions:

- .1 ship-to-shore;
- .2 shore-to-ship;
- .3 ship-to-ship; and
- .4 ship-to-ROC-to-ship.

4.2.4 Should the primary communications system fail a secondary communications system shall be available and be able to enable **vessel** locating information and basic **vessel** functionality including, at a minimum, the ability to:

- .1 command the **vessel** to enter a **safe state**;
- .2 activate the emergency stop;
- .3 activate not-under-command lights; and
- .4 receive and respond to critical alarms.

4.2.5 Where, due to the size of the **vessel**, it is impracticable to fit a secondary communications system, a **vessel** with only a primary communications system may be considered on a case-by-case basis to the satisfaction of the **Administration**.

### **4.3 Responding to Distress**

4.3.1 **Remote Operation Centre** operators shall be able, where applicable, to relay distress call information to the Coastguard.

4.3.2 All **Remotely Operated Unmanned Vessels** shall respond to distress calls and, where practicable, be able to mark a position (including, but not limited to person(s) overboard, another vessel or an oil spill).

4.3.3 A radio system shall include a speaker system to allow **Remote Operation Centre** operators to provide auditory updates to persons in distress.

4.3.4 All **Remotely Operated Unmanned Vessels** shall have lighting, cameras or sensors to assist, as far as is practicable, in the locating of person(s) overboard.

4.3.5 An **owner/operator** of a **Remotely Operated Unmanned Vessel** may voluntarily carry other life-saving appliances to provide support in response to a distress call (for example flotation devices or liferafts which can be remotely launched) appropriate to the size and/or stability of the **vessel**. All life-saving appliances carried shall meet the requirements of [section 14](#) of the **Code** and be ready for use at all times.

### **4.4 Remotely Operated Unmanned Vessels Involved in Group Working**

4.4.1 Each **Remotely Operated Unmanned Vessel** operating in group working shall be directly controlled from the same **Remote Operation Centre**.

## 5 Navigational and Anchoring Equipment

The purpose of this section is to provide means of safe navigation and anchoring of **Remotely Operated Unmanned Vessels**. See Sections [14](#), [19](#) and [20](#) of the **Code**.

### 5.1 Vessel Headings and Bearings

5.1.1 A **Remotely Operated Unmanned Vessel** shall be fitted with means of determining the **vessel's** heading and correcting headings and bearings to true; and this shall be displayed and audible at the **control position(s)** at all times.

5.1.2 A back-up power supply to the equipment in [section 5.1.1](#) of this Annex shall be available in the event of failure of the main electrical power supply.

### 5.2 Sensors and Cameras

5.2.1 A **Remotely Operated Unmanned Vessel** shall have sensors (e.g. radar, AIS, microphone, vibration) and cameras (e.g. normal, low-light, infrared) installed which provide an equivalent standard of meeting visibility and watchkeeping requirements compared to a manned vessel (see [section 7.4.1](#) of this Annex and **MIN XXX**). The standard of visibility (see [section 10.1.2](#) of the **Code**) and watchkeeping requirements shall be to the satisfaction of the **Administration**.

5.2.2 All **Remotely Operated Unmanned Vessels** shall have an AIS transceiver installed. The AIS transceiver shall be operable from the **Remote Operation Centre**.

5.2.3 It shall be demonstrated to the satisfaction of the **Certifying Authority** that sensors and cameras installed on a **Remotely Operated Unmanned Vessel** are able to work effectively either separately, or in conjunction with each other, without causing interference. All systems and equipment installed on board a **Remotely Operated Unmanned Vessel** shall be designed to not affect the functioning of sensors and cameras.

5.2.4 Sensors and cameras shall be located in a position not likely to be damaged, obstructed, or have their situational awareness compromised by flooding or other environmental conditions (e.g. weather) during normal operations.

5.2.5 Sensors and cameras shall be suitable for marine use, be designed to operate in all anticipated conditions and situations, and shall be demonstrated as appropriate to the satisfaction of the **Certifying Authority**.

### 5.3 Watchkeeping Visibility

5.3.1 Sensors and cameras shall be installed to provide horizontal and vertical arcs of visibility to meet requirements for watchkeeping and all operational activities to the satisfaction of the **Certifying Authority**. The provision of a proper lookout is required by the International Regulations for the Prevention of Collisions at Sea.

5.3.2 Camera and sensor visibility shall not be restricted by any **cargo** or payload when in the secured stowed position.

5.3.3 A **Remote Operator** shall carry out duties at the **control position(s)** as both look-out and helmsperson and shall have:

- .1 unobstructed all-round vision;
- .2 no impairment of night-vision; and
- .3 no other impediments to keeping a proper look-out.

#### 5.4 **Signalling and Searchlight**

5.4.1 A **Remotely Operated Unmanned Vessel** shall be equipped with a remotely operable waterproof electric lamp suitable for signalling which can alter its direction remotely.

5.4.2 A **Remote Operator** shall be provided with suitable sensors and camera outputs to be able to interpret signals (e.g. flags and Code).

5.4.3 A **Remotely Operated Unmanned Vessel** operating in **Area Category of Operation 0, 1, 2, 3, or 5** shall be equipped with a searchlight which can be operated from the **Remote Operation Centre**. The searchlight may be the lamp required in [section 5.4.1](#).

#### 5.6 **Anchors and Dynamic Positioning**

5.6.1 A **Remotely Operated Unmanned Vessel** shall meet one of the following requirements:

- .1 carriage of suitable anchors and cables (as set out in [section 20](#) of the **Code**) and shall demonstrate effective remote deployment of the anchor(s) to the satisfaction of the **Certifying Authority**;
- .2 installation of a dynamic positioning system which is able to accurately maintain a **vessel's** position (see **MIN XXX**). In this Annex, dynamic positioning shall mean a system which, at a minimum, can implement station keeping.
- .3 anchoring systems other than anchors or dynamic positioning systems may be accepted on a case-by-case basis subject to the approval of the **Administration**.

5.6.2 A dynamic positioning system should, at a minimum, include a:

- .1 power system;
- .2 thruster system;
- .3 dynamic positioning control system; and
- .4 sensors monitoring and reactive to, at a minimum, **vessel** heading, movement, wind speed and wind direction.

5.6.3 A dynamic position system shall be able to achieve and maintain position in all anticipated weather and operational conditions.

5.6.4 A plan detailing contingency measures if anchoring or dynamic positioning fails shall be kept at the **control position(s)**.

5.6.5 Compliance with guidelines for dynamic positioning shall be recorded in a Dynamic Positioning Verification Acceptance Document (DPVAD).<sup>120</sup>

## 5.7 **Tow Line**

5.7.1 A **Remotely Operated Unmanned Vessel** may carry a tow line to allow it to be towed by another vessel. Where a **Remotely Operated Unmanned Vessel** carries a towline it shall meet the requirements of [Table 26.2.1](#) of the **Code**.

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<sup>120</sup> Recommendations for dynamic positioning systems are detailed in MSC.1/Circ.1580 Guidelines for Vessels and Units with Dynamic Positioning (DP) Systems (for vessels constructed 09/06/2017 onwards).

## 6 Personnel Health, Safety and Medical Care

The purpose of this section is to set out the medical care facilities and health and safety requirements for all personnel involved in the operation or maintenance of **Remotely Operated Unmanned Vessels**. See sections [14](#), [22](#) and [23](#) of the **Code**.

### 6.1 Personnel Health and Safety

6.1.1 Operators located on board a manned vessel whilst operating a **Remotely Operated Unmanned Vessel** shall be regulated under [the Merchant Shipping and Fishing Vessels \(Health and Safety at Work\) Regulations 1997](#).

6.1.2 All remote operations controlled by shore-based operators shall be regulated under all relevant health and safety legislation.

6.1.3 Shore-based operators shall complete training and practice **vessel** drills as required in [section 14.11](#) of the **Code**. Records of training shall be recorded in the Official Log Book and kept in the **Remote Operation Centre**.

6.1.4 The following provisions for shore-based operators shall be regulated under all relevant legislation:

- .1 minimum hours of rest;
- .2 working time provisions;
- .3 conditions of employment of young persons.

### 6.2 Performance Testing and Maintenance of Remotely Operated Unmanned Vessels

6.2.1 A **Remotely Operated Unmanned Vessel** shall be able to complete its entire voyage (or legs between ports) without requiring routine maintenance, and this shall be demonstrated to the satisfaction of the **Certifying Authority**. An effective monitoring programme of critical systems and equipment shall be implemented.

6.2.2 All maintenance personnel shall be appropriately trained in accordance with the risks likely to be encountered when carrying out maintenance of **Remotely Operated Unmanned Vessels**.

6.2.3 **Remotely Operated Unmanned Vessels** shall be maintained either out of the water, or whilst the **vessel** is alongside in port (see [section 6.3.1](#)).

6.2.4 Specific maintenance task(s) which cannot be completed whilst the **vessel** is stationary may be permitted on a case-by-case basis to be completed whilst the **vessel** is in motion where a support vessel is present, subject to approval of the **Administration**.

### 6.3 Boarding of, and Safe Movement on, Remotely Operated Unmanned Vessels

6.3.1 A **Remotely Operated Unmanned Vessel** which meets the safety requirements of [section 22.2](#) of the **Code**, has suitable buoyant stability to



enable safe boarding, and has structures including, but not limited to, guard rails, handrails and non-slip surfaces may be maintained in the water and boarded:

- .1 to carry out maintenance;
- .2 to carry out an inspection;
- .3 to download data;
- .4 to prepare the **vessel** for a voyage; or
- .5 in an emergency.

6.3.2 A **Remotely Operated Unmanned Vessel** which meets the requirements of section [6.3.1 of this Annex](#) shall have:

- .1 a manned override to prevent the **vessel** from being remotely operated if persons are on board the **vessel**;
- .2 emergency escape provisions (see [section 15.7](#) of the **Code**);
- .3 an appropriate level of fire safety (see sections [15](#) and [16](#) of the **Code**); and
- .4 life saving appliances (see [section 14](#) of the **Code**).

6.3.3 A **vessel** which does not meet the requirements of section [6.3.1 of this Annex](#):

- .1 shall be maintained out of the water,
- .2 shall have arrangements made for the recovery of the **vessel** without a need for persons to board; and
- .3 is only permitted to be boarded in extreme circumstances (such as to prevent risk to human life).

6.3.4 The **vessel owner/operator** is responsible for providing, where appropriate, a safe means of access to and from a **Remotely Operated Unmanned Vessel**.

6.3.5 A risk assessment shall be carried out by the **vessel owner/operator** to assess the health and safety of all persons requiring access to and from the **Remotely Operated Unmanned Vessel** during the normal course of their responsibilities.

## 6.4 Medical Care

6.4.1 **Remotely Operated Unmanned Vessels** are not required to carry medical equipment.

6.4.2 Where a **Remotely Operated Unmanned Vessel** is boarded from another vessel anywhere other than in port, a portable medical kit (meeting, at a minimum, the requirements of Annex 3 of [MSN 1905, as amended](#)) shall be made available at the point of boarding. Additional medical supplies may be required to be carried depending on the specific risks associated with the **vessel** and the intended activities of persons boarding the **vessel**.

- 6.4.3 Where maintenance of a **Remotely Operated Unmanned Vessel** is carried out either alongside a berth or out of the water a shore-based medical kit shall be available.
- 6.4.4 Medical care requirements for shore-based personnel shall be regulated under all relevant health and safety legislation.

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## 7 Remote Control of Remotely Operated Unmanned Vessels

The purpose of this section is to detail the minimum requirements for the safe operation of a **Remotely Operated Unmanned Vessel** either from an on-shore (permanent or mobile) or an on-board **Remote Operation Centre**. See sections [24](#) and [28](#) of the **Code**.

### 7.1 Manning Requirements

7.1.1 A **Remotely Operated Unmanned Vessel** shall not carry any crew, industrial personnel or passengers.

7.1.2 The manning requirements of a **Remotely Operated Unmanned Vessel** shall be met by the personnel located within the **Remote Operation Centre(s)** (see [section 7.2](#) of this Annex and [section 28](#) of the **Code**).

7.1.3 A **Remotely Operated Unmanned Vessel** is exempted from the requirement to physically carry at least one person qualified for distress and safety radio communication, as provided for in Schedule 2 of the 2023 Regulations.

A **Remote Operation Centre** shall be manned with at least one person qualified for distress and safety radio communication per **Remotely Operated Unmanned Vessel**, who shall hold a valid GMDSS Radio Operator's Certificate issued by the relevant authority.

### 7.2 Manning of Remote Operation Centres

7.2.1 There shall be an appropriate number and experience of personnel to be able to respond effectively during both normal operations (day and night-time) and emergency situations and shall, at a minimum, include:

- .1 **Remote Operators;**
- .2 the **Master;**
- .3 waterfront support and technical personnel; and
- .4 engineering personnel.

7.2.2 The responsibilities of a **Remote Operator** shall, at a minimum, include the following activities:

- .1 operation and monitoring of all essential **Remotely Operated Unmanned Vessel** systems;
- .2 navigation;
- .3 communications; and
- .4 compliance with VTS and traffic requirements.

7.2.3 The remote manning requirements for a **Remotely Operated Unmanned Vessel** will depend on the category of operation and activities being carried out..

7.2.4 Training and Certification requirements for manned vessels are applicable to operators of **Remotely Operated Unmanned Vessels** (see [section 28](#) of the **Code**).

7.2.5 A **Remote Operator** shall:

- .1 be appropriately trained and qualified for the remote operation of all **vessels** they are required to operate; and
- .2 act as the Officer of the Watch.

7.2.6 A **Remote Operator** shall only manage one **Remotely Operated Unmanned Vessel** at a time.

A **Remote Operator** may be permitted on a case-by-case basis to manage multiple **Remotely Operated Unmanned Vessels** at once, subject to the approval of the **Administration**. The **vessel owner/operator** shall submit a risk assessment to the **Administration** which details the maximum number of vessels which can be safely managed by a single **Remote Operator** and meets the following criteria:

- .1 the minimum personnel, in addition to the **Remote Operator**, required to ensure safe manning levels and safe operation of each **Remotely Operated Unmanned Vessel** during both normal operation and emergency situations;
- .2 controls and data for each **Remotely Operated Unmanned Vessel** shall be available in a consistent format which is designed and located to prevent accidental or inadvertent operation;
- .3 all alerts and alarms shall be available in a format which is designed and located to prevent accidental or inadvertent operation; and
- .4 means to clearly indicate in a consistent format to the **Remote Operator** which **Remotely Operated Unmanned Vessels** they have command and control over.

7.2.7 A **Remote Operator** shall have a clear escalation route and shall report to the **Master**.

7.2.8 All information and data at the **Remote Operation Centre** shall be presented in a language understood by all persons working at the **Remote Operation Centre**.

### 7.3 Requirements for Remote Operation Centres

7.3.1 All **Remotely Operated Unmanned Vessel** alarm, camera, sensor, radar and communication outputs are to be displayed and audible at the **Remote Operation Centre**, and shall:

- .1 detect all objects and information to aid safe navigation, including when the vessel is pitching and rolling;
- .2 appropriately group all data required for the safe operation of a **Remotely Operated Unmanned Vessel**;

- .3 enable detection and recognition of different vessel types including lights, shapes, sound and light signals (as detailed in parts C and D of **COLREGS**, 1972);
  - .4 enable detection at an appropriate range the behaviour of a vessel in view (such as, speed, course, distance, overtaking or crossing);
  - .5 aspect and direction of a vessel in view;
  - .6 provide sufficient situational awareness for **Remote Operators** to effectively control, and plan actions for, a **Remotely Operated Unmanned Vessel**;
  - .7 provide sufficient situational awareness to be able to detect person(s) in or on the water;
  - .8 monitor the health and operation of critical systems (including navigation, engineering, fire suppression systems and fuel levels or propulsion battery charge) and **vessel** motion;
  - .9 have sufficient noise cancelling properties (e.g. to minimise the impact of the **Remotely Operated Unmanned Vessel's** background noise) to aid accurate sound perception by **Remote Operators**;
  - .10 provide critical and non-critical alarms in clearly accessible audible and visual formats;
  - .11 visual alarms shall be visible under all lighting conditions; and
  - .12 auditory alarms shall be audible in all **Remote Operation Centre** conditions (including, but not limited to, the use of headsets and loudspeakers).
- 7.3.2 A **Remote Operation Centre** shall have an emergency source of power which, at a minimum, is able to power all critical systems (see [section 2.3.1](#) of this Annex) a suitable emergency plan can be implemented.
- 7.3.3 A **Remote Operation Centre** shall have protective measures in place against potential cyber security risks or interference with communication systems (see [section 31.3](#) of the **Code**).
- 7.3.4 No single incident or failure of systems at the **Remote Operation Centre** shall result in a **Remotely Operated Unmanned Vessel** entering an unsafe condition.
- 7.3.5 A **Remote Operation Centre** shall have means to display the status of each **Remotely Operated Unmanned Vessel**. The status of a **vessel** shall include all the information required to safely and successfully operate a **Remotely Operated Unmanned Vessel**.
- 7.4 Remote Operation Centre Workstations**
- 7.4.1 **Remote Operator Centre** workstations shall be set-up so that the **remote operator** at all times:

- .1 has a sufficient number of screens to display critical information at all times (e.g. alarm, camera, sensor and radio outputs);
- .2 is able to view all critical alarm, camera and sensor outputs from a single seated position;
- .3 is able to operate navigation lights and sound appliances (see [section 18](#) of the **Code**);
- .4 has a minimum 180° front view from the perspective of the **Remotely Operated Unmanned Vessel**;
- .5 is able to monitor a 360° total field of view;
- .6 is able to monitor critical systems and functions;
- .7 is able to detect degradation in sensor performance and overall situational awareness;
- .8 is able to intervene to manage the safe control of the **vessel** (except during loss of connection between the **Remote Operation Centre** and **Remotely Operated Unmanned Vessel**); and
- .9 is alerted when data has not been refreshed within an acceptable timeframe.

7.4.2 A **Remote Operation Centre** workstation shall:

- .1 display all essential information required for safe remote operation at all times, even when a single or probable combination of failures has occurred; and
- .2 be designed so that the failure of a single connection, processor or display unit shall not result in unsafe or misleading data being displayed to the **Remote Operator**.

7.4.3 Safety critical controls for a **Remote Operation Centre** workstation shall be:

- .1 designed and located to prevent accidental or inadvertent operation (e.g. dedicated levers); and
- .2 designed and accessible for rapid use in an emergency.

7.4.4 When in use a **Remote Operation Centre** workstation shall, as minimum, display the following navigational and operational data at an update rate and level of detail to ensure safe operation:

- .1 speed;
- .2 heading (or track);
- .3 position; and
- .4 camera and sensor outputs.

- 7.4.5 **Remote Operation Centre** workstations shall meet the chart and nautical publication requirements of [section 19.3](#) of the **Code**.
- 7.4.6 Multiple **Remote Operation Centre** workstations shall be able to be operated simultaneously without causing interference during normal operations or emergency situations.
- 7.4.7 **Remote Operation Centre** workstations shall be locked when not in active use, and shall display that the lock is engaged.
- 7.5 Connectivity between the Remotely Operated Unmanned Vessel and Remote Operation Centre**
- 7.5.1 A **Remotely Operated Unmanned Vessel** shall receive and respond to commands from the **Remote Operation Centre** and shall:
- .1 react in a correct and timely manner (see [section 7.5.4](#));
  - .2 provide real-time functionality and operations;
  - .3 operate within the full range of intended distances between the **Remotely Operated Unmanned Vessel** and **Remote Operation Centre**; and
  - .4 safely operate within all anticipated weather and sea state conditions.
- 7.5.2 Communication links between a **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** shall be divided into essential and operational communications and shall:
- .1 not be corrupted;
  - .2 have redundancies;
  - .3 be designed to facilitate real-time monitoring of **critical equipment** health and functionality;
  - .4 be designed so that any single or common cause failure in communication links shall not affect the safe operation of the **Remotely Operated Unmanned Vessel**; and
  - .5 enable remote troubleshooting.
- 7.5.3 Data received from **Remotely Operated Unmanned Vessel** shall be considered in an order of priority as follows:
- .1 situational awareness information;
  - .2 remote control commands for critical systems;
  - .3 emergency and back-up system control;
  - .4 supervision data;
  - .5 maintenance data.

7.5.4 The **vessel owner/operator** shall provide evidence to the satisfaction of the **Certifying Authority** and the **Administration** that:

- .1 the **Remotely Operated Unmanned Vessel** reacts in a correct and timely manner to instructions in all intended weather conditions and intended distances from the **Remote Operation Centre**;
- .2 **latency** and data bandwidth requirements will not exceed the connectivity capabilities in all intended weather conditions and distances from the **Remote Operation Centre**; and
- .3 **latency** shall not result in an unsafe condition;
- .4 communications and control equipment is adequately protected from electromagnetic interference (see **MIN XXX**);
- .5 alarm and emergency data from the **Remotely Operated Unmanned Vessel** is correctly displayed and audible at the **Remote Operation Centre**; and
- .6 connectivity and signal strength between a **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** shall be monitored at a frequency appropriate to the nature of the **vessel's** operation and communications equipment.

7.5.5 Data transferred between the **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** shall be validated to ensure that:

- .1 the data is not corrupted;
- .2 the data is received in order; and
- .3 all commands received by the **Remotely Operated Unmanned Vessel** are correctly interpreted and implemented.

7.5.6 Key **vessel** functions shall be able to be remotely restored from the **Remote Operation Centre**.

7.5.7 A **Remotely Operated Unmanned Vessel** shall be controllable and manoeuvrable under all anticipated operating conditions including:

- .1 transfers between workstations within the same **Remote Operation Centre**;
- .2 transfer between **Remote Operation Centres**; and
- .3 data **latency**.

7.5.8 During transfer between **Remote Operation Centre** workstations:

- .1 the in-command workstation shall be clearly identifiable to all on-duty **Remote Operators**;
- .2 the in-command workstation shall have suitable functionality to be able to respond appropriately to emergency situations;



- .3 positive control must be maintained during transfer;
- .4 the transfer process shall not result in an unsafe condition.

7.5.9 Command and control functions shall not be split between multiple **Remote Operation Centre** workstations. Transfer of command and control functions between **Remote Operation Centre** workstations shall be documented.

7.5.10 A **Remotely Operated Unmanned Vessel** shall be under control at all times, including during switchover between data-link channels. Switchover between data-link channels shall not lead to an unsafe condition.

7.5.11 All commands sent to a **Remotely Operated Unmanned Vessel** shall be:

- .1 automatically logged;
- .2 un-editable; and
- .3 retained for a minimum of six months.

## 7.6 Safe Operation of Remotely Operated Unmanned Vessels

7.6.1 A risk assessment shall be carried out by the **owner/operator** of a **Remotely Operated Unmanned Vessel** to assess acceptable period(s) of loss of capacity of critical systems or connectivity with due consideration of the **vessel's** intended area of operation, and shall be submitted for the approval of the **Administration**. The risk assessment shall, at a minimum, consider the following:

- .1 loss of propulsion capacity;
- .2 loss of steering capacity;
- .3 loss of connectivity from the **Remote Operation Centre**;
- .4 loss of connectivity from the **Remote Operation Centre**;
- .5 risks associated with connectivity loss in all Area Categories of Operation;
- .6 inability to re-establish connectivity between the **Remote Operation Centre** and **Remotely Operated Unmanned Vessel**
- .7 loss of control from the **Remote Operation Centre**; and
- .8 all identified risks to a **Remotely Operated Unmanned Vessel** and appropriate safeguards.

Where loss of capacity or critical systems cannot be resolved within the accepted period(s) set out in the risk assessment, the **vessel** shall enter a **safe state** appropriate to the intended conditions of operation (e.g. initiating dynamic positioning and shutting down non-essential systems, reducing speed or emitting audio and visual warnings to other water users).

7.6.2 All instances where contact between the **Remote Operation Centre** and **Remotely Operated Unmanned Vessel** is lost for longer than the accepted

period(s) determined in [section 7.6.1](#) of this Annex shall be recorded within the Official Log Book (see [section 2.2](#) of this Annex), highlighting:

- .1 when the connection was re-established;
- .2 duration of loss of contact;
- .3 the method of recovery; and
- .4 whether any emergency procedures were carried out.

7.6.3 The **cargo** and systems on board a **Remotely Operated Unmanned Vessel** shall not:

- .1 cause interference (e.g. electro-magnetic) to connectivity with the **Remote Operation Centre**; and
- .2 adversely affect the operation and/or control of the **Remotely Operated Unmanned Vessel**.

7.6.4 A **Remotely Operated Unmanned Vessel** shall be fitted with a speaker system to transmit audio instructions.

7.6.5 Where a **Remotely Operated Unmanned Vessel** loses connectivity with the **Remote Operation Centre** the **vessel** shall display or emit “not under command” sounds and visual signals to alert other water users that the **vessel** is not under command and may not give way.

## 7.7 Safe Operation of Remote Operation Centres

7.7.1 **Remote Operation Centre** operators shall have regular training for emergency situations (see [section 8.3](#) of this Annex). Action plans shall be provided to operators detailing appropriate actions to be taken during emergency situations (including but not limited to display failures, fire, power disruption or a cyber-attack).

7.7.2 A Failure Modes and Effects Analysis (FMEA) shall be developed detailing identified hazards, potential failures and incidents, and their likely impacts. Action plans shall be developed to provide on-duty employees with the actions and equipment required to effectively resolve identified potential failures and incidents.

7.7.3 Critical systems shall have primary and emergency power supplies. Emergency power supplies (e.g. generators or battery systems) shall have a regular testing and maintenance programme in place.

7.7.4 A regularly updated copy of critical systems and databases shall be available.

7.7.5 A **Remotely Operated Unmanned Vessel** handover procedure shall be developed. The procedure shall include but not be limited to:

- .1 requirements to enable safe transfer of a **vessel** between workstations and **Remote Operation Centres**;

- .2 handover information when transferring **vessels** between **Remote Operators**;
- .3 means to clearly identify the in-command workstation or **Remote Operation Centre**;
- .4 means to ensure positive control is maintained at all times; and
- .5 measures to ensure that a **vessel's control position** is known and recorded at all times.

7.7.6 Handover between workstations or **Remote Operation Centres** shall not result in an unsafe condition.

7.7.7 In the event of the **Remote Operation Centre** becoming inoperable a secondary, or back-up, **Remote Operation Centre** shall be available. The back-up shall:

- .1 be able to replicate, at a minimum, camera and sensor outputs and other relevant information for effective operation of **Remotely Operated Unmanned Vessels**;
- .2 be readily accessible;
- .3 have a testing programme to assess suitability of systems and personnel responses (such as emergency drills); and
- .4 have its systems, databases and server regularly updated (where applicable).

Where the connection between the **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** fails the **vessel** shall enter, and remain in, a **safe state** until connection is either re-established with the **Remote Operation Centre** or established with a secondary or back-up **Remote Operation Centre**.

7.7.8 A communications link shall be present between the main **Remote Operation Centre** and the secondary, or back-up, **Remote Operation Centre(s)**. The secondary, or back-up, **Remote Operation Centre** shall take appropriate measures (such as taking control of the **Remotely Operated Unmanned Vessel**) if the communications link is broken.

## 7.8 Emergency Systems

7.8.1 A **Remotely Operated Unmanned Vessel** shall have an emergency stop button which is located on, and can be activated from, the external face of the **vessel**.

7.8.2 A **Remote Operation Centre** shall have a clearly identifiable emergency stop button which:

- .1 sends a signal to command the **Remotely Operated Unmanned Vessel(s)** to enter a **safe state**;

- .2 halts communication and transmission of data between the **Remote Operation Centre** and the **Remotely Operated Unmanned Vessel**; and
- .3 is designed and located to prevent accidental or inadvertent operation (e.g. dedicated levers);
- .4 is designed to operate within the full range of intended distances between the **Remotely Operated Unmanned Vessel** and the **Remote Operation Centre** and within all anticipated weather and sea state conditions;
- .5 is designed and accessible for rapid use in an emergency;
- .6 is connected to a primary and secondary power source; and
- .7 can be overridden once the emergency or problem has been resolved.

It is strongly recommended that activation of the emergency stop button sends a signal to the back-up **Remote Operation Centre** advising that the **Remotely Operated Unmanned Vessel(s)** are no longer being controlled by the primary **Remote Operation Centre** and that the emergency stop button has been activated.

7.8.3 A Remote Operated Centre workstation shall have means to enable the **Remote Operator** to rapidly shut off, and re-initialise, fuel or power to the **Remotely Operated Unmanned Vessel's** engine(s) and shall:

- .1 be designed and located to prevent accidental or inadvertent operation;
- .2 be designed and accessible for rapid use in an emergency; and
- .3 have means to indicate to the **Remote Operator** when the shut-off has been activated.

7.8.4 A back-up **Remote Operation Centre** shall be available at all times.

## 7.9 Tenders

7.9.1 A **Remotely Operated Unmanned Vessel** may operate as either a Type 1 or Type 2 tender, but is not permitted to have any persons on board. Refer to [section 24](#) of the **Code** for the requirements for tenders.

## 8 Safety Management System and Contingency Measures

The purpose of this section is to outline the Safety Management System and contingency measure requirements to ensure the safety of other water users, the safety and integrity of the **Remotely Operated Unmanned Vessel** and the safety of the marine environment. A number of requirements are given to protect **Remotely Operated Unmanned Vessels** and **Remote Operation Centres** from risks associated with cyber-attacks. See [section 31](#) of the **Code**.

### 8.1 Safety Management System and Cyber Security

8.1.1 All **Remotely Operated Unmanned Vessels** shall, from the date of the **Workboat Code** Edition 3 entering into force, meet the requirements of sections [31.2](#) and [31.3](#) of the **Code**.

8.1.2 All documents relating to the Safety Management System shall be available at the **control position(s)**.

8.1.3 Cyber security measures for **Remotely Operated Unmanned Vessels** shall:

- .1 provide secure connections between a **Remotely Operated Unmanned Vessel** and the **Remote Operation Centre**; and
- .2 protect against, where possible, successful cyber-attacks and cyber-incidents on **Remotely Operated Unmanned Vessels** or **Remote Operation Centres**.

8.1.4 The **owner/operator** of a **Remotely Operated Unmanned Vessel** shall, at a minimum, develop procedures for the following:

- .1 authorisation for connections between a **Remotely Operated Unmanned Vessel** and **Remote Operation Centre**;
- .2 authorisation for direct connections to a **Remotely Operated Unmanned Vessel**;
- .3 recovery plan(s) for successful recovery of systems following a cyber-attack;
- .4 measures to initiate a **safe state** for a **Remotely Operated Unmanned Vessel** in an emergency; and
- .5 contingency plans to respond to the loss of critical systems.

8.1.5 Following disruption to, or re-establishment of, connection between a **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** the health and security of the connection shall be tested.

8.1.6 It is strongly recommended that internal audits of the **Remote Operation Centre**, its functions, internal operating standards and record-keeping are carried out on an annual basis and are made available for review by an **authorised person** during survey and inspection of the **Remotely Operated Unmanned Vessel**.

8.1.7 The **owner/operator** of a **Remotely Operated Unmanned Vessel** shall consider applicable legislation within all states that the **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** intend to operate in<sup>121</sup>.

## 8.2 Operating Procedures and Risk Assessments

8.2.1 The **owner/operator** of a **Remotely Operated Unmanned Vessel** shall develop a risk assessment to identify potential risks to the **vessel**, shore-side personnel and maintenance crew. The risk assessment shall include deviations from normal operating conditions.

8.2.2 Shore-based procedures shall be developed to test equipment and connectivity prior to, and during, a voyage.

## 8.3 Emergency Situations and Safeguards

8.3.1 Clear procedures for responding to emergency situations shall be understood by all personnel, and shall at a minimum include:

- .1 the emergency situations listed in [section 10 of Appendix 8](#) of the **Code**;
- .2 loss of contact between a **Remotely Operated Unmanned Vessel** and the **Remote Operation Centre**;
- .3 failure of cameras and/or sensors;
- .4 failure of anchors or dynamic positioning system(s); (see [Section 5.6](#));
- .5 failure or fault at the **Remote Operation Centre**;
- .6 cyber-attack; and
- .7 unauthorised boarding.

## 8.4 Fire and Safety Procedure

8.4.1 A fire and safety procedure for a **Remotely Operated Unmanned Vessel** shall, at a minimum, include the following:

- .1 fire prevention and suppression appliances;
- .2 fire detection equipment and materials; and
- .3 systems and openings which shall be remotely closed or switched off in event of a fire.

## 8.5 Critical Systems

8.5.1 Propulsion and steering systems shall be designed to control and maintain minimum safe speed and direction in all anticipated conditions.

8.5.2 The **owner/operator** of a **Remotely Operated Unmanned Vessel** shall identify critical equipment that will require a back-up power supply in an

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<sup>121</sup> The European Union General Data Protection Regulation (GDPR) or other specific regulations in other coastal states.

emergency situation. Back-up power supplies shall, at a minimum, provide three hours of power for critical systems. Back-up power supplies may also be provided for propulsion and steering systems.

## 8.6 Programmable Electronic Systems, Software and Version Control

8.6.1 Version control shall be implemented for all **Remotely Operated Unmanned Vessel** and **Remote Operation Centre** software.

8.6.2 Safety Integrity Levels (SIL) shall be used for systems where levels of risk are clearly defined<sup>1</sup>.

8.6.3 Programmable Electronic Systems (PES) shall:

- .1 be safe<sup>2</sup>;
- .2 have functional safety<sup>3</sup> (see **MIN XXX**); and
- .3 be designed to operate safely in all anticipated conditions and reasonably foreseeable misuse situations.

8.6.4 In the event of a failure the affected **PES** shall enter, or remain in, a **safe state**. Auditory and visual alarms shall be activated in the affected space and at the **control position(s)**.

8.6.5 **Vessel** equipment shall not interfere with the protective functions of **PES** during normal operations or emergency situations.

8.6.6 Records of remote access shall be recorded for audit purposes.

8.6.7 All persons authorised to carry out remote access shall have a level of access appropriate to their function and qualifications (see **MIN XXX**).

8.6.8 Data, software and hardware shall be protected from unauthorised or accidental modification (see **MIN XXX**).