



Maritime &  
Coastguard  
Agency



# The Hovercraft Code





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# **The Hovercraft Code**

## **Consultation Version 09 March 2015**

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A Voluntary Code of Practice applicable to Small Hovercraft of up to 24 metres in length that carry no more than 12 passengers.

(The Merchant Shipping (High Speed Craft) Regulations 2004  
(SI 2004/0302), as amended)

The Hovercraft (General) Order 1972 (SI 1972/674), as amended)

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

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# 1 Foreword

- 1.1 The Hovercraft Act 1968 defines hovercraft and provides for Orders In Council to be made in relation to them. With the exception of light hovercraft under 1000 Kg not being used for reward the Hovercraft (General) Order 1972 (SI 1972 No 674) requires all hovercraft used in the United Kingdom to be registered, carry appropriate certification and comply with the British Hovercraft Safety Requirements and a number of operational requirements.
- 1.2 The Merchant Shipping (High Speed Craft) Regulations (SI 2004 No. 302) apply to both ships and hovercraft and require high speed craft to comply with the IMO High Speed Craft Code.
- 1.3 This Code has been developed for Light and Small Hovercraft which are United Kingdom craft and to other Light and Small Hovercraft operating within the United Kingdom or United Kingdom waters (at sea and/or inland waters), which are used for reward. A hovercraft surveyed and certified under, and complying with, this Code is exempted from those parts of the HSC Regulations and the General Order requiring the hovercraft to be surveyed and certified and comply with the BHSRs and the HSC Code.
- 1.4 The primary aim in developing the Code has been to set standards of safety and protection for all on-board, and particularly for those who are trainees or passengers, which is broadly in line with that of the 2014 Workboat Code.
- 1.5 The organisations that contributed to the development of The Hovercraft Code are listed below. The Code will be reviewed at regular intervals in consultation with the Industry Working Group

Bill Baker Vehicles Ltd  
British Marine Industry Federation  
The British Hovercraft Company Ltd.  
Griffon Hoverwork Ltd  
Hov Pod Ltd  
Hovercraft Club of Great Britain Ltd  
Hovercraft Cruising Club  
Hovercraft Manufacturers Association  
Hovercraft Society  
Intertidal Ltd  
Ivanoff Hovercraft AB  
K and M Products Ltd  
Lloyds Register  
Maritime and Coastguard Agency  
Royal Institution of Naval Architects  
Royal National Lifeboat Institution  
Vortex Hovercraft Ltd



- 1.6 Compliance with the Code in no way obviates the need for hovercraft operations to comply with relevant bylaws made by either the local/navigation authority or the port/harbour authority for the area in which the hovercraft operates. Local authorities may, for instance, have powers to require hovercraft to have passenger liability and third-party insurance cover, and to set the level of that cover. Additionally, recognising that some hovercraft operate both at sea and on inland waterways, attention is drawn to the common approach to hovercraft safety adopted by the major UK Inland Navigation Authorities. Owners/managing agent(s) of such hovercraft should also comply with any applicable requirements of any relevant authority for the area 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.
- 1.7 This code does not prejudice the operation of the relevant sections of the Road Traffic Act.
- 1.8 Hovercraft operations will also need to respect any environmental designations applicable to the area in which the hovercraft operates. For example, in England, Marine Protected Areas (MPAs) are designated in territorial waters to protect marine wildlife of national and international importance. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Specific Scientific Interest (SSSIs), Ramsar sites and Marine Conservation Zones (MCZs). A large proportion of estuaries, for example, will have one or more of these designations. Operating a hovercraft in designated areas, particularly at times of the year when there is the potential for disturbance to wildlife (e.g. migrating birds), may be an activity which requires assent from the relevant environmental or conservation authority and their advice should be sought.
- 1.9 This Code aims to provide, in a single document, all the information needed for the design, construction, engineering, electrical systems, hull systems, fire protection, and provision of fire-fighting, life-saving, navigation and radio equipment. It also deals with the equally important subject of manning and of the qualifications needed for the senior members of the crew. The Code also summarises the requirements for environmental protection and carriage of cargoes and dangerous goods: these are covered by other regulations which should be consulted for full details.
- 1.10 In addition, designers and builders of hovercraft will need to pay special regard to the intended area of operation and the working conditions to which a hovercraft will be subjected when selecting the standards for the design and specification of the craft, and the materials, products or components to be used in its construction.
- 1.11 The builder, repairer or owner/managing agent of a hovercraft, as appropriate, should take all reasonable measures to ensure that a product, material or



component fitted or used in accordance with the requirements of the Code is suitable for the purpose intended, having regard to its location in the hovercraft, the area of operation and the weather conditions which may be encountered.

1.12 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 Standardisation (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 MCA have accepted them as an equivalent standard.

1.13 In accordance with Directive 1998/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations, any requirement for goods or materials to comply with a specified standard shall be satisfied by compliance with:

1) a relevant standard or code of practice of a national standards body or equivalent body of any EEA State; or

2) any relevant international standard recognised for use in any EEA State; or

3) any relevant technical regulation with mandatory or *de facto* mandatory application for marketing or use in any EEA State

in so far as the standard, code of practice, technical regulation or process in question enables the requirements for safety and fitness for purpose of this Code to be met in an equivalent manner.

1.14 Independent Rescue Boat organisations that use hovercraft for commercial purposes should use the Rescue Boat Code for all aspects of survey and certification but may use the technical standards of this Code, as applicable to the relevant hovercraft type, as an equivalent to the requirements of the Rescue Boat Code.

1.15 It is important to stress that, whilst all reasonable measures have been taken to develop standards which will result in the production of safe and seaworthy hovercraft, total safety at sea can never be guaranteed. As a consequence, owner/managing agents of a hovercraft are encouraged to take out a policy of insurance for all persons who are part of the hovercraft's complement from time to time. It is advised such insurance provide cover against any foreseeable claims that may arise. It is advised if a policy of insurance is in force, a copy of the Certificate

of Insurance be either displayed or available for inspection by persons onboard the hovercraft.

1.16 The Code is only applicable to hovercraft operating on domestic voyages from the UK. Nevertheless the Maritime and Coastguard Agency, and the Industry Working Group that developed this Code, consider that it can also effectively be applied to hovercraft in other parts of the world under similar environmental and operating conditions to those of the UK. United Kingdom registered hovercraft to which this Code applies, when operating outside of United Kingdom waters, may however be subject to additional requirements of the overseas administration. Owners/managing agents should contact the administration controlling those waters regarding the acceptability of the Code and any other requirements.

#### 1.17 Authorisation of Certifying Authorities

1.17.1 The MCA is an Executive Agency of the Department for Transport, and has responsibility and accountability for the UK Merchant Shipping Regulations and their enforcement. The MCA may authorise certifying authorities who have demonstrated necessary competence for the examination (survey) and certification of hovercraft to which this Code applies, and the Certifying Authorities and the MCA have a written agreement which defines this relationship. The MCA, however retains the enforcement duties of the Code and is responsible for auditing the Certifying Authorities, although it remains an active Certifying Authority itself.

1.17.2 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 hovercraft. Authorised Certifying Authorities are permitted to charge for undertaking Code of Practice examination and certification processes as a provision of their authorisation. Arrangements for charges will be made directly between the CA (or a CA's authorised person) and the party requesting such services.

#### 1.18 Health and Safety Regulations

1.18.1 The owner/master of a hovercraft is responsible for the health and safety of anyone working on the hovercraft. When the owner/master employs crew, the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations (SI 1997 No. 2962) and other regulations made under these apply.

1.18.2 Every employer is to be aware of any risks affecting workers and others 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.

- 1.19 Where merchant shipping legislation is not applicable, e.g. because the hovercraft is not deemed to be a vessel engaged in navigation, land-based health and safety legislation applies, even for operations at sea or over water. The Provision and Use of Work Equipment Regulations 1998 impose duties on the employer, self-employed person, and to any person who has control to any extent of work equipment, which includes a hovercraft being used as mobile work equipment.
- 1.20 For hovercraft whose construction, operation and certification requirements are made mandatory by the General Exemption that authorises this Code, any provision of the code that is expressed in the conditional (i.e. “should”) shall be a requirement.

## 2 Definitions

In this Code:

“Administration” means the Maritime and Coastguard Agency;

“All Up Weight” means the actual maximum total permissible weight of the hovercraft with cargo, fuel, lubricating oil, ballast water, freshwater, consumable stores, passengers and crew and their effects including activity related equipment e.g. diving or survey equipment;

“Annual examination” means a general or partial examination of the hovercraft, 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 Record of Particulars and Record of Equipment. The hull, shell fittings, external steering and propulsion components of the hovercraft should be examined out of the water at intervals not exceeding 5 years. The Certifying Authority may stipulate a lesser interval in consideration of hull construction material, condition, age or the type and service of the hovercraft;

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

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

“Area of operation”

Area Category 6 – within 3 miles of a nominated departure point(s) named in the certificate and never more than 3 miles from land, 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 (see definition 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;

Restricted Category 6: as Area Category 6, further restricted to no more than 0.5 miles from the shore (beyond categorised waters) or in areas which are not capable of being navigated by conventional ships within 3 miles of a safe landing place or within one mile of an appropriately certified support boat, in favourable weather and in daylight, and of maximum significant wave height of 0.3m.

All areas of operation cover operations to sea and in categorised or protected waters.

Depending on the nature of the hovercraft and its use, a hovercraft may be restricted to less than the above specified limits. Such a restriction should be recorded on the certificate for the hovercraft, and should be limited to operations within area categories 3 to 6 only.

“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 25 of the Code;

“Cargo” for the purpose of the Code means all items which are transported by the hovercraft except fuel for the hovercraft, ballast (either solid or liquid), consumables to be used on board, permanent outfit and equipment of the hovercraft, stores and spare gear for the hovercraft, crew and their personal baggage and passengers and their personal baggage, and activity related equipment;

“Certificate” means the certificate appropriate to a hovercraft to which the Code is applied;

“Certifying Authority” means either the MCA or one of the organisations authorised by the MCA to appoint persons for the purpose of examining hovercraft and issuing and signing Declarations of Examination; and issue Certificates.

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

“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;

“Compliance examination” means an examination of the hovercraft, its machinery, fittings and equipment, by an authorised person, to ascertain that the hovercraft’s structure, machinery, fittings and equipment comply with the requirements of the

Code. Part of the examination should be conducted when the hovercraft is in the water.

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

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

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

“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;

“Favourable weather” 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 hovercraft, including handling ability;

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

“Forms and Certificates” used by Certifying Authorities are typically:

Record of Equipment for a Light/Small Commercial Hovercraft

Record of Particulars for a Light/Small Commercial Hovercraft

Light/Small Commercial Hovercraft Builders Certificate (Builder)

Operating Permit for a Light/Small Commercial Hovercraft (MCA or Certifying Authority)

“Freeboard” means the distance measured vertically downwards from the lowest point of the upper edge of the weather deck to the floating waterline in still water or, for an open hovercraft, the distance measured vertically downwards from the lowest point of the gunwale to the floating waterline or, the lowest point of the hovercrafts structure that will allow flooding to occur;

“Hoverclub” means the Hovercraft Club of Great Britain Ltd and/or the Hovercraft Cruising Club;

“Hovercraft” or Air Cushion Vehicle (ACV) is a hovercraft such that the whole or a significant part of its weight can be supported, whether at rest or in motion, by a continuously generated cushion of air dependent for its effectiveness on the proximity of the surface over which the hovercraft operates.

“Hovercraft in Commercial Use” includes any hovercraft in commercial use, including any “pleasure hovercraft” while it is in possession of a broker, ship repairer or other such person for the purposes of his business;

“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 Marine equipment directive (MED) 96/98/EC as amended;

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

“Length” means the overall hard structure length (including any structure intended to be permanently inflated in use) from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the rigid hull, excluding removable parts such as flexible skirts and stem head fittings;

“Lift Fan” means any fan that provides a flow of air to the hovercraft air cushion, at suitable pressure, to provide lift. This category of fan includes axial, centrifugal and mixed flow.

“Loose Water” means water that has accumulated within spaces on a hovercraft through operational use but which is not associated with hull damage;

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

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

“Master” means every person (except a marine pilot) having command or charge of the hovercraft. The terms Captain, Driver, Master, Coxswain should be taken as having the same meaning for the purposes of this Code of Practice.



“Member State of the European Economic Area” means a State which is a contracting party to the Agreement on the European Economic Area signed at Oporto on 2 May 1992, as adjusted by the Protocol signed at Brussels on 17 May 1993 and subsequently by the 2004 EEA Enlargement Agreement, and subsequently by the 2007 EEA Enlargement Agreement;

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

“Mile” or “M” means a nautical mile of 1852 metres;

“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;

“Open hovercraft” for the application of the Code means a hovercraft 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.

“Owner/managing agent” means the registered owner, or the owner or managing agent of the registered owner or owner, or owner ipso facto, as the case may be, and “Owners/managing agents” should be construed accordingly;

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

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

"Pleasure craft" for the purposes of this Code, has same definition as in the Merchant Shipping (High Speed Craft) Regulations (SI 2004 No. 302), as amended, and means:

(a) any craft which is -

(i) wholly owned by an individual or individuals and used only for the sport or pleasure of the owner or the immediate family or friends of the owner, or

(ii) owned by a body corporate and used only for the sport or pleasure of employees or officers of the body corporate, or their immediate family or friends,

and is on a voyage which is one for which the owner does not receive money for or in connection with operating the craft or carrying any person, other than as a contribution to the direct expenses of the operation of the craft incurred during the voyage, or

(b) any craft which is wholly owned by or on behalf of a members' club formed for the purpose of sport or pleasure which, at the time it is being used, is used only for the sport or pleasure of members of that club or their immediate family; and for the use of which any charges levied are paid into club funds and applied for the general use of the club,

and no payments other than those mentioned above are made by or on behalf of users of the hovercraft, other than by the owner, and in this definition, "immediate family" means, in relation to an individual, the spouse or civil partner of the individual, and a brother, sister, ancestor or lineal descendant of that individual or that spouse or civil partner;

"Plough In" – a divergent pitch or roll motion involving an increase in drag and reduction in pitch or roll attitude.

"Protected Waters" means waters not categorised in the Merchant Shipping (Categorisation of Waters) Regulations 1992 (SI 1992 No. 2356), as amended, and Merchant Shipping Notice MSN 1837(M), 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;

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

"Safe haven" means a harbour or shelter of any kind which affords safe entry and protection from the force of weather; this includes areas of land such as beaches that a hovercraft can land on and obtain shelter for the hovercraft and crew.

"Shore" means the edge of the water at the time of operation.

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

"To sea" means, for the purpose of this Code, beyond Category D waters, or Category C waters if there are no Category D waters, as defined in Merchant Shipping Notice 1837 (M) – “Categorisation of Waters”;

“Unladen Weight” or “Light Craft Weight” means the actual weight of the hovercraft without cargo, fuel, lubricating oil, ballast water, freshwater, consumable stores, passengers and crew and their effects;

"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 hovercraft when subjected to a hose test;

“Yaw angle” Means, in the horizontal plane, the angle between the longitudinal axis of the hovercraft and instantaneous direction of travel.

### 3 Application

- 3.1 This Code applies to all hovercraft while operated on or over the sea or navigable waters, for reward while on domestic voyages from the United Kingdom.
- 3.2 The Code is applicable to Small Hovercraft being a hovercraft of not more than 24metres in Length, carrying not more than 12 passengers and not more than 15 persons in total. Such a hovercraft is limited to Area Category 2.
- 3.3 The Code provides standards for Light Hovercraft, a sub-set of Small Hovercraft further limited to a maximum of 1000kg unladen weight, 12 metres in length, eight persons on board, and restricted to Area Category 3 or as further restricted on the Certificate.
- 3.4 Light Hovercraft which are being used for reward but are deemed not to be “engaged in navigation” because of their tightly constrained operations may come under the definition of Ultra-Light Hovercraft.
- 3.5 This Code provides standards for Ultra-Light Hovercraft which are of not more than 500 kg unladen weight, carrying a crew of no more than 4 persons and no passengers or cargo (other than activity related equipment), operating in Area Category 6 further restricted to no more than 0.5 miles from the shore (beyond categorised waters) or in areas which are not capable of being navigated by conventional ships within 3 miles of a safe landing place or within one mile of an appropriately certified support boat, in favourable weather and in daylight, and of maximum significant wave height of 0.3m.
- 3.6 This Code provides standards which, in the opinion of the Industry Working Group drafting this Code, may be appropriate for operators to select to use for Ultra-Light hovercraft being used as Work Equipment under the terms of the Provision and Use of Work Equipment Regulations 1998 (SI 1998 No. 2306) as amended.
- 3.7 Light hovercraft (those below 1000kg unladen weight), which are not used for reward do not have to comply with the requirements for registration, or certification. This comparative freedom from regulation is in part based on an assumption that the light hovercraft sector will, as a matter of self-discipline, pay proper regard to safety matters. A major factor making this assumption valid has been the formulation publication and implementation of codes for the construction and operation for light hovercraft by the Hovercraft Club of Great Britain Ltd.

- 3.8 Large hovercraft are those over 24 metres length or which carry more than 12 passengers. The Merchant Shipping (High Speed Craft) Regulations 2004 cover the construction and operational requirements for Large Hovercraft and those Small and Light Hovercraft which need to operate beyond the limits set in this Code.
- 3.9 If a hovercraft is not a “pleasure hovercraft” it is considered to be used for reward for the purposes of this Code.
- 3.10 It is the responsibility of the owner/managing agent to ensure that a hovercraft is properly maintained, examined and manned in accordance with the Code. The Code applies whether the owner/managing agent is corporate, private or of a charitable nature.
- 3.11 At the date of publication of the Code, any hovercraft which is in possession of an existing certificate may continue to be certificated provided they comply with the standards under which they were examined. Where new equipment is installed, or the hovercraft undergoes modification, the standards of the Hovercraft Code relevant to the change, are to be applied as far as is practicable.

### 3.12 Certification

- 3.12.1 To be issued with a certificate for a particular area of operation, a hovercraft must comply with all of the requirements of this Code for the relevant operating area to the satisfaction of the Certifying Authority.
- 3.12.2 A certificate is to be valid for a period not exceeding five years.
- 3.12.3 Manufacturers of recreational hovercraft not used for reward may self-certify stating that their hovercraft is built according to the standards contained in this code for a light or ultralight hovercraft. A hovercraft so built and certified may not be used for reward.

### 3.13 Interpretation

Where a question of application of the Code or an interpretation of a part of the Code arises, the owner/managing agent of the hovercraft concerned should in the first instance seek clarification from the Certifying Authority. In situations where it is not possible to resolve an issue of interpretation the Certifying Authority should apply in writing to the MCA, who may consult with others as deemed appropriate.

### 3.14 Equivalent Standards

When the Code requires that a particular piece of equipment or machinery should be provided or carried in a hovercraft or that any particular provision should be made, to a specified standard, the MCA may permit any other piece of equipment or machinery to be provided or carried, or any other provision to be made, provided that the MCA is satisfied by trials or otherwise that the alternative is at least as effective as that required by the Code.

### 3.15 Carriage of Additional Equipment

Equipment on board 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 and is in excess of the equipment required by this Code it should either be repaired, removed or if removal is not practical, clearly marked as inoperative and secured. See also MGN79 on Safety Equipment and Pollution prevention Equipment carried in Excess of Statutory Requirements.

## 4 Construction and Structural Strength

### 4.1 Structural Strength

#### General

- 4.1.1 The construction and outfitting should provide adequate strength and serviceability for the expected service life of the hovercraft for the intended area and operating conditions.
- 4.1.2 The design of the hovercraft should take into consideration all reasonable combinations of loading.
- 4.1.3 The design assessment of the structure should consider the following loading cases and have Proof and Ultimate Factors of 1.0 and 1.5 respectively under the maximum loads which can arise within the Design Environmental Conditions and hovercraft limitations for which certification is sought.

#### **Ultra-light and Light Hovercraft**

- Manoeuvring loads
- Water impact loads
- Towing loads
- Machinery loads
- Floor loads

#### **Small Hovercraft:**

- Manoeuvring loads
- Water Impact loads
- Floating loads
- Transitional loads
- Wind loads
- Gust loads
- Parking and Mooring loads
- Slings and Jacking loads
- Towing loads
- Machinery loads
- Floor loads

### 4.2 Construction Materials

- 4.2.1 A hovercraft may be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy, high-density polyethylene, permanently inflated structure or combinations of such materials, see applicable standards in Appendix 1.



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

4.3 An authorised person is to confirm that a hovercraft is of adequate strength by carrying out a design appraisal, plan approval and a satisfactory examination of the hovercraft. Full information (including calculations, drawings, details of materials and construction where applicable) is to be presented for approval to the authorised person. The structure and strength is to be approved to meet any one of the following:

4.4 Ultralight and Light Hovercraft

The hull construction should comply with one of the following:-

- 4.4.1 ISO 12215-5 simplified scantling assessment;
- 4.4.2 Hoverclub requirements appropriate to the size of hovercraft in force at the time of construction; or
- 4.4.3 UK Authorised Classification Society rules.

When applying ISO 12215-5 simplified scantling assessment the tables below show typical scantlings based on hovercraft length (Tr = Fibre Reinforced Plastic single skin/Al = Aluminium) and drop test from ISO 12215-5 Annex B;

Craft Particulars			Craft Particulars			Craft Particulars		
Length	4000	mm	Length	6000	mm	Length	8000	mm
Mass	1.25	t	Mass	1.875	t	Mass	2.5	t
b	2000	mm	b	2000	mm	b	2000	mm
Kc	1.1000000000000000		Kc	1.1000000000000000		Kc	1.1000000000000000	
Kloc	1		Kloc	1		Kloc	1	
Kr	0.77		Kr	0.77		Kr	1	
c	0	mm	c	0	mm	c	0	mm
Panel L	2000	mm	Panel L	2000	mm	Panel L	4000	mm
Tr	2.279311718	mm	Tr	2.605636557	mm	Tr	3.720941967	mm
Alu	1.527138851	mm	Alu	1.745776493	mm	Alu	2.493031118	mm

4.5 Hovercraft identical to an existing design may be accepted on the basis of a record of at least five years' history of safe operation in an area where the sea and weather conditions are no less severe than those likely to be encountered in the intended area of operation. This relaxation will be permitted for hovercraft built and certificated within a period of five years from the date of publication of the Code.

## 4.6 Small Hovercraft

4.6.1 Small Hovercraft of less than 12m in length shall comply with either ISO 12215-5 Simplified Scantling Assessment or with UK Authorised Classification society rules.

4.6.2 All hovercraft of 12m in length or over shall comply with UK Authorised Classification society rules.

## 4.7 Watertight Bulkheads

4.7.1 The strength of a watertight bulkhead or the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Certifying Authority or classification society rules if applicable.

4.7.2 When pipes, cables, etc. penetrate watertight bulkheads, they should be provided with valves and/or watertight glands acceptable to the certifying authority or classification society as appropriate.

## 4.8 Skirt Construction and Materials

4.8.1 Skirt materials should have high resistance to ripping.

4.8.2 Skirt construction by riveting, gluing and sewing shall be such that all connections, bonds and seams are stronger than the single thickness base material. Bonded joins should withstand long immersion in water without significant loss of strength.

4.8.3 Attachments of the skirt to the hull shall be of sufficient strength so that no damage is caused to the hull attachment if the skirt material is ripped or snagged with sufficient force to break the skirt connecting device.

4.8.4 Attention should be paid to the configuration of seams on a bag or loop so that rips will be stopped by the seams rather than guided by them.

4.8.5 Skirt attachments shall be designed to withstand the loading due to skid stops on land.

## 5 Weathertight Integrity

- 5.1.1 A hovercraft should be designed and constructed in a manner which will prevent the ready ingress of water into cabins, weathertight internal compartments and spaces.
- 5.1.2 Enclosed deckhouses must be of efficient construction to withstand the forces of weather and sea to which they will be subjected in use.
- 5.1.3 For strength and water tightness purposes only, the requirements of ISO 12216 may be applied to sections 5.2 and 5.3.

### 5.2 Hatchways and Hatches

- 5.2.1 A hatchway which gives access to spaces inside the hovercraft should be of efficient construction and be provided with efficient means to secure it closed weathertight.
- 5.2.2 A cover to a hatchway should be hinged, sliding, or permanently secured by other equivalent means to the structure of the hovercraft and be provided with sufficient locking devices to enable it to be positively secured in the closed position.
- 5.2.3 A hatchway with a hinged cover which is located in the forward half of the hovercraft should have the hinges fitted to the forward side of the hatch, as protection of the opening from boarding seas, except where it is not possible to do so, due to the shape of the hatch or the moulding it is in. A hatch with the hinges on the after side of the hatch should be secured closed at sea, and be provided with a suitable blank. This is not intended to apply to small technical spaces drained directly overboard, e.g. access hatches in side bodies.
- 5.2.4 Hatches which are used for escape purposes should be capable of being opened from both sides.

### 5.3 Doorways and Windows

#### 5.3.1 Doorways Located Above the Deck

- 5.3.1.1 A doorway located above the deck which gives access to spaces inside the hovercraft should be provided with a weathertight door. The door should be of

efficient construction, permanently attached to the bulkhead, not open inwards, and sized such that the door overlaps the clear opening on all sides, and has efficient means of being secured closed which can be operated from either side.

5.3.1.2 A doorway should be located as close as practicable to the centre line of the hovercraft. However, if hinged and located in the side of a house, the door should be hinged on the forward edge. Doors using articulated systems should be specially considered by the certifying authority.

5.3.1.3 A doorway on a weather deck which is either forward or side facing should be provided with a coaming, the top of which is at least 100mm above the deck. A coaming may be portable provided it can be permanently secured to the structure of the hovercraft and can be locked in position whilst at sea.

### 5.3.2 Windows

5.3.2.1 A window serving an enclosed weathertight boundary that in the event of failure could let water enter the hovercraft should be of efficient construction (see standards appendix 1), which provides weathertight integrity (and be of strength compatible with size) for the intended area of operation of the hovercraft.

5.3.2.2 Windows or screens which do not form part of the enclosed weathertight boundary should have an efficient frame and must not be made of materials that could cause danger to persons on-board if broken or the attachment method fails.

## 6 Lift and Propulsion Machinery

### 6.1 General Requirements

6.1.1 Machinery installations should consist of internal combustion machinery, be suitable for use in the intended operating environment and should comply with the requirements given below.

6.1.2 The machinery, electrical and control systems of hovercraft 12m length and over should comply with the rules of a UK approved classification society.

6.1.3 Installations utilising gas turbines or novel means of propulsion may be specially considered by the MCA.

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

### 6.2 Diesel Engines

6.2.1 A hovercraft fitted with a diesel engine should be provided with an engine suitable for hovercraft use and with sufficient fuel for the intended area of operation. Engines of 130kW or more should comply with Merchant Shipping (Prevention of Air Pollution from Ships) Regulations 2008 as amended and Merchant Shipping Notice (MSN) 1819 (M+F). Engines of less than 130kW need not be certificated.

### 6.3 Petrol Engines – Ultra-Light and Light Hovercraft only

6.3.1 The total maximum power of petrol engines installed in a hovercraft is to be less than 175hp (130kW). Only fuel injected petrol engines should be fitted when the machinery compartment is fully enclosed.

### 6.4 Installation

6.4.1 The machinery, fuel tank(s) and associated piping systems and fittings should be of a design and construction adequate for the service for which they are intended, see appendix 1 for applicable standards. These should be installed and protected

so as to reduce to a minimum risk to persons during normal movement about the hovercraft, with due regard being paid to moving parts, hot surfaces and other hazards. Where an enclosed machinery space is provided the fuel tank(s) should be located outside the space.

- 6.4.2 Special consideration should be given to the design & installation of high pressure fuel pipe systems on diesel machinery to reduce the risk of oil mist fires through failure of the pipes or associated fittings, particularly where they are exposed to excessive temperatures & vibrations. Mitigations could include the use of double-skinned pipes, shielding, insulation of hot surfaces, proximity & protection of electrical apparatus, anti-vibration measures & fuel oil mist detection or a combination of these measures.
- 6.4.3 Means should be provided to isolate a source of fuel which may feed a fire in an engine space. A valve or cock, which is capable of being closed from a position outside the engine space, should be fitted in the fuel supply line pipe as close as possible to the fuel tank or a spill proof fuel pipe connector which allows rapid disconnection of the fuel supply.
- 6.4.4 Fuel filling and venting pipes should be constructed of fuel compatible non-kinking material, adequately supported and of sufficient dimensions to prevent spillage during filling.
- 6.4.5 A venting pipe should be led to the open atmosphere, terminating in a position level with or higher than the fuel filling mouth and its open end should be protected against:-
- water ingress – by a goose neck or other efficient means; and
- flame spread – by a suitable gauze diaphragm (which can be detached for cleaning).
- 6.4.6 The majority of the fuel system should be manufactured from metallic pipe; however, where a flexible section of piping is essential for the design it should be as short as possible, the flexible pipes should be fire resistant/metal reinforced (see appendix 1 for applicable standards). The flexible pipes shall be secured by either metal hose clamps or permanently attached end fittings (e.g. swaged sleeve or sleeve and threaded insert). Where hose clamps are used, the fitting to which the flexible pipe attaches should have a bead, flare, annular grooves or other means of preventing slippage, the anti-slippage arrangement shall not provide a path for fuel leakage.

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

## 6.5 Means of Starting and Stopping

6.5.1 An engine should be provided with either mechanical, hand or electric starting with independent batteries, or other means of starting acceptable to the Certifying Authority.

6.5.2 When the sole means of starting is by battery, the battery should be duplicated and connected to the starter motor via a change over switch so that either battery can be used for starting the engine. A Charging facility with over voltage protection should be provided. Under normal circumstances it is not recommended to discharge both batteries in parallel. Ultra-Light Hovercraft need not be provided with duplicate batteries.

6.5.3 All internal combustion machinery should have an efficient means of remote stopping from outside the engine space.

6.5.4 Where the control position is not enclosed, hovercraft should be fitted with a kill-cord to be used at all times during navigation.

## 6.6 Stowage of Petrol

6.6.1 Spare petrol for propulsion may be carried in a 5 litre container stowed in a deck locker which meets the following requirements; additional quantities may be carried in compliance with section 21.7:

6.6.1.1 vapour tight to the hovercraft's interior;

6.6.1.2 not openable from the hovercraft's interior; and

6.6.1.3 adequately drained overboard and ventilated to atmosphere.



## 7 Propeller and Fan Systems

### 7.1 Fans and Propellers for Hovercraft

7.1.1 Fans and propellers must be suitable for use in the marine environment and the application in which they will be used. The rotating speed of selected fans or propellers must at all times be kept within the maximum speed recommended by the manufacturer or approval standard, any limiting conditions shall be included in the applicant's Declaration.

### 7.2 Acceptable Propeller and Fan standards:

- 7.2.1 For hovercraft taking part in organised hoverclub racing events, a fan and hub combination with a blade tip speed of up to 168 m/s may be selected from the World Hovercraft Federation standards in Appendix 1.
- 7.2.2 For Commercial and pleasure cruising hovercraft, fan and hub combination as for 7.2.1 but with the blade tip speed reduced by 20% below that recommended by the WHF.
- 7.2.3 For propellers, and for fans with blade tip speeds over 168 m/s, the design and construction requirements contained at Appendix 4 should be applied.

### 7.3 Environmental Conditions

- 7.3.1 The propeller shall be shown to be capable of functioning satisfactorily without unacceptable damage when operated in the likely prevailing conditions of spray, sand, aggregate, salt etc. that are likely to be met when operating the hovercraft.
- 7.3.2 Due regard shall be paid to effects of corrosion, UV light, electrolytic action between different metals, erosion or cavitation which may result from operation in the environments to which they are subjected.
- 7.3.3 Metals and alloys used in hovercraft propeller equipment shall be appropriate to the marine environment.
- 7.3.4 All bolts and other attachment devices used in the propulsion and lift systems should be physically secured to prevent them from becoming loose in service.

7.3.5 Where multiple fans or propellers are driven by the same engine the normal operating rotational fan speed should allow for over speeding as a result of a single failure in any part of the drive system and the engine should be provided with over speed protection.

7.3.6 All fans and propellers shall be located so that likelihood of a wave strike is reduced to a minimum.

7.3.7 Where multiple lift fans are provided means should be provided to maintain control in the event of one fan being un-available.

## 7.4 Fan/Propeller guarding

### 7.4.1 Ultra-Light and Light Hovercraft

7.4.1.1 All fans/propellers shall be protected by suitable means upstream with a mesh guard of maximum mesh dimension of 50mm placed a minimum of 125mm from the blade or if distance less than 125mm the mesh should have a maximum dimension of 15mm.

7.4.1.2 All fans/propellers shall be protected from the front and sides such that it is not possible to place a finger, arm or other part of the body into the path of the fans/propellers. It shall not be possible to reach the path of the rotating assembly with a 12mm diameter rod of 100mm length when approached from outside the fans/propellers guard applying a load of up to 450N.

7.4.1.3 The exit area shall be protected such that a 300mm diameter object cannot reach the fan. Protection can include any struts, rudders etc. that will provide guarding.

7.4.1.4 All guards shall be capable of resisting a force of 450N placed on an area 100mm x 100mm without deflecting into the path of the rotating assembly.

### 7.4.2 Small Hovercraft

7.4.2.1 Fans and propellers should be guarded as above except where persons are unlikely to be near propulsion fans full intake guarding is not required but a rail or similar should be installed to restrict personnel access to the propulsion components. Rear guarding as per section 7.4.1.3 is required if a person standing on the ground behind the hovercraft can potentially reach the blades.

## 7.5 Fan/propeller containment (All hovercraft)

7.5.1 All fan and propeller guarding shall be designed to contain as far as is practicable failed blades or blade fragments as a result of collision or ingestion of foreign objects all-round the circumference of rotating fans and propellers. This may take the form of a duct or guard.

7.5.2 A proposed containment shall be considered acceptable where evidence exists from similar systems. Systems shall be considered as similar if they use the same materials, construction, blades, and maximum rotating speed.

7.5.3 A proposed containment may also be considered acceptable where it is shown analytically or by test that it is suitable for the purpose.

## 7.6 Transmissions

7.6.1 Failure of all belts, transmission shafts and their associated bearings shall be considered. Arrangements shall be made to prevent shafts and belts flailing in the event of failure, by the use of suitable guards and anti-flail devices. Where multiple fans/propellers are driven from a single engine, the failure of any one component (e.g. drive belt) shall be considered in the fans/propellers speed and strength calculations. The overspeeding of any rotating component by any failure of any transmission components must be considered.

## 8 Electrical Arrangements

### 8.1 General

Electrical installations and battery storage should be in accordance with the following sections and applicable standards contained in appendix 1. Machinery, electrical and control systems of hovercraft of 12m in length and over should comply with the rules of a UK approved classification society.

### 8.2 Systems

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

8.2.2 AC systems should normally be two wire insulated for single phase, or three or four wire 3 phase system, with insulated neutral in the case of a four wire system. Alternative arrangements with earthing of neutral conductor may be specially considered by the Certifying Authority.

8.2.3 When general lighting within a hovercraft is provided by a centralised electrical system, an alternative source of lighting (which may be a suitable portable battery operated lamp(s) if practical, taking into consideration the size and complexity of the hovercraft) should be provided. This alternative source of lighting should be sufficient to provide the following for a minimum duration of 1 hour:

- 8.2.3.1 illuminate survival craft launching and embarkation;
- 8.2.3.2 illuminate man-overboard rescue equipment and rescue areas;
- 8.2.3.3 permit work on essential machinery.

### 8.3 Batteries System Requirements

8.3.1 Batteries and battery systems should be provided as indicated in Section 6.5

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

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

8.3.4 A battery isolating switch should be provided for all systems. It is preferred that this switch acts as an isolator, i.e. Double pole. However, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an "off" position, this may serve as the isolating switch.

8.3.5 Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment) should be located in a position not likely to flood in normal operations or in the event of minor damage. For Ultra Light Hovercraft this may be complied with as far as is practicable.

8.3.6 Batteries should be of the sealed type to prevent electrolyte loss.

#### 8.4 Battery Stowage

8.4.1 All batteries should be secured firmly to avoid movement when the hovercraft is subjected to sudden acceleration or deceleration.

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

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

8.4.4 Where the maximum charging power output exceeds 2 kW for nickel cadmium batteries, or 3 kW for lead-acid batteries (calculated on the basis of the maximum charging current and the nominal voltage of the battery and taking into account the characteristic charging curve of the charging appliance) the batteries shall be installed in a mechanically ventilated dedicated compartment within the hovercraft or a locker on the open deck. In either case stowage space is to be for batteries only.

8.4.5 To ensure that any evolved hydrogen is expelled, battery compartments, lockers and containers should be exhausted from the highest point of the space and air supplied at a level below the top of the batteries, see appendix 1 for applicable standards.

#### 8.5 Cables

8.5.1 Electric cables should be constructed to a recognised standard for marine use in small craft, see appendix 1.

- 8.5.2 Cables which are not provided with electrical protection should be kept as short as possible and should be “short circuit proofed” e.g. single core with an additional insulated sleeve over the insulation of each core. Normal marine cable, which is single core, will meet this requirement without an additional sleeve, since it has both conductor insulation and a sheath.
- 8.5.3 Note that when selecting cables, particular attention should be given to environmental factors such as temperature and contact with damaging substances, e.g. polystyrene, which degrades PVC insulation.
- 8.5.4 Adequate provision should be made for securing electrical connections e.g. by use of locking washers.

## 8.6 Hazardous Spaces

- 8.6.1 Where practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. When equipment is installed in such a space it must comply with a recognised standard for prevention of ignition of a flammable atmosphere, see appendix 1.

# 9 Steering Gear and Rudder Systems

## 9.1 Steering

- 9.1.1 A hovercraft should be provided with efficient means of steering.
- 9.1.2 The control position should be located so that the person conning the hovercraft has a clear view for safe navigation of the hovercraft.
- 9.1.3 When steering gear is fitted with remote controls, arrangements should be made for emergency steering in the event of failure of the control. For Ultra Light and Light Hovercraft this could include, but is not limited to locking the steering amidships and using weight shift or skirt shift to control the direction of the hovercraft.

## 9.2 Rudder System

The rudder and supporting structure construction materials, design in total (including actuating cylinders, connecting rods, attachments, bearings and pintles) should be adequate for the operating conditions likely to encountered by the Hovercraft, See standards appendix 1 .

## 10 Loose Water Removal

- 10.1 A hovercraft should have an efficient pumping system, with suction pipes so arranged that any compartment (other than a tank permanently used for the carriage of liquids which is provided with efficient means of pumping or drainage) can be drained.
- 10.2 When considered necessary to protect the suction line from obstruction, an efficient strum box should be provided.
- 10.3 When considered necessary, to prevent back flooding, non-return valves should be fitted.
- 10.4 Means of providing efficient pumping other than those described in this section may be considered provided that full information is submitted to and approved by the Certifying Authority.
- 10.5 Small Hovercraft should be provided with at least two pumps, one of which should be hand operated with a capacity of not less than 70 litres per minute, situated in two separate spaces. All pumped spaces should be capable of being drained after the failure of one pump.
- 10.6 Light and Ultra Light Hovercraft of 6 metres in length and over should carry a hand bailer or bucket and a hand pump meeting the requirements in Section 10.1.5.
- 10.7 Light and Ultra Light Hovercraft of less than 6 metres in length and operating in Category 6, a minimum of one hand bailer or a bucket is to be provided.

# 11 Stability

For the purposes of this chapter, the term “cargo” shall include activity related equipment.

## 11.1 Skirt System

The skirt system shall be such as to ensure adequate stability when hovering on cushion under all operating conditions. Adequate stability is defined as follows:

11.1.1 For the hovercraft trimmed level in a static hovering condition, the skirt shall provide sufficient righting moments in the conditions of maximum design speed and maximum design environment of wind and waves or hard surface so as to prevent unpredictable or dangerous plough-in.

11.1.2 The righting moment generated by the skirt system in pitch and roll shall steadily increase at a linear or greater rate with rotation, up to the point when the hull contacts ground or water.

## 11.2 On Cushion Stability

Hovercraft should be provided with information relating to the safe speed and yaw angle operational envelope for pitch and roll stability.

### 11.2.1 Pitch stability on cushion

11.2.1.1 The hovercraft should demonstrate adequate pitch stability when operated up to the maximum design speed. In flat water conditions the hull should not enter the water unless commanded to do so e.g. as part of a braking manoeuvre.

11.2.1.2 The hovercraft should not suffer excessive decelerations as a result of any un-commanded pitch down event (“plough-in”). Excessive is defined as great enough to unseat a person (0.3 g).

### 11.2.2 Roll stability on cushion

11.2.2.1 The hovercraft should be stable when operated in yaw up to the maximum speed specified for the yaw angle with persons located in their normal seating position.



### 11.3 Hard Structure Clearance

Average Hard structure clearance (with the skirt hem trimmed level over a flat surface) should not exceed 12.5% of hard structure width (Hard Structure Width/8) unless it can be demonstrated that both dynamic and static stability characteristics are adequate, by calculation and/or trials in accordance with section 11.6.6 & 11.6.7

### 11.4 Cushion Pressure Design

In order to avoid collapse of the skirt system at high speed, the pressure in the skirt or the cushion area itself is not to be less than the dynamic air pressure at the maximum speed.

### 11.5 Operational Damage

11.5.1 The hovercraft shall maintain stability sufficient to prevent capsize in the event that any part of the skirt should collapse and be dragged back by the water surface during operation at a maximum operational speed in any direction.

11.5.2 The skirt should be designed so that damage to any part or area of the skirt will not cause other parts or areas of the skirt to fail as a direct consequence.

11.5.3 In the design and construction of skirts, consideration should be given to the problems associated with:

11.5.3.1 Scooping that may induce excessive loads in skirt materials or attachments.

11.5.3.2 Drainage of water collected when floating off-cushion or in normal operation.

11.5.3.3 The need to avoid excessive skirt bounce.

11.5.3.4 Deterioration of material strength due to sunlight or ozone during the life of the hovercraft.

## 11.6 Operational Damage – hovercraft with permanently inflated structure

11.6.1 Where hovercraft are provided with permanently inflated structure a test should be carried out with all of the hovercraft's equipment, fuel, cargo (including activity related equipment) and the number of persons for which it is to be certificated, on board. The engine, equipment and cargo may be replaced by an equivalent mass. Each person may be substituted by a mass of 82.5kg for the purpose of the tests.

11.6.2 The tests will be successful if, for each condition of simulated damage, the persons for which hovercraft is to be certificated are supported within the hovercraft. The conditions are:

.1 With forward inflated compartment deflated (both sides if appropriate);

.2 With the entire inflated compartment, from the centreline at the stem to the transom, on one side of the hovercraft deflated.

## 11.7 Off Cushion Stability – Intact

11.7.1 With the lift system not operating, a hovercraft should be tested in its all up weight condition to ascertain the angle of heel and the position of the waterline which results when all persons which the hovercraft is to be certificated to carry are assembled along one side of the normal passenger area (subject to a minimum heeling moment of  $WB/12$  where B is the watertight hull structure breadth and W is the number of persons the hovercraft is certificated to carry multiplied by 82.5 kg) the master may be assumed to be at the hovercraft control position. Each person may be substituted by a mass of 82.5kg for the purpose of the test.

11.7.2 The hovercraft will be judged to have an acceptable standard of stability if the test shows that:

11.7.2.1 the angle of heel does not exceed 7 degrees and the freeboard to deck is not less than 75mm at any point; or

11.7.2.2 if unable to meet the criteria in 11.6.2.1 the angle of heel may exceed 7 degrees, but should not exceed 10 degrees providing the conditions of Section 12 are met.

11.7.3 For hovercraft carrying a combination of passengers and cargo, the test defined in Section 11.6.1 should be carried out with the full complement of passengers and cargo, and additionally with passengers only. For the purposes of

these tests the cargo may be assumed to be retained at its normal stowage position.

11.7.4 In all cases, the all up weight of persons and/or cargo derived from the tests conducted shall be recorded on the certificate.

#### 11.8 Person Recovery Stability Test – for hovercraft of 4 seats or above

Two persons should recover a third person from the water into the hovercraft. The third person should feign to be unconscious with their back facing the hovercraft so as not to assist the rescuers. The third person should also wear suitable anti-exposure clothing (e.g. dry suit or immersion suit). Each person involved should wear an approved lifejacket. The hovercraft should remain stable throughout the operation, and should not capsize. The hovercraft maybe on cushion or off cushion as deemed appropriate by the operator and in line with the intended operation of the hovercraft.

#### 11.9 Off Cushion Stability – Open Craft Swamped

For open hovercraft it should be demonstrated by test or by calculation that the hovercraft, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons and cargo for which it is certificated and a mass equivalent to its engine and full tank of fuel, with a reserve of buoyancy of 10%. The hovercraft should float sufficiently to provide a stable platform for the persons on board.

## 12 Freeboard

When floating with the lift system not operating, the freeboard, for a hovercraft should be not less than that determined by the following requirements:

### 12.1 Ultra-Light Hovercraft

12.1.1 It is recommended that an Ultra-Light Hovercraft has a minimum freeboard of 200mm. If the hovercraft has an integrated lift system with the fan on the hovercraft centreline then the freeboard to the lowest edge of the fan intake may be 100mm.

### 12.2 Light and Small Hovercraft

12.2.1 Have a clear height of side (i.e. the distance between the waterline and the lowest point of the gunwale or any other lower point of water ingress such as into the hovercraft, excluding wet plenums if used) of not less than 200mm for hovercraft of 7 metres in length or under and not less than 400mm for hovercraft of 18 metres in length or over. For a hovercraft of intermediate length the clear height should be determined by linear interpolation.

12.2.2 Hovercraft that incorporate a design intended to permit water to flow freely over a buoyant structure may be accepted based on a demonstration that essential systems are capable of operating on cushion and when subject to wave strike.

12.2.3 Encountering an isolated steep sided wave (eg. large vessel bow wave) within the operational limit of the hovercraft and at a speed of 20 knots in a forward direction shall not cause water to damage any essential structure or equipment.

# 13 Life-Saving Appliances

## 13.1 General

Table 13.1 – Lifesaving Appliances

Area & category of Operation	Work Equipment used in Restricted Cat 6	3,4,5,6 (Up to 20M or as on certificate)	2 (up to 60M or as on certificate)
Liferafts (to accommodate total number of persons onboard)	Not required (subject to suitable risk assessment for the area of operation)	Yes	Yes
Lifebuys without light (marked with hovercraft name)	1 and separate rescue line	NA	NA
Lifebuys with light and buoyant line (marked with hovercraft name)	NA	1	1
Lifejackets with whistle and retro reflective material	100% (lifejackets worn at all times)	100%	100%
Thermal protective aids	100%	100%	100%
Mud escape mats or protective clothing for mud escape	Yes	NA	NA
Parachute flares	NA	4	4
Red hand flares	2	2	6
Smoke signals	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held
Portable VHF	1	1	1
General alarm >750kW total installed power	NA	NA	Audible in all parts of hovercraft
Life saving signals table – 2 x SOLAS No 2 or 1 x SOLAS No1	Yes	Yes	Yes
Training/safety maintenance instructions	Yes	Yes	Yes

All life-saving equipment must be marked in accordance with the guidelines in Marine Guidance Note MGN 105 (M+F) – “Use and Fitting of Retro-reflective Material on Life-saving Appliances”.

All life-saving equipment must be marked in accordance with the guidelines in Merchant Shipping Notice MSN 1735 (M+F) – “Type - Approval of Marine Equipment (UK Nominated Bodies)” or equivalent standards approved by the Administration.

## 13.2 Liferafts

- 13.2.1 Liferafts should be constructed to SOLAS standard, Wheelmarked or DfT approved and be equipped with a SOLAS B pack or built to the ISO 9650 Part 1 Type 1 Group A. Liferaft(s) should be equipped to a level equivalent to that of a "SOLAS B PACK". This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft.
- 13.2.2 Liferafts – Light Hovercraft are permitted to use Valise type rafts if they can be stored in an area protected from UV and are ready for use when underway. Small Hovercraft should be provided with life rafts in canisters on deck arranged so as to be capable of manual and float free deployment and fitted with HRUs.
- 13.2.3 All liferafts, should be serviced at a service station approved by the manufacturer and at the manufacturer's recommended intervals, however where the liferaft(s) are stored in valises this should be at least annually.
- 13.2.4 Hovercraft expected to operate over soft sand and mud shall have mud escape equipment to allow all persons to walk over soft mud without becoming trapped. This may be derived from standard hovercraft equipment such as seats which are modified for the purpose.

## 13.3 Lifejackets

- 13.3.1 Lifejackets should be MCA (DfT) or MED approved ("Wheelmarked") or should comply with BS EN ISO 12402, Part 3 or Part 6, for lifejackets of 150 Newtons or BS EN ISO 12402, Part 2, for lifejackets of 275 Newtons or equivalent ISO/CEN standard. Long straps or lines which may become entangled in fans should be avoided.
- 13.3.2 Lifejackets that comply with BS EN 396 or 399 and with a current servicing certificate, may continue to be used where already fitted on a hovercraft at the time of the Code coming into force.
- 13.3.3 All lifejackets should be fitted with a whistle, retro-reflective material and – if the craft is certified to operate at night – with a light.
- 13.3.4 If the lifejackets are the inflatable type, an additional 10% or 2, whichever is the greater, should be provided. This does not apply to hovercraft where the lifejackets are to be worn at all times.

- 13.3.5 Inflatable lifejackets are to be of the compressed gas inflation type, with either manual or automatic activation, and fitted with oral top up valves. Lifejackets which are inflated orally only are not acceptable.
- 13.3.6 Compressed gas inflatable lifejackets should be serviced to manufacturers' recommendations within a maximum of one month either side of the Compliance, Renewal and Intermediate examination. In the intervening years they are to be examined annually to the manufacturer's recommendation. Certification or declaration of servicing must be available for inspection by the Certifying Authority/Administration. As far as is reasonable and practicable, visual examinations should be carried out weekly by the owner/managing agent to determine whether they are safe to use.
- 13.3.7 Where a lifejacket is serviced annually this is acceptable as an alternative to the servicing regime prescribed in 13.3.6.
- 13.3.8 A suitable size of lifejacket should be provided for each person on board.

## 14 Fire Safety

### 14.1 Ultra-Light and Light Hovercraft

14.1.1 Where Ultra-Light and Light Hovercraft are fitted with exposed engines a minimum of two multi-purpose portable fire-extinguishers should be provided.

14.1.2 Where an enclosed engine space is provided it should, as far as is practicable comply with the requirements of section 14.2. The fixed fire extinguishing system may consist of a portable extinguisher suitably sized for the space being protected and arranged to discharge into that space.

14.1.3 At least one portable fire-extinguisher is to be located so that it can easily be reached from the main control position of the hovercraft and the other within close proximity of the engine.

14.1.4 Hovercraft should be fitted with fire extinguishers to a recognised standard.

### 14.2 Small Hovercraft Machinery Space

14.2.1 On small hovercraft the Machinery shall be fitted in a gas tight enclosed space. The enclosure of the machinery space should, with special consideration given to fire flaps, be arranged to contain the fire extinguishing medium, i.e. the machinery space should be capable of being closed down in order that the fire is starved of air and the extinguishing medium cannot escape. Any ventilation fans located within, or feeding a machinery space, should be capable of being stopped from outside the space in the event of a fire.

14.2.2 Fixed Fire extinguishing systems of an approved type, suitable for each engine space, should be provided. A person should not be required to enter the machinery space in order to extinguish a fire.

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

14.2.4 Fibre Reinforced Plastic (FRP) Construction: Machinery space boundaries should prevent the passage of smoke and flame for 15 minutes, and be fitted with materials (as required) of an approved type that have been tested to an ISO or SOLAS standard, see appendix 1.



14.2.5 Fire resistance of FRP may be achieved with the use of fire resisting resins or Intumescent polyester, epoxy, vinylester or phenolic resin surface coatings; however, solvent borne intumescent paints are not acceptable.

14.2.6 Aluminium and Wood Construction: Machinery space boundaries should have an equivalent level of fire protection to section 14.2.4.

### 14.3 Insulation

14.3.1 Thermal or acoustic insulation fitted inside the machinery space should be of a non-combustible type see appendix 1.

14.3.2 The thermal or acoustic insulation will be considered as being a non-combustible material if it complies with SOLAS FTP code or BS EN ISO 4589 Part 3, and the material has an Oxygen Index greater than 21.

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

### 14.4 Fire Detection (Light and Small Craft)

14.4.1 Efficient fire detectors should be fitted in enclosed machinery space(s).

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

## 15 Fire Extinguishing

15.1.1 Enclosed interior spaces are to be provided with a sufficient number of portable fire-extinguishers to ensure that at least one extinguisher appropriate to fire risk will be readily available for use in every compartment.

15.1.2 Portable fire-extinguishers should be stowed in readily accessible positions.

15.1.3 Portable fire-extinguishers intended for use in the space are to be stowed near the entrance to that space.

15.1.4 At least one portable fire-extinguisher is to be located so that it can easily be reached from the main control position of the hovercraft.

15.1.5 Where cooking facilities are provided a portable fire-extinguisher of a type appropriate to the energy source used and a fire blanket is to be located in a position readily accessible for use in the event of a fire.

## 15.2 Furnishing Materials for hovercraft with enclosed interior spaces

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

15.2.2 Upholstery covering fabrics should satisfy the cigarette and butane flame tests of a recognised standard.

Table 15.1 – Fire Appliances

Restricted Cat 6	3, 4, 5, 6 (Up to 20M or as on certificate)	2 (up to 60M or as on certificate)
2 x 5A 34B or equivalent	NA	NA
NA	Minimum 2 x 13A 113B or equivalent multi-purpose portable fire extinguishers plus approved fixed extinguishing system for enclosed machinery space(s) if provided	Minimum 2 x 13A 113B multi-purpose portable fire extinguishers plus approved fixed extinguishing system for enclosed machinery space(s)

## 15.3 Cargo

15.3.1 If a hovercraft carries cargo, additional fire extinguishers of a suitable type for the cargo should be provided (also refer to section 24.7 for dangerous goods requirements).

## 16 Radio Equipment

16.1 Each hovercraft should carry sufficient radio communications equipment to perform the following distress and safety communications functions throughout its' intended voyage.

transmitting ship to shore distress alerts;

receiving shore-to-ship distress alerts;

transmitting and receiving ship-to-ship distress alerts;

transmitting and receiving search and rescue co-ordinating communications;

transmitting and receiving on-scene communications;

transmitting and receiving maritime safety information; and

transmitting and receiving bridge-to-bridge communications if appropriate to the size of craft

### 16.2 Radio Installation

16.2.1 Hovercraft should be fitted with the minimum radio equipment appropriate to its Area of Operation. Minimum and Recommended Radio Equipment is detailed in Table 16.1.

16.2.2 VHF transmission and reception ranges are reliable only within the line of sight ranges.

16.2.3 Aerials should be mounted as high as is practicable to maximise performance.

16.2.4 On small hovercraft and other hovercraft with an enclosed control position a fixed radio installation should be provided. A card or cards giving a clear summary of the radio distress, urgency and safety procedures should be displayed in full view of the radio operating position(s).

Table 16.1 – Minimum and Recommended Radio Equipment

Area of operation Category	6 Restricted Cat 6	3, 4 & 5 (Up to 20M or as on certificate)	2 (Up to 60M or as on certificate)	
VHF Fixed radio installation with DSC	Not required	1 set	1 set	
Portable VHF	1 set	1 set	1 set	Recommended to provide 1 set per liferaft if more than one carried
Navtex Receiver	Not required	Not Required	Recommended	
M/F Radio	Not required	Not required	Required if operating in GMDSS sea area A2.	

### 16.3 Operational Performance

All radio communication equipment should be of a type which is approved by the administration.

### 16.4 Installation

All radio installations should:

- 16.4.1 be so located to ensure the greatest possible degree of safety and operational availability;
- 16.4.2 protected against the harmful effects of water, extremes of temperature and other adverse environmental conditions;
- 16.4.3 marked with the call sign, the *hovercraft* station identity and any other codes applicable to the use of the radio installation.

## 16.5 Sources of Energy

16.5.1 When the electrical supply to radio equipment is from a battery, charging facilities (which are capable of recharging batteries to minimum capacity requirements within 10 hours) or a duplicate battery of capacity sufficient for the voyage should be provided.

16.5.2 The battery electrical supply to radio equipment should be protected against flooding/swamping as far as practicable and arranged so that radio communications are not interrupted in adverse conditions.

16.5.3 When fully charged, the batteries should provide at least 3 hours of operation to ensure effective use of all radio equipment.

## 16.6 Radio Watches

A hovercraft, while at sea, should maintain a continuous radio watch:

where practicable, on VHF Channel 16;

where practicable, on VHF Channel 13;

.on VHF Digital Selective Calling (DSC), on Channel 70;

for broadcasts of Marine Safety Information on the appropriate frequency or frequencies, on which such information is broadcast for the area in which the hovercraft is navigating; normally using the international NAVTEX service (if fitted) or a recognised Mobile Satellite Communications System enhanced group calling facility (if fitted). Further information may be obtained from the Admiralty List of Radio Signals, Volume 5.

## 16.7 Ships' Radio Licence - Guidance

Owners/managing agents should be aware that a hovercraft with radio communications equipment on board is required to have a Ships' Radio Licence issued by the relevant authority.

## **17 Navigation Lights, Shapes and Sound Signals**

- 17.1 A hovercraft should comply with the requirements of the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996 (SI 1996 No. 75), as amended (COLREGs), which give effect to the International Regulations for Preventing Collisions at Sea, 1972, as amended. A hovercraft which operates only between sunrise and sunset, and in favourable weather, is not required to carry navigation lights where it can be demonstrated that the hovercraft will not be in a situation where it has to operate in restricted visibility.
- 17.2 An all-round flashing yellow light must be fitted for use at all times the hovercraft is underway.
- 17.3 Sound signalling equipment should comply with the requirements of the COLREGs. A hovercraft of less than 12 metres in length is not obliged to carry the sound signalling equipment required by the COLREGs, provided that some other means of making an efficient sound signal is provided.
- 17.4 If it can be demonstrated to the Certifying Authority that, for a particular hovercraft, full compliance with the regulations is impracticable, then application should be made to the MCA via the Certifying Authority for consideration of equivalent arrangements, taking into account the nature of the operation of the hovercraft concerned.
- 17.5 A Summary of navigation lights, shapes and sound signalling appliances required for hovercraft is provided at Table 17.1. This table is for guidance only and does not cover all possible operations. Reference should be made to the COLREGs for full information.

**TABLE 17.1 - Lights, shapes and sound signals - Guidance**

<i>Overall length</i>	<i>When underway</i>	<i>At anchor<sup>4,5</sup></i>	<i>Not under command<sup>5,6</sup></i>	<i>Aground<sup>5,7</sup></i>	<i>Sound signalling appliances</i>
<i>Less than 7m</i>	<i>All round white + sidelights<sup>1,2</sup> Required</i>	<i>Not required</i>	<i>Not required</i>	<i>Not required</i>	
<i>7m - 12m</i>	<i>All round white + sidelights<sup>1</sup> OR Masthead (vis 2 miles) + 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</i>	<i>Required<sup>3</sup></i>	<i>Not required</i>	<i>Not required</i>	<i>Means to make an efficient sound signal required</i>
<i>12m - 20m</i>	<i>Masthead (vis 3 miles) + sidelights + stern light</i>	<i>Required<sup>3</sup></i>	<i>Required<sup>6</sup></i>	<i>Required<sup>7</sup></i>	<i>Whistle required</i>
<i>20m - 24m</i>	<i>Masthead (vis 5 miles) + sidelights + stern light</i>	<i>Required<sup>3</sup></i>	<i>Required<sup>6</sup></i>	<i>Required<sup>7</sup></i>	<i>Whistle and bell required, approved by UK Nominated Bodies</i>

<sup>1</sup> Range of sidelight is 1 mile.

<sup>2</sup> Vessels not exceeding 7 knots maximum speed should show sidelights if practicable.

<sup>3</sup> By night, all round white light where best seen; by day one black ball (0.6 metres in diameter) in the fore part.

<sup>4</sup> Anchor light or day shape is not required when anchored not in or near a narrow channel, fairway or anchorage or where other vessels normally navigate.

<sup>5</sup> Size of the daytime shapes and distances apart may be reduced commensurate with size of vessel.

<sup>6</sup> By night, two all-round red lights in a vertical line two metres apart and the lowest not less than four metres above the hull (weatherdeck); by day two black balls.(0.6 metres in diameters) in a vertical line, 1.5 metres apart. Vessels of less than 12 metres in length, except those engaged in diving operations, shall not be required to exhibit the lights and shapes prescribed.

<sup>7</sup> By night two all-round red lights in a vertical line 2 metres apart plus anchor light; by day three black balls (0.6 metres diameter) in a vertical line, 1.5 metres apart. A vessel of less than 12 metres in length, when aground, shall not be required to exhibit the lights or shapes prescribed.

## 18 Navigational Equipment

### 18.1 Magnetic Compass – Small Hovercraft

18.1.1 An efficient magnetic compass, or other means independent of the hovercraft's main power supply, to determine the ship's heading and display the reading at the main steering position, as well as the means of correcting heading and bearings to true at all times (eg a valid deviation card).

Each magnetic compass required to be carried by this Code should be properly adjusted and its table or curve of residual deviations available at all times. Magnetic compasses should be adjusted when:

- they are first installed;
- they become unreliable;
- the hovercraft undergoes structural repairs or alterations that could affect its permanent and induced magnetism;
- electrical or magnetic equipment close to the compass is added, removed or altered; or
- a period of two years has elapsed since the last adjustment and a record of compass deviations has not been maintained, or the recorded deviations are excessive, or when the compass shows physical defects.

It is strongly recommended that a 'Compass Error' record is maintained with regular compass errors taken and fully recorded as a proper record of the compass' reliability where the compass is not swung in accordance with the requirements.

### 18.2 Magnetic Compass – Light and Ultra-Light Hovercraft

Light and Ultra-Light Hovercraft should carry a suitable marine fixed or handheld compass on board.

### 18.3 Transmitting Magnetic Heading Device (TMHD) ("Fluxgate Compass")

18.3.1 A TMHD is acceptable as an alternative to the magnetic compass required in 18.1, provided that a suitable back-up power supply is available to power the equipment in the event of failure of the main electrical supply.

18.3.2 Where a TMHD incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded and adequately compensated for within the device, a deviation card is not required.



18.3.3 The TMHD or a repeater should be positioned so as to be clearly visible at the main control position.

#### 18.4 Other Equipment – Small Hovercraft

Small Hovercraft should be provided with, and operate whilst navigating:

18.4.1 A receiver for global navigation satellite system or a terrestrial radio navigation system, or other suitable means to establish and update the hovercraft's position at all times.

18.4.2 A radar capable of displaying target information at the hovercraft's maximum speed and fitted with either ARPA or Automatic Tracking Aid (ATA).

18.4.3 A class B AIS transponder.

## 19 Miscellaneous Equipment

### 19.1 Nautical Publications

19.1.1 Charts and other nautical publications (e.g. radio signals, lights, harbour contacts or a suitable nautical almanac combining these) to plan and display the hovercraft's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routing and ship reporting schemes. An electronic chart system, complying with the requirements detailed in Marine Guidance Note MGN 319 (M+F), may be accepted as meeting the chart carriage requirements of this sub-paragraph.

19.1.2 Ultra-Light and Light Hovercraft need not carry publications but should carry an electronic chart system, complying with the requirements detailed in Marine Guidance Note MGN 319 (M+F).

### 19.2 Signalling Lamp/Waterproof Torch

19.2.1 A hovercraft should be provided with an efficient waterproof electric lamp/torch suitable for signalling.

### 19.3 Radar Reflector

- 19.3.1 A radar reflector should be mounted on the hovercraft, this may be passive (including inflatable types) or active (powered), that meets the standards laid down in BS EN ISO 8729:1999.
- 19.3.2 For Ultra-Light and Light Hovercraft only, where it is not practicable for an efficient radar reflector to be fitted, they must not put to sea in fog, and if visibility starts to deteriorate they are to return to shore.

### 19.4 Searchlight

- 19.4.1 Light and Small Hovercraft should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations.

## 19A Other SOLAS Chapter V Requirements

19A.1 All vessels should comply with the requirements of SOLAS Chapter V, as implemented by The Merchant Shipping (Safety of Navigation) Regulations 2002 – SI. 2002 No. 1473 as amended, and summarised below:

- 19A.2 Regulations V/31, V/32 and V/33 – Assistance to other vessels and hovercraft. This requires the Master to let the Coastguard and any other vessels in the vicinity know if they encounter anything that could cause a serious hazard to navigation, if it has not already been reported. This can be fulfilled by calling the Coastguard on VHF, at the earliest opportunity. The Coastguard will then warn other vessels in the area. It also requires the Master to respond to any distress signal and help anyone or any boat in distress as best as they can;
- 19A.3 Regulation V/34 - Safe Navigation and avoidance of dangerous situations. This requires the Master to have a passage plan for the intended voyage from berth to berth; and
- 19A.4 Regulation V/35 – Misuse of distress signals. This prohibits the misuse of distress signals.
- 19A.5 When underway on or over water, the hovercraft shall comply with the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996 (SI 1996 No. 75).

## **20 Anchoring and Towing**

### 20.1 General

- 20.1.1 An anchor shall be carried, which shall be of sufficient mass for the size and type of hovercraft (Ultra light Hovercraft may dispense with this if accompanied by a support vessel).
- 20.1.2 The anchor shall be of suitable construction and holding power for the operating area under consideration.

### 20.2 Tow Line

- 20.2.1 A hovercraft should be provided with a towline. Where practicable, the towline should be buoyant. The anchor warp may also be used as the towline.
- 20.2.2 A strong securing point or equivalent structure should be provided for attachment of the towing line.

## **21 Clean Seas**

All hovercraft should comply with the requirements of UK Regulations implementing MARPOL and environmental protection requirements as applicable to the size and operating area of the hovercraft.

### 21.1 Oil pollution

Hovercraft should retain on board oil or oily mixtures for discharge to shore facilities.

### 21.2 Garbage

Placards to be displayed on board a hovercraft over 12 metres in length overall to notify the crew and passengers of the disposal requirements set out in regulations 26 to 28 and regulation 30 of the Merchant Shipping (Prevention of Pollution by Sewage and Garbage from Ships) Regulations 2008 (SI 2008/3257), and in the International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL), Annex V.

### 21.3 Air pollution

Engines installed on hovercraft should comply with the emission standards outlined in section 6 unless the hovercraft is intended solely for use on land in which case the Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) Regulations 1999 (SI No. 1999/1053) apply.

## 22 Protection of Personnel

### 22.1 Health and Safety at Work on ships and hovercraft

The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (SI 1997 No. 2962), as amended, apply wherever “workers” are employed on ships and hovercraft. Further Guidance can be found in MGN 20 (M+F) and MGN 175 (M+F).

This Code does not aim to provide definitive guidance on these Regulations, and it is the duty of the owner/manager and master to ensure that they are familiar with the requirements which include carrying out risk assessments, which are the basis for mitigating measures under all of the regulations.

The following requirements for control of noise and vibration exposure of employees may also need to be considered on hovercraft:

The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007

The Merchant Shipping and Fishing Vessels (Control of Vibration at Work) Regulations 2007

MIN 476 (M) Codes of Practice For Controlling Risks due to Noise and Vibration on Ships.

Health and Safety at Work etc. Act 1974, 1974 c. 37

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

### 22.3 Seating

22.3.1 Where seating is provided it should be adequately secured with regard to likely hovercraft motions, acceleration and deceleration.

22.3.2 Hovercraft should have suitable inboard seating for all persons on board that allow them to effectively brace themselves and provide lateral support.

22.3.3 Appropriately positioned handholds and foot placements can improve the ability for personnel to brace effectively.

22.3.4 Further guidance can be found in MGN 436 (M+F)

## 22.4 Maritime Labour Convention

22.4.1 Maritime Labour Convention 2006 (MLC) does not apply to ships navigating exclusively within inland or sheltered waters or areas where port regulations apply. The UK interpretation of this is that the MLC does not apply to United Kingdom ships operating on domestic voyages within 60 miles of a UK safe haven. A domestic voyage is a voyage that starts and finishes in the UK without the vessel going to a port in another state. However, there is already existing UK legislation covering some requirements of the MLC which applies to all seagoing ships regardless of their area of operation.

22.4.2 The MLC will apply to all United Kingdom ships on international voyages, and to United Kingdom ships which operate on a voyage from a state other than the UK, and return to that same state without visiting any other state. The MLC will also apply to United Kingdom ships on domestic voyages which proceed further than 60 miles from a UK safe haven. Furthermore, any UK vessel to which the MLC applies, operating in the waters of a State that has ratified the MLC, will receive no more favourable treatment than a vessel flying the flag of that State under Article V(7) of the MLC. Guidance on the application can be found in MGN 471, 477, 490 and 491.

## 22.5 Health and Safety at Work on hovercraft which are not vessels

22.5.1 Where Merchant Shipping regulations do not apply to an Ultra-light hovercraft, the land based regulations made under the 1974 Health and Safety at Work Act continue to apply, even to operations over coastal waters, and should be complied with by operators and employers. In particular, the Provisions and Use of Work Equipment Regulations 1998 (SI 1998/2306) apply. Operators and employers should refer to HSE guidance on these regulations, which can be found at <http://www.hse.gov.uk/work-equipment-machinery/puwer.htm><sup>1</sup>.

## 23 Medical Stores

23.1 Medical stores should be carried in accordance with the requirements set out in MSN 1768 (M+F). This requires medical stores according to the distance from shore that a hovercraft operates, for hovercraft in Area Categories 2, 3, 4, 5 and 6, Category C stores are required, as listed in Appendix 1 of the MSN 1768.

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<sup>1</sup> Link checked 8 March 2015

## 24 Manning and Requirements Specific to the Use of the Hovercraft

### General

- 24.1 A hovercraft should be safely manned.
- 24.2 Hovercraft operating in Area Categories 3 to 6, should have a second person on board deemed by the master to be capable of assisting the master in an emergency.
- 24.3 Hovercraft operating in Area Category 2 should have a second person on board deemed by the owner/managing agent to be experienced and competent.
- 24.4 A hovercraft should carry at least one person qualified for distress and safety radio communication purposes, who should hold a short range radio certificate.
- 24.5 Keeping a Safe Navigational Watch
- 24.5.1 The master and every person in charge of a navigational watch serving on hovercraft shall hold an appropriate certificate.

The master of every hovercraft shall ensure that watchkeeping arrangements are adequate for maintaining a safe watch or watches, taking into account the prevailing circumstances and conditions such as:

1. the present and forecast state of the weather, visibility and sea;
2. the proximity of navigational hazards; and
3. the density of traffic in the area;

and that, under the master's general direction, persons in charge of the navigational watch are responsible for navigating the hovercraft safely during their periods of duty, when they shall be physically present at the control position or in a directly associated control location at all times. The owner/managing agent and the master of a hovercraft should ensure that any person who assists the master in navigational watchkeeping duties is qualified to carry out such duties.

### 24.6 Single Handed Operations

- 24.6.1 The MCA does not recommend single handed operations.

24.6.2 In all cases where single handed operations take place the owner/managing agent and the master should be satisfied that it is safe to do so.

24.6.3 A single handed operation is considered to be taking place when either;  
there is only one person onboard the hovercraft; or

there is a master onboard with passengers, and there is no one else on board capable of assisting the master in an emergency.

24.6.4 Single handed operations are not permitted where a watch system is necessary to maintain the safe navigation of the hovercraft due to extended periods at sea.

24.6.5 Single handed operations are not permitted in any activity which involves the transfer of personnel between vessels.

24.6.6 The person operating the hovercraft single handed must comply fully with the minimum requirements for a master (appropriately qualified for the operating area) and with the following conditions:

24.6.6.1 The area of operation is restricted to Area Category 3, 4, 5 or 6 in conditions of favourable weather and subject to favourable official weather forecasts for the area throughout the period of operation;

24.6.6.2 the duration of the voyage should not exceed 8 hours;

24.6.6.3 the hovercraft is not operated single handed in conditions of restricted visibility;

24.6.6.4 an acceptable lifejacket is worn at all times by the master;

24.6.6.5 no overside working takes place whilst the hovercraft is being operated single handed;

24.6.6.6 details of the time and point of departure, voyage plan and the Expected Time of Arrival (ETA) of every single handed voyage are left with a suitable person ashore and that person is notified of the safe arrival on completion of each voyage; and communication should be made with a person ashore or with a hovercraft in company at regular agreed intervals; and

24.6.6.7 an engine kill-cord should be fitted and used at all times.

Masters are strongly recommended to wear personal locator beacons.

## 24.7 Dangerous Goods

24.7.1 Dangerous goods for the purposes of these requirements are those substances and articles which are listed or classified in the latest edition of the International Maritime Dangerous Goods (IMDG) Code as amended. Such substances and articles are ascribed with the primary hazard characteristics of a class in the IMDG Code or as solid substances in Appendix 1 of the International Maritime Solid Bulk Cargoes (IMSBC) Code, which would also be subject to the provisions of the IMDG Code when carried in packaged form.

24.7.2 Where Packaged Dangerous Goods are carried, appropriate certification must be carried to the satisfaction of the Administration in accordance with The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations (SI 1997 No. 2367). MGN 37 (M) - The Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997 provides advice. Further guidance may be obtained from the Administration.

24.7.3 Carriage of Dangerous Goods (e.g. by technicians carrying equipment). At the point of embarkation technicians should be required to declare the contents of their baggage to the master/crew of the hovercraft and the crew should take the appropriate action for safe stowage. Relevant signage should be posted at the point of embarkation.



## 25 Procedures, Examination, Certification and Qualifications

### 25.1 Procedures for hovercraft to be examined

25.1.1 Plan approval should be carried out by an authorised person for the first of type.

25.1.2 Prior to entering into service, light hovercraft in commercial use and all small hovercraft should be issued with the certificate required by this code.

25.1.3 Ultra-Light Hovercraft operating as “work equipment” in Restricted Category 6 are covered by Table 25.1. Hovercraft being used for recreational purposes as a Pleasure Vessel are covered by Table 25.2. Hovercraft in commercial use are covered by Table 25.3.

25.1.4 The owner/managing agent should contact a Certifying Authority in order to obtain an Application for Examination (if appropriate) and arrange for the hovercraft to be examined by an authorised person (as required).

25.1.5 The Certifying Authority should decide the extent of the examination based on the type, age and history of the hovercraft and may give credit for any recent and detailed competent examination of a hovercraft for which a report is available.

25.1.6 Light hovercraft for pleasure use and ultra light hovercraft may be certified by the hovercraft manufacturer. The manufacturer should provide guidance on intended operation and environmental conditions for pleasure use.

25.1.7 Forms typically provided as part of the application, examination and certification process are as follows:

Record of Equipment for a Light/Small Commercial Hovercraft  
Record of Particulars for a Light/Small Commercial Hovercraft  
Light/Small Commercial Hovercraft Builders Certificate (Builder)  
Certificate of Compliance (MCA or Certifying Authority)  
Operating Permit for a Small Commercial Hovercraft (MCA or Certifying Authority)

Table 25.1 – Ultra-Light Hovercraft when operated commercially for reward.

UK Hovercraft Certification Requirements Matrix					R = Recommended M =Mandatory	
Operated as Work Equipment under Provision and Use of Work Equipment Regulations (PUWER). The owner/operator is responsible for ensuring that suitable risk assessments have been carried out, that appropriate maintenance has been completed and that appropriate training and qualifications etc. are in place in accordance with relevant land or sea based health and safety regulations.						
Craft Operation	Work Equipment use on land	Restricted Category 6				
Craft Group	Ultra-light	Ultra-light				
Craft Construction Group	Hovercraft Code of Practice R	Hovercraft Code of Practice R				
Craft Certificate	Hovercraft Manufacturers Builders Certificate R	Hovercraft Manufacturers Builders Certificate R				
Craft Certificate issued by	Manufacturer or Operator	Manufacturer or Operator				
Operating Permit Required	No	No				
	However, all masters must ensure that they are not operating in areas with restrictions.					
Master Certification (marine qualification)	Appropriate training required R	Commercially Endorsed RYA Powerboat Level 2 and 25 hours instruction. R				
Master Type Rating on Craft	NA	NA				

Table 25.2 – Pleasure Hovercraft Certification Requirements

UK Hovercraft Certification Requirements Matrix				
R = Recommended M = Mandatory				
Craft Operation	Racing	Cruising (Homebuilt)	Cruising (Professional Manufacturer)	Cruising Craft over 1000 Kg unladen weight
Craft Group	Racing	Light	Light/Ultralight	Small
Craft Construction	Hovercraft Club of Great Britain Racing Hovercraft Construction Rules M <sup>2</sup>	Hoverclub Construction Rules R	Hovercraft Code R	Hovercraft Code M
Craft Certificate	Hovercraft Club of Great Britain Racing log book M <sup>2</sup>	Hoverclub log book R	Hovercraft manufacturers Builders Certificate R	Small Hovercraft Certificate M
Craft certificate issued by	Hovercraft Club of Great Britain	Hoverclub	Manufacturer	Authorised Person
Operating Permit Required	No	No	No	No
	However, all masters must ensure that they are not operating in area with restrictions			
Master Certification (marine qualification)	Hovercraft Club of Great Britain Hovercraft racing licence M <sup>2</sup>	RYA Powerboat Level 2 and 25 hours instruction under a relevant Hoverclub scheme R	RYA Powerboat Level 2 and 25 hours instruction under a relevant Hoverclub scheme R	Commercially endorsed RYA Powerboat Level 2 and 25 hours instruction under a relevant Hoverclub scheme M
Master Type Rating on a craft	No	R	R	M (can include the 25 hours instruction above)

<sup>2</sup> This is made mandatory under the rules of the Hovercraft Club of Great Britain Ltd. Paragraph 3.7 refers.

Table 25.3 – Commercial Hovercraft Certification Requirements

Craft Operation	Commercial	Commercial
Craft Group	Light	Small
Craft construction group	Hovercraft Code M	Hovercraft Code M
Craft certificate	Commercial Hovercraft Safety Certificate M	Commercial Hovercraft Safety Certificate M
Craft certificate issued by	Authorised person	Authorised person
Operating Permit Required	No	Yes
Master Certification (marine qualification)	Commercially Endorsed RYA Powerboat Level 2 and 25 hours instruction	MCA Master code vessel 200 GT or for up to 5 miles to sea MCA boat master licence with HSC endorsement
Master Type Rating on Craft	R	M (MCA approved)

## **26 Safety Management**

26.1 Operators of Light and Small Hovercraft operating commercially under this code are recommended to implement a Safety Management System (SMS) which complies with the principles of the ISM Code, but is commensurate with the size and complexity of the hovercraft and company's operations. See Appendix 6 for details of the areas that should be addressed by a SMS.

## **27 Accident Reporting**

27.1 The owner/managing agent 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. MGN 458 (M+F) explains the Regulations and the requirement to report accidents to the Department for Transport's Marine Accident Investigation Branch (MAIB).

27.2 Accidents and damage should also be reported to the Certifying Authority.

## **28 Compliance Examination and Issue of Permits and Certificate of Compliance**

- 28.1 The Certifying Authority should appoint an authorised person to undertake a compliance examination of Light and Small Hovercraft. The compliance examination of Light and Ultralight pleasure Hovercraft, may be undertaken by a competent person appointed by the manufacturer. For Ultra-Light Hovercraft considered as “work equipment” the person undertaking a compliance examination may be a competent person as defined in the relevant health and safety regulations.
- 28.2 The arrangements, fittings and equipment provided on the hovercraft are to be documented on the Record of Particulars and Record of Equipment report upon satisfactory completion and documentation of the compliance examination, and the required declarations, a copy of the signed report should be forwarded to the Certifying Authority.
- 28.3 Sea Trials are to be carried out on all commercial hovercraft and witnessed by the authorised person, who shall endorse the trials documentation.
- 28.4 Sea trials should be carried out by the manufacturers on the first of type of all recreational hovercraft and ultra light hovercraft prior to them issuing a Manufacturers Build Certificate.

Sea trial results are to be completed and documented and should include:

- Plough in effect and boundary
- Yaw/Speed Curve
- Emergency stop
- Intact stability, if not proven by calculation
- Skirt drainage including start from stationary over water
- Manoeuvring trial at slow speed
- Man overboard recovery

- 28.5 The designer should provide the Certifying Authority with information necessary to confirm that the stability of the hovercraft meets the standard required by the Code for the permitted area of operation and/or intended use of the hovercraft.
- 28.6 Upon satisfactory review of the documented arrangements, fittings and equipment provided in compliance with the Code, also the required declarations in the completed report and approval as appropriate of either the Stability Information

Booklet or required stability information and fee payments, the Certifying Authority will issue the Certificate.

28.7 A Certificate should be valid for not more than five years from the date of examination of the hovercraft out of the water by the authorised person. For a newly constructed hovercraft, built under full construction survey for the purposes of this Code, the Certificate may begin from the final compliance survey. The Certificate may be valid for a lesser period of time as determined by the Certifying Authority.

#### 28.8 Annual Examination by an Authorised Person

The owner/managing agent should arrange for an annual examination of a hovercraft as defined in Table 28.1 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 initial/renewal examination, at intervals not exceeding 15 months. On satisfactory completion of the annual examination, the authorised person should enter a record of the examination on the report Record of Particulars and Record of Equipment report form and forward the results of the examination to the Certifying Authority.

#### 28.9 Annual Examination by the Owner/Managing Agent

The owner/managing agent must carry out, or arrange for, an annual examination of a hovercraft within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months, to confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the report. Also that the hovercraft, its machinery, fittings and equipment are in a sound and well maintained condition, and where necessary serviced at the required period.

28.10 The owner/managing agent is to enter a record of a successful examination on the form and report the results of the examination to the Certifying Authority.

28.11 For Light Hovercraft an authorised person should carry out an intermediate examination no later than 36 months from the initial or renewal examination.

28.12 Renewal examination should be carried at intervals of not more than 5 years except that it may be carried out up to 3 months before expiry date of the certificate.

28.13 Examination Regime.

Table 28.1 provides details of the minimum examination regime applicable to the various hovercraft groups.

28.14 Where it is deemed necessary by the authorised person or Certifying Authority, the hovercraft may need to be examined more often than required by the survey regime Table 28.1. This may require additional examination out of the water at intervals of less than five years, paying special attention to the exterior hull condition.

Table 28.1 – Examination regime

Craft Group	Ultra-Light	Light	Light	Small
Area of Operation Category	Restricted Cat 6	6	3, 4 & 5 (Up to 20M or as on certificate)	2 (Up to 60M or as on Certificate)
Annual	Self Certified by Operator	Self Certified by Operator	Self Certified by Operator	Authorised Person
Intermediate	Not required	Not required	Authorised person	N/A
Renewal	Competent Person	Authorised Person	Authorised Person	Authorised Person



## APPENDIX 1 Applicable standards

### All Hovercraft:

BS 6883 Specification for elastomer insulated cables for fixed wiring in ships. (Suitable for lighting, power, control, instrumentation and propulsion circuits.)

IEC 60092 – 350, Electrical Installations in Ships – part 350:Shipboard Power Cables – General Construction and Test Requirements.

IEC 600332-1 (all parts), Test on electrical and optical fibre cables under fire conditions – Part 1: Test for vertical flame propagation for a single insulated wire or cable.

IEC 600332-3-22, Test on electrical cables under fire conditions – Part -3-22: Test for vertical flame spread of vertically mounted bunched wires or cable – Category A.

### Ultralight and Light hovercraft

Applicable Code Section	Standard
4.2.1	ISO 12215 - Small craft - Hull construction and scantlings
4.2.1	WHF 002 Construction Regulations for Racing Hovercraft
5.3.2	ISO 12216 Small craft. Windows, portlights, hatches, deadlights and doors. Strength and watertightness requirements.
6.1.1	ISO 13592 – Small craft – Backfire flame control for petrol engines
6.1.1	BS EN 28846:1993 Small craft. Electrical devices. Protection against ignition of surrounding flammable gases
6.1.2	ISO 10133 – Small craft – Electrical equipment – Extra low-voltage DC installations
6.4.1	ISO 7840 – Small craft – Fire resistant fuel hoses
6.4.1	ISO 8846 – Small craft – Electrical devices – Protection against ignition of surrounding flammable gases
6.4.1	ISO 13591 - Small craft.- Portable fuel systems for outboard motors
6.4.1	ISO 10088 – Small craft – Permanently installed fuel systems and fixed fuel tanks
6.4.1	ISO 15584 – Small craft – Inboard petrol engines – Engine mounted fuel and electrical components.
6.4.4	ISO 11105 – Small craft – Ventilation of petrol engines and/or petrol tank compartments

7..2.1.2	WHF 009 Moment of Inertia and Blade Energy Calculations
7..2.1.2	WHF 015 Homologated Fans
8	British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.
8.2.2	ISO 13297 – Small craft -- Electrical systems -- Alternating current installations
9.2	ISO 13929 Small craft. Steering gear. Geared link systems
9.2	ISO 10592 Small craft. Hydraulic steering systems
14.1	ISO 9094 – Small craft – Fire protection
14.2.4	SOLAS FTP CODE IMO RESOLUTION MSC.307(88) INTERNATIONAL CODE FOR APPLICATION OF FIRE TEST PROCEDURES, 2010
14.4.1	ISO 9094-1 Small Craft. Fire protection Craft with a hull length of up to and including 15m

#### **Applicable standards Small hovercraft up to 12m length**

Applicable Code Section	Standard
4.2.1	ISO 12215 - Small craft - Hull construction and scantlings
4.2.1	WHF002 Construction Regulations for Racing Hovercraft
5.3.2	ISO 12216 Small craft. Windows, portlights, hatches, deadlights and doors. Strength and watertightness requirements.
6.1.2	ISO 10133 – Small craft – Electrical equipment – Extra low-voltage DC installations
6.4.1	ISO 7840 – Small craft – Fire resistant fuel hoses
6.4.1	ISO 8846 – Small craft – Electrical devices – Protection against ignition of surrounding flammable gases
6.4.1	ISO 10088 – Small craft – Permanently installed fuel systems and fixed fuel tanks
7.2.1.2	WHF 009 Moment of Inertia and Blade Energy Calculations
7.2.1.2	WHF 015 Homologated Fans
8.1	The Institution of Electrical Engineers Regulations for the Electrical and Electronic Equipment of Ships with Recommended Practice for their Implementation, 6th Edition 1990 and subsequent supplements.

8.1	British Marine Federation Code of Practice for Electrical and Electronic Installations in Boats, 4th Edition.
8.2.2	ISO 13297 Small Craft. Electrical systems. Alternating current installations
9.2	ISO 13929 Small craft. Steering gear. Geared link systems
9.2	ISO 10592 Small craft. Hydraulic steering systems
14.2	ISO 9094-1 Small Craft. Fire protection Craft with a hull length of up to and including 15m
14.2.4	ISO 9094 – Small craft – Fire protection
14.2.4	SOLAS FTP CODE IMO RESOLUTION MSC.307(88) INTERNATIONAL CODE FOR APPLICATION OF FIRE TEST PROCEDURES, 2010

UK Authorised Classification society rules

**Applicable standards Small hovercraft 12m length or over**

UK Authorised Classification society rules

## APPENDIX 2 Example Certificate

Name of Certifying Authority	
<b>COMMERCIAL HOVERCRAFT SAFETY CERTIFICATE</b> Issued under the authority of the Government of the United Kingdom of Great Britain and Northern Ireland by the [Certifying Authority], an executive agency of the Department for Transport	
Name of Craft...	Date of Build...
Official Number...	Port of Registry/Base Port...
Craft/Hull ID No...	
Length (Hard Structure Length) (m)...	Hard Structure Breadth (m)...
Hovercraft Group [Ultra-Light, Light, Small]	Craft Use [Work Equipment/Cruising/Crew Training/Commercial/Pleasure]
Name and address of owner...	
This is to certify that the above named craft was examined by [Name of authorised person] of [Certifying Authority] at [Place of Survey] on [Date of Survey] and found to be in compliance with the requirements of The Hovercraft Code.	
Anniversary Date of the Certificate:	[Anniversary date]
The permitted area of operation is	[Area Category]
The permitted GMDSS Sea Area of operation is	[GMDSS Sea Area]
Maximum No. of persons to be carried	[No.]
Maximum all up weight including persons and equipment	[kg]
Maximum cargo weight	[kg]
Maritime Labour Convention Compliance standard [UK Domestic voyages/International voyages]	
This certificate will remain in force until [Expiry date] subject to the hovercraft, its machinery and equipment being efficiently maintained, annual examinations and manning complying with the Code of Practice, and to the following conditions [Conditions].	

Issued at [Place of issue]	On [Date of issue]
For and on behalf of [Name of Certifying Authority]	
Name [Name of person issuing Certificate on behalf of the Certifying Authority]	
Signature [Signature of person issuing Certificate on behalf of the Certifying Authority]	

Date [Date of Issue of the Certificate]

1 <sup>st</sup> Annual Survey/inspection by Authorised Person/Self Certification*				
Name	Authority	Signature	Date	Stamp
2 <sup>nd</sup> Annual/Intermediate Survey/Inspection by Authorised Person/Self Certification*				
Name	Authority	Signature	Date	Stamp
3 <sup>rd</sup> Annual/Intermediate Survey/inspection by Authorised Person/Self Certification*				
Name	Authority	Signature	Date	Stamp
4 <sup>th</sup> Annual Survey/inspection by Authorised Person/Self Certification*				
Name	Authority	Signature	Date	Stamp

\*Delete as appropriate

## APPENDIX 3 Example Hovercraft Builders Certificate

### HOVERCRAFT BUILDERS CERTIFICATE

Company logo

This Certificate is issued as a Declaration of Conformity under sole responsibility of the manufacturer. I declare on behalf of the Hovercraft manufacturer that the Hovercraft mentioned below complies with and has been designed and build in accordance with the applicable requirements of the Hovercraft Code for the operational area recorded on this certificate.

Name/Address of Craft Manufacturer...

Name & Position of Manufacturer Authorised Person...

Date of Build...

Operational Area [...]

Maximum Significant wave height...

Hovercraft Group [...]

Craft Use [Work Equipment/Cruising/Crew Training/Commercial/Pleasure]

### DESCRIPTION OF CRAFT

Manufacturers Model.....

Craft ID/Hull No....

All up Weight..... (Kg)	Maximum payload...(Kg)
Overall Length (m)...	Hard Structure Length (m)...
Hard Structure Beam (m)...	Moulded Depth... (m)
Maximum Persons on board.....	Hover Height....(m)
Maximum speed....(knots)	

Construction Material

- Aluminium  Other (specify)
- Plastic, Fibre Reinforced Plastic
- Wood  .....

Type of Main Propulsion

- Petrol (up to 130kW)  Other (specify)
- Diesel  .....

Type of Engine and Power

Total Installed Engine power ..... kW      Number of Engines .....

- Inboard (radiator cooled)  Other (specify)
- Outboard (air cooled)  .....

Thrust Equipment

- Fan  Material (specify) .....
- Airscrew propeller

Directional Control

- Hydraulic  Other (specify) .....
- Electric

Lift System

- Independent of main propulsion engine  Other (specify) .....
- Integrated with main propulsion engine

Deck

Open craft  Other (specify)   
Enclosed superstructure  .....

Issued at [Place of issue] On [Date of issue]

For and on behalf of [Name of Manufacturer]

Signature [Signature of authorised person issuing Certificate]

Position [Position of authorised person issuing Certificate]

Date [Date of Issue of the Certificate]



# APPENDIX 4 Hovercraft Propeller Requirements

Definitions used in this appendix

“CS-P” means Certification Specification for Propellers

“EASA” means European Aviation Safety Agency

“FAA” means Federal Aviation Authority

## 1.0 General

This Appendix gives guidance on how the requirements of this code and suitable minimum benchmark standards should be observed, and applied, in the case of hovercraft propellers, alternative standards providing an equivalent level of safety may be accepted by the MCA.

New propellers fitted to new and existing hovercraft may be deemed as fulfilling the preliminary requirements of this code of practice, if they can be shown to meet the standard outlined in Section 2.0 of this appendix.

New propellers may be deemed to meet the requirements of this code for ongoing Maintenance and Inspection if they additionally meet the requirements of Section 3.0 of this appendix.

Existing propellers on existing hovercraft may be deemed to meet the requirements for ongoing Maintenance and Inspection, if they are shown to meet the requirements of Sections 2.7 and 3.0 of this appendix. Existing hovercraft propellers shall be brought into this maintenance regime within a suitable timescale approved by the MCA.

MCA may additionally require existing propellers on existing craft to undergo retrospective design and testing assurance by full application of Section 2 of this appendix in the event of: Critical failure (i.e. major or hazardous propeller effect as defined by CS-P), or modification, or on replacement, or in the qualified opinion of the administration’s Certificating Authority or Administration surveyor.

## 2.0 Applicability and Terminology

2.0.1 Applicability. The requirements outlined shall:

(i) Apply in full to hovercraft to which this code of practice applies, when fitted with new propeller equipment;

(ii) Apply in full to all hovercraft to which were previously fitted with existing propeller equipment, and following:

a) An event of failure (major or hazardous propeller effect as defined by CS-P) or;

b) Propeller modification, or;

c) On replacement, or;

d) In the qualified opinion of the administration’s Certificating Authority or Administration surveyor.

(iii) Apply to hovercraft in the development and propeller inspection and maintenance.

2.0.2 'New' propeller equipment means propellers fitted to hovercraft on or after 01 July 2012.

2.0.3 'Existing' propeller equipment means propellers fitted to hovercraft before 01 July 2012.

2.0.4 'Safety Certificate' means the certificate referred to in section 23.

2.0.4 The 'applicant' means the person or organisation requesting type approval of propeller equipment.

2.0.5 Where otherwise undefined herein, the propeller airworthiness terms used shall have the meanings given in the European Aviation Safety Agency's (EASA), Part 21, Part 145 and CS-P specification.

2.0.6 All other terms used shall have the meanings defined within the Merchant Shipping Act, Hovercraft Act and their associated regulations.

## 2.1 General Requirements for Fans and Propellers

2.1.1 In seeking approvals the applicant shall, as a minimum, provide to the administration's Certificating Authority design data, calculations and trials data in accordance with the following sections and sub-sections, establishing the ability of the propeller equipment to withstand the loads which can arise during the operations for which the hovercraft is to be certificated, so that the possibility of catastrophic failure is extremely remote. This information shall be referred to as the applicant's Declaration.

2.1.2 The fan or propeller when suitably mounted and operated in the manner defined in the Applicant's Declaration shall be of sufficient strength and stiffness to withstand the most adverse combination of loads which can arise during its use without exceeding acceptable stress levels.

2.1.3 In accordance with the requirements for provision of the hovercraft's safety certificate, the propeller equipment shall be subject to an initial survey, and periodic surveys. This shall be addressed in accordance with approved propeller maintenance manuals and schedules, and the equipment shown to be to the attending surveyor's satisfaction.

2.1.4 The propeller shall only be operated and maintained within the parameters defined in the Declaration. Any subsequent alteration or amendments to the Declaration shall be made only with the acknowledgement and written approval of the administration's Certificating Authority or the Administration.

## 2.2 Requirements for Propellers and Fans of Metal Construction

2.2.1 "Metal fans and propellers" means that in which the load carrying parts are manufactured wholly from homogeneous metallic materials.

2.2.2 Metal fans and propellers shall have minimum Proof and Ultimate Factors of safety as defined by CS-P under loads arising from Maximum Speed (including any over-speed case) quoted in the applicant's Declaration.

2.2.3 The strength and fabrication of metal fans and propellers shall be such that the probability of hazardous fatigue failure under the action of repeated loads of variable magnitude expected in service is extremely remote throughout their operational life.

### 2.3 Requirements for Propellers and Fans of Composite Construction

2.3.1 A "Composite fan or propeller" means that in which the load carrying parts are not manufactured wholly from metallic materials (e.g. reinforced plastics, wood or mixed metal/ plastics).

2.3.2 The non-metallic components of each composite fan or propeller shall have a minimum Ultimate Factor of 3.0 under the loads arising from Maximum Speed (including any over-speed case) quoted in the applicant's Declaration; for areas agreed to be critical with respect to fatigue the ultimate factor shall not be less than 4.0. Metal components shall meet the requirements for Propellers and Fans of Metal Construction in 2.2.

2.3.3 The ultimate strength, on which the factors of Propellers and Fans of Composite Construction are based, shall be verified by test.

### 2.4 Environmental Conditions

2.4.1 The propeller shall be shown to be capable of functioning satisfactorily without unacceptable damage when operated in the likely prevailing conditions of icing, spray, sand, aggregate, salt etc. that are likely to be met when operating the hovercraft.

2.4.2 Due regard shall be paid to effects of corrosion, electrolytic action between different metals, erosion or cavitation which may result from operation in the environments to which they are subjected.

2.4.3 Metals and alloys used in hovercraft propeller equipment shall as a minimum be shown to be a 'noble' marine grade specification. Materials particularly susceptible to the marine environment (e.g. manganese, low grade aluminium etc.) shall be avoided.

2.4.4 Any limiting conditions shall be included in the applicant's Declaration.

### 2.5 Tests General

1.5.1 Subject to applicability, propellers and fans of a type not formally 'approved' for use on hovercraft shall be subjected to a type testing and evaluation as set out in 2.6 Propeller Type Tests.

### 2.6 Propeller Type Tests

2.6.1 New propellers shall be deemed as fulfilling the preliminary requirements of section 7 of this code and be eligible for 'provisional' Type Testing on hovercraft, if they meet the following characteristics:

(i) That the manufacturer of propeller equipment normally carries out its work under the authority of the European Aviation Safety Agency (EASA), and holds approval for propeller manufacture under Part 21, and that identical working practices for hovercraft propellers are being applied throughout the organisation generally.

(ii) That propellers are manufactured in accordance with EASA's Certification Specifications for Propellers (CS-P Book 1): Subpart A, Subpart B and Subpart C. (CS-P 380 and CS-P 390 may be omitted from Subpart C on hovercraft).

(iii) That Endurance Testing is carried out in accordance with Annex 1, herein interpreted for hovercraft, in lieu of CS-P 390.

2.6.2 New propellers shall be deemed as fulfilling the requirements of section 8 of this code and be eligible for Type Approval on hovercraft if they additionally meet the following vibration, fatigue, and functional service test and evaluation characteristics performed on the propeller, engine and hovercraft combination:

(i) That the propellers are further tested in accordance with EASA's Certification Specifications for Propellers (CS-P Book 1): Subpart D (excluding CS-P 560).

(ii) That the propellers are further functionally tested in accordance with Annex 2, herein interpreted for hovercraft, in lieu of CS-P 560.

2.6.3 CS-P Book 2 shall be used to demonstrate an acceptable means of compliance in all regards.

2.6.4 Equivalent Federal Aviation Administration (FAA) standards may alternatively be substituted for EASA standards on agreement with the MCA.

## 2.7 Development Programmes

2.7.1 Following acceptance, an in-service "Development Programme" should be implemented for assessing service and inspection life intervals where appropriate, which is approved by the administration's Certificating Authority, and takes account of adequate sampling in the gathering of objective evidence of satisfactory service.

2.7.2 Service Bulletins and Maintenance manuals shall be maintained in accordance with the approved service and inspection intervals throughout the programme of service life development.

2.7.3 Service life development shall also incorporate a programme of measures for enhanced inspection and non-destructive examination (NDE) in the period approaching the forecasted component life, or in the case of older otherwise formally accepted propeller types where limited design evaluation data is available.

## 3.1 Propeller Inspection and Maintenance

3.1.1 Inspection and maintenance of propeller equipment fitted to new and existing hovercraft shall be deemed as fulfilling the preliminary requirements of this Code and be eligible for acceptance if they meet the following characteristics:

(i) That the maintainer of propeller equipment normally carries out its work under the authority of the European Aviation Safety Agency, and that the maintainer asserts to the MCA in writing and by copy of its certification, that it holds approval for propeller maintenance under Part 145, and that identical working practices for hovercraft propellers are being applied throughout the organisation generally.

(ii) That the scope of maintenance and inspection duties is specified in 'type approved' "Operation and Maintenance Manuals" and "Service Bulletins", and that the content and validity of the documents are maintained accordingly. (Minimum EASA standards shall apply in terms of propeller documentation content).

(iii) That the inspections and maintenance of the propeller is shown to be continuous in accordance with the documents outlined in (ii) above, 'and', 'or' any Development Programme approved by the administration's Certificating Authority.

(iv) That any Airworthiness Directive or other instruction subsequently issued in relation to the propeller equipment by the propeller manufacturer or Administration's Certificating Authority is taken into account and applied accordingly.

(v) That competence of staff undertaking maintenance and inspection work on propellers is shown to be in accordance with EASA practices of Part 145, including airworthiness enhancements required (e.g. Non Destructive Examination (NDE) test practitioner qualification requirements for aerospace components – see (vi)). Competency shall be demonstrated in written form to the MCA.

(vi) That NDE inspections on propeller equipment are in particular conducted in accordance with the type holder's procedures and instructions (airworthiness data), by EN4179:2009 qualified persons only.

3.0.2 Equivalent FAA standards may alternatively be substituted for EASA standards on agreement with the MCA.

## APPENDIX 5 Manning Of Hovercraft

This Appendix gives information relating to the manning and operation of hovercraft in commercial use as follows:

Section 1 - Areas of Application

Section 2 - Minimum Qualifications of the Person in Charge of the hovercraft and the Additional Person When Required To Be Carried

Section 3 - Revalidation of Certificates & Licences

Section 4 – Hovercraft specific training

General

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

1. Areas of Application

Hovercraft operated commercially within the following areas should carry at least the qualified personnel shown in Section 2 below:-

Area Category 6 As defined on the certificate.

Area Category 2-5 As defined on the certificate.

Minimum Qualifications of the Person in Charge of the hovercraft (Master) and of the Additional Persons required to be carried on Board

2. General

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

2.1.2 Any person appointed as a Master must be a minimum age of 18 years.

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

2.2 Commercial Endorsement of Certificates

2.2.1 RYA certificates of competency and/or service should carry the endorsement – “valid for commercial use on hovercraft subject to the Codes of Practice published by the Maritime and Coastguard Agency”. To receive such a commercial endorsement, holders of certificates of competency should hold a valid Medical Fitness Certificate (see 2.6 for the appropriate medical certificate for the area of operation), the Basic Sea Survival

Course and the Professional Practices and Responsibilities requirements described in 2.6, 2.7 and 2.10 below.

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

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

## 2.3 Qualifications Required

2.3.1 A hovercraft should be manned in accordance with Table 25.7.9 – 25.7.11 Qualifications differing from those tabled, but of equal standing or specialist application, will be considered by the MCA.

## 2.5 Radio Qualifications

2.5.1 Every hovercraft should carry at least one person holding a Radio Operator's Certificate suitable for the radio equipment on board.

## 2.6 Medical Fitness Certificates

All seafarers should hold a valid medical fitness certificate. The medical fitness certificate for anyone employed at sea is the seafarer's medical certificate (ENG1), following a medical examination, from an approved doctor appointed by the Secretary of State, listed on the MCA's website ([www.dft.gov.uk/mca](http://www.dft.gov.uk/mca)) or a seafarer's medical fitness certificate obtained from a country whose medical certificates are accepted as being equivalent to the UK ENG 1 medical certificate, these countries are listed on the MCA website ([www.dft.gov.uk/mca](http://www.dft.gov.uk/mca)).

Seafarers on hovercraft that are required to comply with the MLC must hold an ENG 1 or a medical certificate accepted as equivalent to the ENG 1 by the MCA regardless of the category of operation.

2.6.2 For those employed on Small Hovercraft that operate no further than 60 miles from a UK safe haven on a domestic voyage and are not subject to MLC requirements (Area Categories 2, 3, 4, 5, and 6) the alternative ML5 certificate is acceptable. The ML5 certificate is attached to the ML5 report which is completed by a GMC registered medical practitioner with a licence to practice on the basis of a satisfactory ML5 report. An ML5 certificate is valid for no more than 5 years. The ML5 report form must be downloaded from MCA's website ([www.dft.gov.uk/mca](http://www.dft.gov.uk/mca)). Those of 65 years of age and over are required to re-validate their ML5 certificate annually.

(Note - Additional guidance on both ENG1 and ML5 certificates can be found in MSN 1822(M). Marine Guidance Note MGN 264 (M))



2.6.3 As an alternative to Section 2.6.2, for hovercraft operating no further than 60 miles from a safe haven, the following will be accepted as evidence of medical fitness:

CAA commercial pilot's licence,  
HSE diving medical certificate,  
DVLA Group 2 Drivers Licence.

2.6.4 The following conditions will also apply:

.1 The validity of the evidence of medical fitness would be that of the validity of the parent licence, e.g. one year in the case of a CAA commercial pilot's licence.

.2 In the case of the DVLA Group 2 Driver's licence, evidence of satisfactory colour vision will be required.

.3 In the case of the above-named equivalent medicals, a declaration will be required, signed by the applicant confirming the following: The contact details of the examining doctor, their consent for the MCA to obtain further medical (Captain's Medical Certificate) unless another member of the crew holds a medical or nursing qualification of an equivalent or a higher standard. The Master or nominated first-aider should undertake refresher training at least every five years.

.4 In all cases the certificate held by the seafarer must relate to the category of medical chest on board regardless of the category of operation.

## 2.9 Fire Fighting Training

2.9.1 Every hovercraft to which this code applies should have on board at least one crew member who has attended an MCA approved one day fire fighting course (e.g. the 1 day Boatmaster's Licence Course, or 1 day Seafish Industry Authority course). Successful completion of a 3 day STCW Fire Fighting and Fire Prevention course or the equivalent Royal Navy course will be deemed acceptable.

## 2.10 RYA Professional Practices and Responsibilities

2.10.1 Masters holding RYA certificates of competency and/or service should complete the online Professional Practices and Responsibilities Certificate as part of their commercial endorsement.



## 2.11 Radar Training

2.11.1 In any hovercraft that carries radar, the Master and any member of the crew who is likely to use the radar is strongly recommended to undertake appropriate training e.g. the Small Ships Navigation and Radar Course, the MSQ unit 'Use of Radar for Safe Navigation and Collision Avoidance on Domestic and Code hovercraft, or other course subsequently approved by the MCA. This strong recommendation becomes a requirement 5 years after the publication of this course.

## 2.12 Electronic Chart Systems Training

2.12.1 It is strongly recommended that training appropriate to the type of equipment on the hovercraft must be undertaken by the Master and any other crew member responsible for navigation. This strong recommendation becomes a requirement 5 years after publication of this code.

Note: the MSQ unit 'Operate non-ECDIS marine Electronic Chart Systems', developed by the NWA has been approved by the MCA as meeting this requirement

## 3. Revalidation of Certificates of Competency or Service

3.1 All Certificates (whether of competency or service), must be revalidated every five years. Information on revalidation requirements can be found on the MCA website ([dft.gov.uk/mca](http://dft.gov.uk/mca)) for STCW and other certificates of competency, or on the RYA website ([rya.co.uk](http://rya.co.uk)) for their certificates.

### 3.2 Refresher Training

From 1st January 2017 any seafarer holding certain STCW short courses will require to have these refreshed, information can be found on the MCA web site ([www.dft.gov.uk](http://www.dft.gov.uk)) and in MIN 469. The owner/manager of the hovercraft is responsible for ensuring that any on board training and other training is refreshed as necessary.

#### 4 Hovercraft type rating training

The training for the master and all officers having an operational role on a hovercraft must cover at least the following subjects:

4.1 knowledge of all on-board propulsion and control systems, including communication and navigational equipment, steering, electrical, hydraulic and pneumatic systems and bilge and fire pumping;

4.2 the failure mode of the control, steering and propulsion systems and proper response to such failures;

4.3 Practical handling characteristics of the hovercraft and the limiting operational conditions;

4.4 communication and navigation procedures;

4.5 intact and damage stability and survivability of the hovercraft in damage condition;

4.6 location and use of the craft's life-saving appliances, including survival craft equipment;

4.7 location and use of escapes in the hovercraft and the evacuation of passengers;

4.8 location and use of fire protection and fire-extinguishing appliances and systems in the event of fire on board;

4.9 location and use of damage control appliances and systems, including bilge pumps;

4.10 cargo securing systems; ballast systems, communication with passengers in an emergency;

4.12 location and use of all other items listed in the owner's manual.

Masters and officers trained in the above subjects will be qualified, subject to satisfactory assessment, to hold endorsement for hovercraft. The training may be provided by the builder, operator or by an outside source. The builder or operator must nominate individuals to be responsible for training (the Type Rating Instructor - TRI) and for the assessment of officers after training (the Type Rating Examiner - TRE).

An individual cannot be both TRI and TRE. The hovercraft operator must also arrange for ratings and other personnel employed on a hovercraft to undertake training in the matters listed in sub paragraphs 4.6 to 4.12 above. The assessment arrangements must ensure that all who have been trained can demonstrate that they have all the competencies and knowledge required.

# APPENDIX 6 Safety Management

## 1. INTRODUCTION

The purpose of this Appendix is to provide guidance on how to develop and implement an effective safety management system for hovercraft.

## 2. GENERAL

Each operator should create a safe working environment, which should include the following:

### 2.1 A Safety and Environmental Protection Policy.

This must address the issues of health, safety and the environment as they affect the company and its staff, both ashore and afloat. Such a policy might read along the following lines:

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

### 2.2 Risk Assessment

The owner /operator should develop an effective Risk Assessment system which will systematically identify risks to personnel, hovercraft and the environment. The outcomes from the risk assessment system will inform the development of safe systems of work. The system should be simple to understand and implement such that Masters and crewmembers can carry out effective risk assessments, taking into account any deviations from the 'normal' method of operation. Further guidance can be found in Chapter 1, the Code of Safe Working Practices for Merchant Seamen.

2.3 The owner/operator is recommended to 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.

2.4 Procedures to ensure safe operation of hovercraft in compliance with the regulations and rules.

The regulations and rules, not addressed by this Code of Practice, which apply to all hovercraft include, but are not limited to:

- International Regulations for Preventing Collisions at Sea;
- Local Navigation Rules;
- National health and safety regulations;
- The Code of Safe Working Practices for Merchant Seamen;
- All relevant national shipping or guidance notices.

2.4.1 The company should draw up simple procedures to ensure that safe working practices are carried out in the operation of the hovercraft. These may be in the form of checklists which can be followed by all personnel.

2.4.2 For some hovercraft, it might be appropriate to have permanently exhibited checklists, e.g. at the control position for navigational items. Alternatively, in a smaller hovercraft, the record could take any suitable form such as a diary as distinct from a specially printed logbook. Whatever form the record takes, such entries should be accepted as evidence of compliance with the ON BOARD PROCEDURES requirements.

2.5 Lines of communication between personnel, ashore and afloat. Responsibility and authority of each employee should be clear. This may be best illustrated in a simple diagram, showing who reports to whom.

2.6 Procedures for reporting accidents.

The requirement for reporting accidents should be well understood by all personnel and in so doing improve the safety culture practiced on board.

2.7 Procedures for responding to emergency situations.

There should be clearly stated procedures for responding to emergency situations. These may include but not be limited to:

- fire
- collision
- grounding
- violent act
- main propulsion or steering failure
- man overboard

Checklists may be useful in this regard.

### 3. HEALTH AND SAFETY PROTECTION POLICY

One or more competent persons should be delegated to take responsibility for health and safety, and that person/persons should be clearly identified. It is the responsibility of the owner/operator to ensure that the policy is complied with, and that the responsibilities are understood.

The company/owner should develop a policy on prevention of alcohol and drug abuse. All personnel both ashore and afloat have a duty to take care of themselves and other persons who may be affected by their acts or omissions.

It is essential that, in the event of an emergency, there is the ability to communicate with the emergency services via a shore base. The shore base may be the company office ashore, the local Coastguard, Police or Fire Station, or another office as may be agreed between the hovercraft and the shore base.

### 4. RESPONSIBILITIES

The Master must have authority at all times to make decisions with regard to the safety of the hovercraft and the persons on board. To ensure that there is no ambiguity

regarding the authority of the Master, there should be a simple written statement to this effect.

## 5. PERSONNEL AND TRAINING

All personnel should receive training appropriate to the tasks they undertake. It is the responsibility of the company/owner to ensure that this training is given, and that the personnel have an understanding of the relevant regulations and rules.

As a minimum, this means:

for the Master, the relevant qualifications;

for the crew, relevant qualifications and any additional training appropriate to their designated duties.

Prior to the first occasion of working on the hovercraft, each employee must receive appropriate familiarisation training and proper instruction in on board procedures. This should include, but not necessarily be, limited to:

- control of areas around hovercraft on the ground, transition to hovering;
- manoeuvring on land and transition from land to sea (e.g. on a public beach);
- operations in restricted areas and over mud;
- launching and recovery of survival craft;
- evacuation from all areas of the hovercraft;
- donning of lifejackets; and
- use and handling of fire-fighting equipment.

## 6. ON BOARD PROCEDURES

Simple procedures should be developed for the operation of the hovercraft. These should include, but not be limited to:

- testing of equipment, including propulsion and steering gear, prior to commencing a passage;
- navigation and handling of the hovercraft;
- maintenance routines;
- bunkering operations;
- watertight/weathertight integrity;
- on and off cushion stability of the hovercraft;
- conduct of passengers and crew while on board;

## 7. PREPARATION FOR EMERGENCIES

The potential emergencies likely to be encountered by the hovercraft should be considered. Exercises should then be carried out in the handling of these emergencies and evacuation from the hovercraft.

Where possible, all personnel should be involved in these exercises, both ashore and afloat.

The roles and responsibilities of all personnel in an emergency situation should be defined.

The exercises should be recorded. The names of those who participated should also be recorded.

#### 8. REPORTING OF ACCIDENTS

Hovercraft operating under this Code are required to report any accidents to the Certifying Authority and MAIB and the company must therefore have a procedure in place. Additionally, all accidents and near accidents should be recorded and reported to the operator/owner, who should implement corrective action, with the aim of improving safety.

#### 9. MAINTENANCE OF THE HOVERCRAFT AND EQUIPMENT

Maintenance of the hovercraft and equipment is an essential ingredient of safety management. The equipment should be checked and tested daily when in use, in addition to the tests referred to in the ON BOARD PROCEDURES section of the Code.

There should be procedures for a more detailed inspection and maintenance programme of the hovercraft and equipment.

The frequency of the inspections should be determined by the owner/operator, but every event should be recorded.

A checklist could be employed as an aide memoir for the inspection of equipment.

#### 10. REVIEW

Every company/owner should undertake a review of the safety management system of all hovercraft at least once in every three years.









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