

[LEGAL NOTICE NO. 108]

MARITIME TRANSPORT DECREE 2013  
(DECREE NO. 20 OF 2013)

## Maritime (Hovercraft) Regulations 2014

IN exercise of the powers conferred upon me by section 240(1)(c) of the Maritime Transport Decree 2013, I hereby make these Regulations—

### PART I — PRELIMINARY

#### *Short title and commencement*

1. These Regulations may be cited as the Maritime (Hovercraft) Regulations 2014 and shall come into force on a date or dates appointed by the Minister by notice in the Gazette.

#### *Interpretation*

2. In these Regulations, unless the context otherwise requires,—

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

“authorised organisation” means an organisation that has entered into a memorandum of agreement with the Chief Executive Officer in compliance with the International Maritime Organisation Assembly Resolution A.739 (18) and the annex as amended by Resolution MSC 208(81), entitled “Adoption of Amendments to the Guidelines for the Authorisation of Organisations Acting on Behalf of the Administration” whereby that organisation may carry out surveys and audits and issue certificates on behalf of the Authority;

“authorised person” means a person employed by an authorised organisation and appointed under section 38(1) of the Decree to carry out such inspections and audits as the Authority considers necessary for the purposes of these Regulations;

“Authority” means the Maritime Safety Authority of Fiji;

“certificate” means the certificate issued to a surveyor by the Authority under the Decree, permitting him or her to survey a hovercraft;

“Chief Executive Officer” means the Chief Executive Officer of the Authority;

“class I light craft” means any hovercraft having open accommodation for up to 6 persons or a maximum design payload of 500 kilograms;

“class II light craft” means any hovercraft having closed accommodation for up to 12 persons or a maximum design payload of 1000 kilograms but not less than 500 kilograms;

“Classification Society” means a recognised organisation, authorised by the Chief Executive Officer to conduct such inspections and such audits as the Authority considers necessary for the purposes of these Regulations;

- “commercial hovercraft” means a hovercraft that is not a pleasure hovercraft and is used for commercial purposes;
- “Decree” means the Maritime Transport Decree 2013;
- “Fiji waters” has the same meaning as in the Decree;
- “fire-restricting material” means material that has properties complying with the criteria for qualifying products as ‘fire-restricting materials’ in the Standard for Qualifying Marine Materials for High Speed Craft as Fire-Restricting Materials adopted by the International Maritime Organisation by resolution MSC. 40(64);
- “High-Speed Craft Safety Certificate” means the certificate issued under regulation 15;
- “hovercraft” means any craft or vessel deriving full support in the atmosphere from the reaction of air against the surface of the water over which it operates;
- “inland waters” means all rivers, lakes, dams and other inland waters of Fiji, which are navigable;
- “light craft” means any commercial hovercraft designed to carry not more than 12 persons or not more than a design payload of 1000 kilograms;
- “official number” means the registration number or registry number issued to a ship during its registration;
- “operating limit” means the area of water approved by the Chief Executive Officer, in which the hovercraft is authorised to operate;
- “payload” means any load carried by a hovercraft and includes the weight of any persons carried;
- “Permit to Operate High-Speed Craft” means the permit issued under regulation 17(2);
- “place of refuge” means any natural or artificial sheltered area which may be used as a shelter by a hovercraft under conditions likely to endanger its safety;
- “pleasure hovercraft” means a ship that is used exclusively for the owner’s pleasure and is not offered or used for hire or reward;
- “ship” shall have the same meaning as in the Decree;
- “surveyor” means any person who holds a maritime document issued or recognised under section 24 of the Decree, as an authorised surveyor for the purposes of—
- (a) design approval and issue of the Certificate of Construction of a light craft required by regulation 8; or
  - (b) the issue of a High-Speed Craft Safety Certificate required by regulation 15.

*Objectives*

3. The objectives of these Regulations are to prescribe the requirements for the design, construction and equipment of commercial hovercraft operating over and in Fiji waters.

*Application*

4. These Regulations apply to commercial hovercraft operating over and in Fiji waters.

*Official number*

5.—(1) The owner and the master of all commercial hovercrafts built, shall ensure that the hovercraft is permanently marked with the letters 'MSAF', followed by an official number issued to the hovercraft by the Chief Executive Officer.

(2) The letters and numbers shall be—

- (a) clearly marked;
- (b) dark on a light background or light on a dark background;
- (c) in characters at least —
  - (i) 50 mm high, in the case of a class I light craft; and
  - (ii) 75 mm high in the case of all other hovercraft; and
- (d) marked on both sides of the hovercraft on hard structure where it is clearly visible to persons who are not on the hovercraft but adjacent to the hovercraft.

## PART 2—LIGHT CRAFT

*Compliance*

6.—(1) Subject to sub-regulation (2), the owner of any light craft shall not allow that light craft to be operated unless—

- (a) the light craft and its equipment comply with the requirements of regulations 7 to 11;
- (b) a safe operational plan is prepared and approved by the Authority or authorised organisation in accordance with regulation 9;
- (c) the light craft and its equipment undergo the inspections by the authorised person or surveyor as required by regulation 10;
- (d) the operation of the owner of light craft undergoes the audits by the authorised person or surveyor as required by regulation 10; and
- (e) the owner is in possession of or holds a valid Certificate of Compliance in respect of the light craft.

(2) The owner or operator of any light craft shall not permit that light craft to be used for racing.

(3) Any person who contravenes this regulation commits an infringement offence in accordance with section 262 of the Decree and shall be liable to a fine not exceeding \$2,000.

*Operating limits*

7.—(1) The owner or operator of a light craft shall not allow the light craft to be operated beyond its operating limit.

(2) Any owner or operator who contravenes this regulation commits an infringement offence in accordance with section 262 of the Decree and shall be liable to a fine not exceeding \$2000.

*Design, construction and equipment*

8. The owner of a light craft shall ensure that the light craft complies with the design, construction and equipment requirements of the Schedule and that the light craft—

- (a) has its design approved by a surveyor or authorised person in accordance with clause 11.1 of the Schedule; and
- (b) is issued with a Certificate of Construction by a surveyor or authorised person in accordance with clause 15.1 of the Schedule.

*Safe operational plans*

9.—(1) The owner of a light craft shall provide to the Authority or an authorised organisation a copy of a safe operational plan which is related to the specific operation of the owner's light craft.

(2) The safe operational plan shall include the following—

- (a) a record of design approval and the Certificate of Construction for the light craft issued under clause 15.0 of the Schedule;
- (b) details of design limitations of the light craft;
- (c) loading procedures including any distribution and securing of loads for the light craft;
- (d) operational route information;
- (e) a pre-operational safety check list;
- (f) identification of the person responsible for any decision on the cancellation or delay of voyages;
- (g) information regarding the handling, control and performance of the light craft;
- (h) a description and operational details of the light craft's fire appliances and lifesaving appliances;
- (i) an evacuation procedure for the light craft in the event of an emergency;
- (j) contingency plans for rescue assistance, including land based support arrangements;
- (k) details of driver experience and qualifications required for the light craft;
- (l) communication arrangements between the light craft, the shore and emergency services;

- (m) a planned maintenance schedule for the light craft, its skirt, motors and systems with a record of the work undertaken;
- (n) a record of the maintenance and servicing of the light craft's fire appliances and lifesaving appliances;
- (o) a record of each driver employed with their qualifications, training, experience, medical and first aid certificates; and
- (p) a procedure for removing the light from the water, lifting, transporting it and dismantling and reassembling it.

(3) The safe operational plan may refer to the manufacturer's manual or handbook required to be supplied for the craft by clause 14.0 of the Schedule, provided that the manual or handbook is retained as part of the safe operational plan.

(4) The safe operational plan that is approved by the surveyor or authorised person shall be reviewed by the owner or operator on a regular basis, and following any accident or incident.

(5) A written record shall be made by the owner of each review conducted under sub-regulation (4), which shall include a summary of any conclusions drawn, and any action taken, as a result.

(6) A safe operational plan shall be made available—

- (a) to the surveyor or authorised person for the purpose of the initial and periodic audits; and
- (b) at all reasonable times for inspection by a surveyor or authorised person.

*Inspections and audits*

10.—(1) The owner of a light craft shall arrange for a surveyor or authorised person to inspect the light craft and carry out an initial audit of the operation of the owner or operator.

(2) A surveyor or authorised person performing an initial audit of the operation of the owner or operator of a light craft required by regulation 6(1)(d) shall audit the operation to establish that a safe operational plan meeting the requirements of regulation 9 is in place and that the operation complies with that plan.

(3) The owner or operator of a light craft shall ensure that periodic audits of the operation of the owner are carried out by the surveyor or authorised person to determine the maintenance of the safe operational plan and continuing compliance with that plan and the requirements of the Schedule.

(4) The owner or operator shall ensure that at least one audit under sub-regulation (3) is undertaken each year.

(5) Upon the completion of any audit, the surveyor or authorised person shall immediately advise the owner or operator, in writing, of any non-compliance likely to compromise the safety of the operation.

(6) Upon receipt of the written advice of the surveyor or authorised person, the owner shall take immediate steps to rectify the non-compliance to the satisfaction of the surveyor or authorised person.

(7) Where the non-compliance under sub-regulation (6) is not rectified, the Certificate of Compliance shall not be issued.

*Certificate of Compliance*

11.—(1) The Authority or authorised organisation shall approve the safe operational plan upon—

- (a) sighting the Certificate of Construction of the light craft issued under clause 15.0 of the Schedule;
- (b) inspecting the light craft as required by regulation 10;
- (c) completion of a satisfactory initial audit of the operation of the owner as required by regulation 10; and
- (d) confirming that the safe operational plan is consistent with that operation and complies with the requirements of regulation 9.

(2) The Authority or authorised organisation shall issue a Certificate of Compliance in accordance with section 24 of the Decree to the owner of the light craft—

- (a) where an application in accordance with section 23 of the Decree is made by the owner; and
- (b) upon receipt of notification of approval of the safe operational plan by the surveyor or authorised person.

(3) The Certificate of Compliance shall specify the period of validity of the Certificate which shall not be more than two (2) years from the date of its issue.

*Recognition of authorised person*

12.—(1) Every person, other than an employee of the Authority, who inspects or audits a light craft operation for the purpose of regulation 10 shall hold a valid Certificate of Recognition authorising the person to conduct those inspections and audits.

(2) A person is entitled to a Certificate of Recognition as an authorised person if—

- (a) that person makes an application in accordance with section 23 of the Decree; and
- (b) the Chief Executive Officer is satisfied that the—
  - (i) person has the appropriate technical qualifications and practical experience in the operation of hovercraft to undertake the inspections and audits to be authorised by the certificate; and
  - (ii) requirements of section 24 of the Decree have been fulfilled.

(3) Every Certificate of Recognition issued shall prescribe—

- (a) the extent and nature of any inspection or audit that may be undertaken by the authorised person;
- (b) that the certificate is issued in respect of a hovercraft operating in accordance with regulation 6(1);

- (c) the period of validity of the certificate, which in any case shall not be more than 5 years from the date of issue; and
- (d) any other conditions or requirements that the Chief Executive Officer deems appropriate.

### PART 3—HOVERCRAFT OTHER THAN LIGHT CRAFT

#### *Design, construction and equipment*

13. The owner or operator of a hovercraft which is not a light craft shall ensure that the hovercraft complies with the design, construction and equipment requirements of—

- (a) the Code of Safety for High-Speed Craft 2000 (2000 HSC Code) adopted by the Maritime Safety Committee of the International Maritime Organisation by resolution MSC.97(73) dated 5 December 2000 as amended by Resolution MSC. 222(82), MSC. 260(84), MSC. 271(85);
- (b) the Regulations for hovercraft of one of the following Classification Societies—
  - (i) Lloyd's Register of Shipping;
  - (ii) Det Norske Veritas; or
  - (iii) Bureau Veritas; or
- (c) the Regulations for hovercraft of an administration, the certificates of which are recognised by the Chief Executive Officer under section 24 of the Decree.

#### *Survey*

14.—(1) The owner or operator of a hovercraft which is not a light craft shall ensure that before the hovercraft enters into service it is surveyed and is subsequently maintained in survey for—

- (a) a hovercraft to which regulation 13(a) applies, by an authorised organisation;
- (b) a hovercraft to which regulation 13(b) applies, by the Classification Society responsible for the Regulations referred to in regulation 13(b); or
- (c) a hovercraft to which regulation 13(c) applies, by a surveyor.

(2) The intervals and nature of surveys in respect of a hovercraft to which regulation 13(c) applies shall be approved by the Chief Executive Officer.

#### *Certification*

15.—(1) The Chief Executive Officer or an authorised organisation recognised by the Authority shall issue to the owner of a hovercraft which is not a light craft, a High-Speed Craft Safety Certificate complying with regulation 16, on satisfactory completion of an initial survey by a surveyor or an authorised person of that hovercraft.

(2) The Chief Executive Officer or an authorised organisation shall renew the High-Speed Craft Safety Certificate issued in respect of that hovercraft under sub-regulation (1) on satisfactory completion of a periodic survey of a hovercraft by a surveyor or an authorised person.

(3) The owner of a hovercraft which is not a light craft shall not permit the hovercraft to be operated unless—

- (a) the owner is in possession of a valid High-Speed Craft Safety Certificate issued by the Chief Executive Officer or an authorised organisation for that hovercraft; and
- (b) the owner is in possession of a Permit to Operate High-Speed Craft issued by the Chief Executive Officer for that hovercraft.

(4) Any person who contravenes sub-regulation (3) commits an infringement offence in accordance with section 262 of the Decree and shall be liable to a fine not exceeding \$2,000.

*High-Speed Craft Safety Certificate*

16. The High-Speed Craft Safety Certificate issued under regulation 15(1) shall be either a—

- (a) High-Speed Craft Safety Certificate issued in accordance with section 1.8 of the International Code of Safety for High-Speed Craft 2000; or
- (b) High-Speed Craft Safety Certificate indicating compliance with the requirements of either Regulation 13(b) or (c) and in a form approved by the Chief Executive Officer.

*Permit to operate high-speed craft*

17.—(1) The Permit to Operate High-Speed Craft issued under regulation 15(3)(b) shall be either a—

- (a) Permit to Operate High-Speed Craft issued in accordance with section 1.9 of the International Code of Safety for High-Speed Craft 2000; or
- (b) Permit to Operate High-Speed Craft certifying compliance with the requirements of sub-regulation (2).

(2) The Chief Executive Officer may issue a Permit to Operate High-Speed Craft if he or she is satisfied that the following requirements are fulfilled—

- (a) the owner of the hovercraft exercises strict control over its operation and maintenance by means of a safety management system approved by the Chief Executive Officer;
- (b) the owner ensures that only persons who hold a qualification approved by the Chief Executive Officer to operate that type of hovercraft on the intended route are employed;
- (c) operational limits which are approved by the Chief Executive Officer and imposed by the authorised organisation or surveyor, as the case may be, that shall ensure that the hovercraft operates within its design limitations;
- (d) the hovercraft shall at all times be in reasonable proximity to a place of refuge, to enable the hovercraft to have sufficient time to seek refuge when weather or sea conditions are likely to arise which are outside the permitted operating conditions of the hovercraft;



- (e) adequate communication facilities and appropriate weather forecasts are available within the area of operation of the craft; and
- (f) rescue facilities appropriate to the type of hovercraft are readily available in the area of operation.

#### PART 4—SURVEYOR

##### *Appointment or recognition of an authorised surveyor*

18.—(1) Every person who holds a valid certificate issued by the Chief Executive Officer or Certificate of Recognition as a surveyor may—

- (a) approve the design of a light craft;
- (b) issue a Certificate of Construction for a light craft; or
- (c) issue a High-Speed Craft Safety Certificate.

(2) A person is entitled to a certificate or Certificate of Recognition as a surveyor if that person makes an application in accordance with section 23 of the Decree and the Chief Executive Officer is satisfied that—

- (a) the person has the appropriate technical qualifications and practical experience in the design and construction of a hovercraft to undertake the approvals, testing, inspections and surveys for the purposes of—
  - (i) design approval of a light craft;
  - (ii) issue of a Certificate of Construction for a light craft; or
  - (iii) issue of a High-Speed Craft Safety Construction Certificate for a hovercraft; and
- (b) the requirements of section 24 of the Decree have been fulfilled.

(3) Every certificate or Certificate of Recognition issued shall specify—

- (a) the extent and nature of any approval, testing, inspection or survey that may be undertaken by the surveyor;
- (b) the certificate that may be issued is either—
  - (i) for the design approval of a light craft;
  - (ii) a Certificate of Construction for a light craft; or
  - (iii) a High-Speed Craft Safety Certificate for a hovercraft;
- (c) the period of validity of the certificate or Certificate of Recognition, which in any case shall not be more than 5 years from the date of issue; and
- (d) any other conditions or requirements that the Chief Executive Officer deems appropriate.

Made this 14th day of December 2014.

P. TIKODUADUA  
Minister for Infrastructure and Transport

SCHEDULE  
(Regulation 8)

LIGHT CRAFT REQUIREMENTS

1.0 *General*

1.1 *Responsibility*

It is the responsibility of the designer, manufacturer, or operator, as appropriate, to seek design approval, inspection and testing of the light craft and certification of construction by the surveyor.

1.2 *Recognition of foreign light craft*

1.2.1 The Chief Executive Officer may, in accordance with section 24 of the Decree, recognise design approval or the certification of construction of a light craft designed or constructed in a country other than Fiji provided that the approval or certification is issued by an Authority acceptable to the Chief Executive Officer.

1.2.2 Full details of the light craft and its intended operation with certified copies of approvals and certificates shall be supplied to the Chief Executive Officer.

2.0 *Structural*

2.1 *Structural strength*

2.1.1 The rigid hull shall be designed with sufficient longitudinal and torsional strength to withstand, without permanent deformation or progressive failure—

(a) hogging and sagging when floating at the maximum designed weight in waves with amplitude to length ratio of 1:10, the wave height being the maximum for which certification is sought; and

(b) standing on a solid surface at maximum designed weight, with any bottom area bounded by the outer boundary and the longitudinal and lateral centre-lines of the hull bottom unsupported, with no lift power.

2.1.2 Engines, lift fans, propulsive devices, fuel tanks and seats shall be securely fastened to structure of sufficient strength, such that they will not break loose under a crash deceleration of 6g. For the purpose of determining the sufficiency of the fastenings and associated structure under this loading the seats are to be assumed to contain an occupant of 75 kg with a centre of gravity 300 mm above the seat pan and fuel tanks are to be assumed to be full.

2.1.3 Strong points, with adequate load diffusion must be provided to enable the craft to be lifted or jacked, or towed while floating and for the securing of any cargo. The designer must specify any loading or angular limitations.

2.1.4 Designers must submit the design envelope of craft operation in terms of maximum weight, speed and wave or obstacle height when seeking design approval from the authorised surveyor. Structural design data must also be submitted to substantiate compliance with sub clauses 2.1.1, 2.1.2 and 2.1.3. Such data may be by calculation or the results of relevant full scale testing. All design assumptions must be stated.

## 2.2 *Hydrodynamic design*

- 2.2.1 The underside of the hull is to incorporate a planning surface inclined upwards towards the craft boundary around the periphery.
- 2.2.2 The upper surface of the hull must, to the maximum extent practical, be designed such that in the event of total loss of lift power at any point in the design envelope over water, and at any permitted yaw angle, there will be no destabilising moment in roll or pitch resulting from water contact.
- 2.2.3 When floating at maximum weight, the outer structural boundary must be sloping outwards to provide a height above the static water plane of not less than —
  - (a) for Class I light craft – 50 mm; and
  - (b) for Class II light craft – 75 mm.

## 2.3 *Structural materials*

- 2.3.1 All structural materials must be fire-restricting materials or be treated so as to make them fire-restricting. Any structure immediately adjacent to fuel tanks or containing fuel tanks or electric batteries, must be resistant to fire and absorption of fuel or battery electrolyte.
- 2.3.2 The materials must be resistant to, or treated so as to make them resistant to, corrosion or damage from salt or fresh water, and to water absorption.
- 2.3.3 All structural joints must be securely made using appropriate bonding materials or corrosion resistant fastenings or a combination of both.
- 2.3.4 Appropriate protective treatment must be applied to prevent corrosion due to dissimilar metal contact.

## 2.4 *Skirt material*

- 2.4.1 Material used for the skirt components must include provision to prevent progressive tearing.
- 2.4.2 Skirt material must be resistant to damage from fuels and oils used in the craft.
- 2.4.3 In selecting skirt materials due regard must be given to low temperature and ultra-violet radiation effects.

## 2.5 *Skirt design*

- 2.5.1 Joints used in the fabrication and securing of the skirt must be of sufficient strength to prevent progressive failure in the event of skirt damage. Bonded joints must be made with appropriate bonding agents, paying due regard to the skirt material and to the operating environment.
- 2.5.2 Skirt design must include provision for effective draining of entrapped water.
- 2.5.3 Designers must take into account the relevant factors of skirt design which influence the craft's resistance to capsize over water.

### 3.0 *Buoyancy and Stability*

#### 3.1 *Provision of buoyancy*

3.1.1 The craft must be provided with buoyancy such that, when floating in fresh water of mass density of 1000 kg/m<sup>3</sup> at maximum designed weight, it has a 50 percent reserve of intact buoyancy.

3.1.2 Buoyancy may be provided by structural voids or pre-formed low density flotation material. The use of poured-in-place foam plastic is not generally permitted. All buoyancy must be contained within, or securely fastened, to the hull structure. Any foam plastic used must be structurally stable, impervious to water absorption, and resistant to impact damage.

3.1.3 The designer must declare all spaces for which buoyancy is claimed, and the amount claimed for each space.

#### 3.2 *Buoyancy distribution*

3.2.1 Buoyancy must be evenly distributed over the craft plan-form.

3.2.2 No contribution to intact buoyancy is to be claimed for any space or material above a level which is 75 mm below the lowest point at which water may enter the intact craft when floating in calm water at maximum designed weight.

3.2.3 Structural void contributions to buoyancy are to be bounded by watertight boundaries, and must each be provided with a watertight access panel for inspection and the removal of any accumulated water. Any penetrations of buoyancy void boundaries must be watertight.

#### 3.3 *Intact stability*

3.3.1 The craft when floating in still water at maximum certified weight must have positive stability.

Additionally—

(a) the intact stability of Class I light craft must be such that, with one occupant on board, movement of that occupant to any position on the craft's outer edge will not result in the craft shipping water; and

(b) the intact stability of Class II light craft must be such that no permitted loading condition at maximum weight will result in a flotation attitude at an angle below the horizontal of more than 8° in any direction.

#### 3.4 *Damage stability*

3.4.1 For the purposes of calculating the damage stability of the craft, designers must assume the following damage conditions—

(a) bottom damage, clear of any watertight division, extending over a rectangular area measuring 0.1L longitudinally by 0.2B transversely and with vertical penetration of 10 centimetres;

- (b) side damage extending over a length of 0.1L, clear of any transverse watertight division, and vertically for the full depth of the damaged buoyancy space, with penetration of 0.2B into the buoyancy space; and
  - (c) end damage, clear of any longitudinal watertight division, and vertically for the full depth of the damaged buoyancy space, with penetration of 0.1L into the buoyancy space.
- 3.4.2 Following any damage condition given in paragraph (a) the craft must have sufficient reserve of buoyancy and stability that when floating in still water—
- (a) it will support all occupants, and movements of occupants without progressive flooding; or
  - (b) permit deployment of, and evacuation of all occupants into survival craft without loss of buoyancy or capsize during the period necessary to achieve that objective.
- 4.0 *Machinery*
- 4.1 *Installation*
- 4.1.1 Only engines, fans, propellers and major transmission components for which the equipment manufacturer has provided recommended limitations or acceptable design data are to be installed, and craft manufacturers must ensure that the installation will not result in such limitations or data being exceeded under normal operation.
- 4.1.2 In the absence of limitations or design data appropriate testing will be required.
- 4.1.3 All engines or engine frames must be securely fastened to the vehicle structure, using anti-vibration mounts. All mechanical fastenings of engines and engine mounts are to be positively secured.
- 4.2 *Machinery safety*
- 4.2.1 All rotating machinery and intakes must be guarded to prevent personal injury and foreign object damage. No shafting or transmission components are to be in, or pass through, spaces normally occupied when the craft is operating. Assemblies must be designed so as to avoid the possibility of fretting.
- 4.2.2 Any shafting must be designed so that its first critical (whirl) speed is at least 120 per cent of normal maximum operating rpm.
- 4.2.3 Fans and propellers must be provided with adequate provision to contain debris resulting from disintegration at normal maximum rpm, to the maximum possible extent.
- 4.2.4 Carburetors of enclosed petrol engines must be fitted with flame arrestors, and provision is to be made to contain any fuel leakages. Air intakes must be filtered, and positioned so as to minimise spray ingestion.

- 4.2.5 Engine exhausts are to be positioned and shielded so as to prevent damage to the craft's structure or components from heat or hot gases, and to prevent personal injury. Exhaust outlets are to be positioned so as to minimise any gas re-ingestion into the craft. No component of an engine exhaust system must be within, or discharge into the cushion plenum chamber.
- 4.3 *Engine controls and instrumentation*
- 4.3.1 Means of starting and stopping engines, and of controlling their speed, are to be provided at the craft operator's position. On Class I light craft the control of propulsion engine speed, when an integrated propulsion/fan engine or separate propulsion engines are fitted, must return to idle position if released.
- 4.3.2 The speed of all engines and the values of any engine operating parameter subject to limitations must be displayed at the operator's position. Limiting values are to be marked on the instruments. Gauges or warning lights may be used to indicate the limitations.
- 5.0 *Fuel Systems*
- 5.1 *Fuel tanks and lines*
- 5.1.1 Fuel storage tanks and pipes are to be positioned so as to minimise the risk of damage or rupture in the event of a collision.
- 5.1.2 Permanently installed fuel storage tanks must be vented to atmosphere through vents of adequate size with flame screens at their outlets, which should be so positioned as to minimise re-ingestion of fuel vapour into the craft. Where bladder tanks are installed, they must be securely fastened to their cells, which are to be sealed and also vented.
- 5.1.3 Any portable fuel tank used must be to a standard acceptable to the surveyor, and must be securely fastened when installed.
- 5.1.4 All fuel tanks whether permanently installed or portable, and their immediate surrounding structure, are to be of fire-restricting material which is impervious to fuel absorption.
- 5.1.5 All fuel tanks are to be provided with filler caps capable of being securely fastened and positioned so as to minimise accumulation of spilled fuel.
- 5.1.6 No fuel tanks, pipes or vents are to pass through or be in any space normally occupied when the craft is in operation.
- 5.1.7 All fuel and vent lines must be adequately supported, and provided with means to minimize failure through vibration or fatigue. All connections and couplings are to be fuel-tight and positively fastened.
- 5.1.8 Any fuel pipe subject to a pressure head from the tank must be provided with a cock or valve as close as possible to the fuel tank and operable from the craft operator's position, such that fuel flow from the tank may be stopped. This cock or valve must be outside any engine compartment.

- 5.1.9 The craft's operator must be able to visibly determine the contents of each permanently installed tank from the normal operating position, and to readily determine the contents of a portable tank.
- 5.1.10 In craft fitted with enclosed engines, no fuel tank is to be installed within the engine enclosure. Lines carrying fuel within that enclosure must be of stainless steel.
- 5.1.11 All metallic components and piping must be grounded, and bonded where appropriate, to prevent accumulation of static charge.
- 5.1.12 Fuel and fuel systems used for the purpose of trimming the craft must also comply with the appropriate requirements of this clause.

## 6.0 *Electrical Systems*

### 6.1 *General*

- 6.1.1 In general the electrical systems shall comply with—
  - (a) for electrical systems which operate at nominal potentials of 50 volts DC or less, ISO 10133:2012 – Small craft – Electrical systems – Extra low voltage DC installations; and
  - (b) for electrical systems which operate at nominal voltages less than 250 volts single phase, ISO 13297:2000 – Small craft – Electrical systems – Alternating current installations.
- 6.1.2 The owner of a light craft shall ensure that he or she provides in a clear and eligible form to and for approval by a surveyor the following information before the light craft is built or when there is a major alteration or modification of the electrical system—
  - (a) schematic diagrams of the main and any emergency power and lighting systems which include—
    - (i) a description of the type of electrical systems of supply installed;
    - (ii) ratings of generators, transformers, batteries, charging sources, inverters, and semiconductor converters;
    - (iii) all feeders connected to each switchboard;
    - (iv) insulation type, size and current loadings of feeder and final sub-circuit cables; and
    - (v) make, protection characteristic curve, prospective short circuit, and over current ratings of all circuit breakers and fuses; and
  - (b) simplified diagrams of generation circuits, battery charging, interconnector circuits and feeder circuits;
  - (c) arrangement and location plans of main and emergency switchboards plus any distribution boards;

- (d) plans showing the location of the main and emergency sources of power, radio battery, inverters, and battery chargers;
- (e) electrical load calculations used to determine the capacities of main and emergency generators and battery banks;
- (f) circuit diagram(s) of electrically powered bilge pumps plus bilge level alarms and pump monitoring systems;
- (g) circuit diagrams of electrically powered navigation lights, controls, and monitoring; and
- (h) voltage drop calculations of each of the following—
  - (i) main power feeder circuit;
  - (ii) navigation light circuit;
  - (iii) bilge pump circuit; and
  - (iv) vhf radio power supply circuit.

6.1.3 Before the electrical system is put into service it must be inspected and tested by the surveyor. The inspections and tests must include—

- (a) visual inspection;
- (b) inspection for continuity of all conductors;
- (c) insulation resistance tests;
- (d) verification of polarity;
- (e) confirmation of earthing;
- (f) confirmation that it is not possible to make contact with bare live parts; and
- (g) confirmation that alarms and shutdown devices are functional.

6.1.4 The insulation resistance of all circuits and equipment must be—

- (a) measured, using a direct current insulation tester, between—
  - (i) all current carrying parts connected together and earth; and
  - (ii) all current carrying parts of opposite polarity or phase; and
- (b) not less than 1 megohm.

If initial tests produce results less than 1 megohm, appliances may be disconnected and tested separately. Disconnected appliances must have an insulation resistance of not less than 0.5 megohm.

## 6.2 Batteries

6.2.1 Electric batteries are to be installed and secured in compartments treated to be resistant to corrosion from battery electrolyte. Such compartments are to be as remote as practical from any fuel system components and from spaces normally occupied when the craft is operating. Where practicable batteries are to be contained in a box resistance to electrolyte.



- 6.2.2 Any battery capable of being charged while the craft is operating must be vented to atmosphere.
- 6.2.3 Class II light craft must have sufficient battery capacity to power any installed fire detection equipment, navigation and instrument lighting, emergency lighting and any electrically powered controls for a minimum of 6 hours.
- 6.3 *Electric cables*
- 6.3.1 All electric cables are to be installed such that connections are not less than 100 mm above the bottom of the space containing the connections. Cables passing through spaces normally occupied when the craft is operating are to be installed so as to minimise the risk of damage by occupants and to prevent personal injury.
- 6.3.2 All electrical cables must be covered with insulation resistance to water absorption.
- 6.3.3 Connections must be protected against spray and dissimilar metal corrosion.
- 6.4 *Safety*
- 6.4.1 Any electrical component installed in an enclosed engine space, or a space where flammable vapours may accumulate, must be of a spark-proof design acceptable to the surveyor.
- 6.4.2 At the normal operating position, the operator of the craft is to be provided with means of disconnecting all installed electrical power supply from the craft's circuits.
- 6.4.3 Any electrical generator or alternator supplying power to a craft's electrical systems in normal operation must be provided with power failure indication and a voltmeter at the operator's position.
- 6.5 *Navigation lights*
- 6.5.1 All hovercraft are to be fitted with a yellow flashing light, visible all round the craft for a distance of 2 nautical miles, adjusted to flash at 120 or more flashes per minute. Power supply to this light is to be controlled from the operator's position.
- 6.5.2 Craft intending to operate at night must be fitted with navigation lights complying with Maritime (Collision Prevention) Regulations 2014 and adequate instrument lighting.
- 7.0 *Fire safety*
- 7.1 *Engine enclosures*
- 7.1.1 Any space which encloses an engine shall—
- (a) be constructed of fire-restricting material or treated to make it fire-restricting;
  - (b) be provided with sensors giving indication at the operator's position in the event of a fire;
  - (c) be provided with a fire extinguishing flooding system operable from outside the space, or with at least one breakable access through which fire extinguishing medium may be discharged;

- (d) for engines using petrol as fuel—
    - (i) be provided with forced ventilation such that ventilation is provided for a minimum of 30 seconds before the engine is capable of being started; and
    - (ii) be provided with vapour detectors giving warning at the operator's position of any dangerous accumulation of vapour;
  - (e) be insulated so that the outside of any boundary common with space which may be occupied when the craft is operating will not cause burns to persons coming into contact with it in the event of a fire within the space.
- 7.1.2 Any penetrations of the boundaries of an enclosed engine space which connect with other spaces within the craft must be of at least fire-restricting material.
- 7.2 *Furnishings*
- All furnishings, coverings, fabric and trim shall be at least fire-restricting materials.
- 7.3 *Fire extinguishers*
- Portable fire extinguishers, of such size, type and number as may be required by the surveyor, having regard to the craft size and layout, must be provided and securely fastened in readily accessible stowages.
- 8.0 *Controls*
- 8.1 *Directional controls*
- 8.1.1 The craft's operator must be provided with means of directional control at the operating position. The control system is to be installed such that, over the full range of movement, the force required to be applied by the operator is reasonably constant.
- 8.1.2 Manually operated control systems must be designed with a safety margin, acceptable to the surveyor, against the following load applied with the maximum lever arm possible—
- (a) foot controls – 60 kgs;
  - (b) stick lever controls – 50 kgs fore and aft and 30 kgs lateral;
  - (c) wheel controls – 50 kgs fore and aft and  $20 D$  kgs.m where  $D = \text{diameter(m)}$ ; and
  - (d) handlebar controls – 50 kgs fore and aft and 25 kgs in rotation.
- 8.1.3 The range of movement required by the operator to provide full deflection of the control surfaces must be readily attainable without the need for excessive seat adjustment or excessive body movement.
- 8.1.4 Control surfaces must be securely fastened to the craft with positively secured fastenings.

- 8.1.5 The surfaces and their mountings are to be designed to withstand any forces acting upon them at any deflection at the maximum designed craft speed, without distortion.
- 8.2 *Other controls*
- 8.2.1 The craft's operator is to be provided with controls at the operator's position for—
- (a) starting, stopping and regulating the speed of all engines;
  - (b) shutting off the supply of fuel from all installed fuel tanks;
  - (c) starting any engine space ventilation blower;
  - (d) activating any fixed fire extinguishing system;
  - (e) disconnecting all electrical power from vehicle circuits; and
  - (f) switching on and off any installed lighting.
- 8.2.2 The throttled control of any engine used for propulsion of a Class I light craft or any integrated propulsion/fan engine must be arranged so as to close to the idle position when released.
- 9.0 *Accommodation*
- 9.1 *Exits*
- 9.1.1 Class 2 light craft with enclosed accommodation must be provided with either a fully opening enclosure or at least two means of exit. Means for the rapid exit of persons in the event of an overturn must be provided.
- 9.1.2 In designs employing exit doors, at least one exit must be not less than 750 mm in width, and when open is to provide a clear unobstructed minimum height immediately outside of not less than 1.75 m. All exits must either be capable of being jettisoned or designed to hinge outwards, and must be provided with means of securing them closed. Hinged exits are to have means of securing them in the open position.
- 9.1.3 The second exit may be designated as an emergency exit. It must be as remote as practical from the normal exit and at least 660 mm in width and 660 mm in height.
- 9.1.4 In craft which are intended to be operated in periods of darkness, all exits must be provided with adequate means of illumination.
- 9.2 *Seats*
- 9.2.1 Securely fastened seats must be provided for the total number of persons the craft is designed to carry.
- 9.2.2 The seat for the operator must be provided with fore-and-aft movement and with a—
- (a) lap and full shoulder safety belt in a Class 2 light craft; or
  - (b) lap safety belt in a Class I light craft.

### 9.3 *Windows*

- 9.3.1 Any windows must be made of material which will not break into dangerous fragments if fractured. The material must also continue in service to provide clear visibility for the operator.
- 9.3.2 In Class 2 light craft clear visibility from the operator's position must be provided and maintained over a horizontal arc of at least 60° either side of the longitudinal axis.

### 10.0 *Operational equipment*

#### 10.1 *Bilge pump*

An effective bilge pump capable of pumping not less than 15 litres per minute must be provided. The pump must be securely stowed in a readily accessible position if it is not permanently installed<sup>1</sup>.

#### 10.2 *Miscellaneous equipment*

- 10.2.1 An anchor and rope, acceptable to the surveyor, must be provided and these must be securely stowed.
- 10.2.2 Class 1 light craft must be provided with 2 paddles which must be securely stowed and readily available.

#### 10.3 *Lifesaving appliances*

- 10.3.1 A non-SOLAS lifejacket with a buoyancy of at least 71 Newtons must be—
- (a) provided for every person on board the craft; and
  - (b) stowed in a readily accessible location when it is not in use.
- 10.3.2 Class 2 light craft which proceed beyond sheltered waters must be provided with an inflatable liferaft which is capable of carrying the total number of persons on board. The inflatable liferaft must be securely stowed and capable of being readily launched to the satisfaction of the surveyor.

### 11.0 *Design Approval*

#### 11.1 *Approval of design*

The designer or manufacturer of a light craft must have the design information required by clause 11.2 of this Schedule approved by a surveyor.

#### 11.2 *Design information to be supplied*

- 11.2.1 A surveyor may approve the design of a light craft if the surveyor has received the following information and considers the design complies with applicable requirements of this Schedule—
- (a) craft dimensions, estimated empty weight, number of persons or payload craft designed to carry, designed maximum weight;
  - (b) principal materials of construction;

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<sup>1</sup>The bilge pump may be a hand pump or mechanically or electrically driven.

- (c) weight, maximum speed and power of each engine, as provided by the engine manufacturer, together with the manufacturer's engine model designation;
- (d) manufacturer's data relating to lift fans and propellers or propelled devices, including—
  - (i) any speed limitations;
  - (ii) type, amount and distribution of buoyancy;
  - (iii) craft's designed maximum speed, wave height and wind speed;
  - (iv) general arrangement drawing and structural detail drawings;
  - (v) electrical details required by clause 6.1 of this Schedule; and
  - (vi) such additional relevant information the surveyor may require.

### 11.3 *Approval of information and plans/specifications of prototype*

11.3.1 Where design information and plans are submitted for the prototype of a series of craft the surveyor may approve the design information and plans or specifications for use by the manufacturer of subsequent craft provided—

- (a) the design information and plans or specifications are in sufficient detail that compliance with all applicable requirements of this Schedule can be readily established;
- (b) the plans or specifications contain sufficient instruction relating to materials, fastenings, equipment and components that the craft may be constructed and assembled with adequate safety; and
- (c) a prototype craft has been constructed from the plans or specifications, the prototype construction has been witnessed by the surveyor and the prototype craft has been subject to tests and trials in accordance with clause 13 of this Appendix, to the satisfaction of the surveyor.

### 12.0 *Construction*

12.1 All fabrication of the hull and skirt of a light craft must be carried out by or under the supervision of persons possessing appropriate knowledge and skill relating to the materials and fabrication methods.

12.2 The manufacturer must make available any test reports concerning materials, welds and other joints made during fabrication of the light craft that the surveyor may require and provide appropriate access to the light craft for its inspection by the surveyor during its construction.

12.3 Due regard must be paid to recommendations of material manufacturers regarding storage, atmospheric control and material preparation during fabrication.

12.4 Any special recommendations or instructions of the manufacturer are to be complied with when installing equipment in the craft.

12.5 The surveyor must inspect a light craft during its construction to the extent necessary to ensure its compliance with the design approval required by clause 11.1 of this Appendix.

## 13.0 *Testing and Trials*

### 13.1 *Testing*

13.1.1 Every craft must be subjected to a watertight buoyancy integrity test as soon as possible after completion. Depending upon the craft design and means of providing buoyancy, this check must be carried out by either a pressure test of each buoyancy void, or by a flotation test at maximum design weight for 12 hours. Flotation tests must be carried out with no skirts fitted.

13.1.2 If the buoyancy test required by clause 13.1.1 is carried out by a pressure test, each buoyancy void must be subjected to a pressure test. The test medium is to be air or an inert gas, using a pressure head of water of not less than 1.5 times the theoretical draught of the void when the craft is floating in water at maximum design weight. The test will be satisfactory if the pressure has not decreased by more than 10 percent after 30 minutes.

13.1.3 If the buoyancy test required by clause 13.1.1 is carried out by a flotation test, it may be carried out by either—

(a) observation of the waterline on each side of the bow and each side of the stern at the start and end of the flotation test;

(b) weighing the craft before and after the flotation test, with the same weighing equipment; or

(c) inspection of each buoyancy void immediately after the flotation test.

13.1.4 Testing is considered satisfactory—

(a) if tested in accordance with 13.1.3(a), the flotation draft at any observed point has not increased by more than 10 per cent;

(b) if tested in accordance with 13.1.3(b), the weight has not increased by more than 10 per cent; and

(c) if tested in accordance with 13.1.3(c), the individual buoyancy voids have accumulated less than 4 litres of water.

13.1.5 Any structural void intended to contain fuel or a fuel bladder must be subjected to a pressure test. The test medium must be air or an inert gas, using a pressure head of water of not less than 1.5 times the maximum depth of the space. The test will be satisfactory if the pressure has not decreased by more than 10 per cent after 30 minutes.

13.1.6 Upon completion of the craft the electrical system must be inspected and tested in accordance with the requirements of clause 6.0 of this Schedule.

13.1.7 Each installed engine is to be operated and adjusted to ensure that all operating parameters are within the manufacturer's recommended limits.

### 13.2 *Craft trials*

13.2.1 The first craft of a new type of light craft must be subjected to operational trials during which such data is to be gathered as may be necessary to establish that all installed equipment and machinery is maintained within recommended limitations during normal operation of the craft in all design conditions.

- 13.2.2 Handling and manoeuvring trials must establish any limitations, when operating in any design condition, beyond which operation is unsafe in respect of weight, vertical and longitudinal centre of gravity position, speed, wind speed, wave height and yaw angle.
- 13.2.3 The trials must examine the craft's behaviour and handling qualities during and subsequent to the failure of each engine separately when the craft is operating in all conditions for which it is designed. The results of such trials must be used if appropriate to modify any limitations established as a result of the trials conducted in accordance with paragraph (b).
- 13.2.4 For craft intended to be operated in periods of darkness, an assessment must be made of the adequacy of all lighting while operating in darkness, paying due regard to glare and reflection which may distract the operator.
- 13.3 Documented reports
  - 13.3.1 Documented reports and results of all trials must be made available to the authorized surveyor. Provision must be made for the surveyor to participate in or witness any trials.
- 13.4 Documented reports and results of trials of any craft must be maintained by the manufacturer and surveyor and must be made available on request by the Chief Executive Officer.
- 14.0 Technical information
  - 14.1 *Manuals*
    - 14.1.1 The manufacturer of any craft must ensure a manual or handbook is produced containing sufficient information to enable the owner to service, maintain and repair the craft in order to keep it in safe operational condition. The manual must include relevant information provided by manufacturers of engines and any other components.
    - 14.1.2 The manual or handbook must provide sufficient guidance and instruction to enable the operator to observe handling and control precautions, and must contain specific information regarding at least—
      - (a) any craft or equipment operating limitations, as established during trials;
      - (b) handling precautions to be observed in the event of an engine failure;
      - (c) actions to be taken in the event of a fire; and
      - (d) any other emergency or failure precautions that have been established.
    - 14.1.3 Where plans are intended to be sold for the construction of a craft by other than a craft manufacturer, the designer must ensure a manual or handbook is provided complying with the above requirements.

15.0 *Certification*

15.1 *Certification of light craft*

15.1.1 Upon completion of design approval required by clause 11.0, satisfactory inspection of construction required by clause 12.0, satisfactory testing and trials required by clause 13.0 and compliance with other applicable requirements of this Schedule, the surveyor may issue a Certificate of Construction for the light craft within such operating limits as may have been established.

15.1.2 A light craft which commenced construction on or before the date of entry into force of this Part will be considered satisfactory for the purposes of paragraph (a) if it is in a good state of repair and built to standards appropriate to the materials of construction and its intended use, and is considered fit for its intended purpose by the surveyor issuing the Certificate of Construction.

15.1.3 For identical repeat models of a prototype light craft which is already in possession of a Certificate of Construction and the same operating limits, the surveyor may issue a Certificate of Construction following satisfactory inspection of the construction and compliance with other applicable requirements of this Schedule without design approval required by clause 11.0 and the testing and trials required by clause 13.0.

15.1.4 Any Certificate of Construction issued under paragraphs (a), (b) and (c) must be in a form approved by the Chief Executive Officer.

16.0 *Safety equipment*

A light craft must be provided with—

(a) a Red Cross First Aid Kit in a waterproof container; or

(b) a suitable equivalent in a waterproof container.

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