

MARINE (FIJI SMALL CRAFT CODE) REGULATIONS, 1990

IN exercise of the powers conferred upon me by sections 170 and 212 of the Marine Act, 1986, I have made the following Regulations.

*Citations*

1.—(1) These Regulations may be cited as the Marine (Fiji Small Craft Code) Regulations, 1990.

(2) The Code set out in the Schedule may be cited as the Fiji Small Craft Code.

*Purpose*

2.—(1) The purpose of these Regulations is to set out in one document, called the Fiji Small Craft Code, details of the law relating to commercial vessels less than 10 metres in length and to hire and drive vessels, and to give legal force to those provisions of that Code that do not otherwise have that force by virtue of the Marine Act, 1986 or regulations made under that Act.

(2) The Fiji Small Craft Code summarizes some provisions of the law relating to commercial vessels less than 10 metres in length and to hire and drive vessels so to any extent that those provisions are inconsistent with any provisions of the Marine Act, 1986 or regulations made under that Act the provisions of the Act or regulations prevail.

(3) Sections 2 and 3 of the Fiji Small Craft Code summarize, for the sake of convenience, the provisions of the Marine (Certificates of Competency and Manning of Vessels) Regulations, 1989 in so far as they relate to commercial vessels less than 10 metres in length.

*Vessel to be properly manned*

3.—(1) Subject to subregulation (2), neither the owner nor the master of a commercial vessel less than 10 metres in length shall send or take the vessel to sea or permit the vessel to remain at sea with fewer qualified seamen on board than the complement prescribed in respect of that vessel by section 3 of the Fiji Small Craft Code.

Penalty: A fine not exceeding \$500.

(2) Where a vessel to which subregulation (1) applies is at a port or place and does not have on board the prescribed number of seamen of a particular grade a shipping officer may, where he is satisfied that—

- (a) a qualified seaman of that grade is not available for employment at that port or place;
- (b) it would be unreasonable to require the owner or master to obtain a qualified seaman of that grade from another port or place; and
- (c) the safety of the vessel would not be endangered,

allow the vessel, subject to any conditions he thinks fit, to go to sea without carrying the prescribed complement of seamen of that grade.

(3) Where this regulation applies in respect of a vessel, the master and the owner of the vessel shall each take such action as may be necessary to ensure that any conditions imposed under subsection (2) are observed.

Penalty: A fine not exceeding \$500.

*Vessel to be surveyed*

4. A commercial vessel less than 10 metres in length must undergo the surveys and inspections prescribed in section 12 of the Fiji Small Craft Code.

*Vessel not to go to sea without certificate*

5.—(1) Subject to subregulation (2), neither the owner nor the master of a commercial vessel less than 10 metres in length shall allow the vessel to go to sea unless there is in force in respect of the vessel such survey certificates as are required under section 12 of the Fiji Small Craft Code.

Penalty: A fine not exceeding \$1,000.

(2) A shipping officer may, subject to such conditions as he thinks fit, allow a vessel to which subregulation (1) applies to go to sea without a survey certificate.

(3) Where, under subregulation (2), a shipping officer allows a vessel to go to sea without a survey certificate, he shall give to the master of the vessel a written statement setting out—

- (a) the circumstances of the case; and
- (b) the conditions, if any, under which the vessel is allowed to go to sea.

(4) Where this regulation applies in respect of a vessel, the master and owner of the vessel shall each take such action as may be necessary to ensure that any conditions imposed under subregulation (2) are observed.

Penalty: A fine not exceeding \$1,000.

*Principles to be followed in carrying out survey*

6. In carrying out a survey for the purposes of section 12 of the Fiji Small Craft Code a surveyor shall be guided, as appropriate, by—

- (a) section 5—construction;
- (b) section 6—load lines;
- (c) section 7—stability;
- (d) section 8—engineering;
- (e) section 9—lifesaving equipment; and
- (f) section 10—radio equipment,

of the Fiji Small Craft Code.

*Requirement to carry certain safety equipment*

7. The owner and the master of a commercial vessel less than 10 metres in length must each ensure—

- (a) that there is carried on or fitted in the vessel the safety equipment specified in respect of the vessel by section 16 of the Fiji Small Craft Code that applies with any standard applicable to the equipment specified in section 11 of the Code; and
- (b) that the equipment fitted or carried in accordance with paragraph (a) is in good order and ready for use,

before the vessel goes to sea.

Penalty: A fine not exceeding \$1,000.

*Master to comply with certain provisions of Code*

8. The master of a commercial vessel less than 10 metres in length must comply with the following sections of the Fiji Small Craft Code:

- (a) section 4.7 and 4.8—documents to be produced before clearance outwards;
- (b) section 4.9—documents to be delivered and reports to be made when entering inwards;

- (c) section 11.2.6—Vessel Record Book to be kept and produced;
- (d) section 12.1.4—damage to vessel to be reported and special survey to be called for;
- (e) section 13—crew to be informed of emergency station duties;
- (f) section 14—obligation to comply with Collision Convention.

Penalty: A fine not exceeding \$500.

*Hire and drive vessels*

9.—(1) The owner of a hire and drive vessel shall comply with any provision of section 15 of the Fiji Small Craft Code that is applicable to him.

Penalty: A fine not exceeding \$500.

(2) In subregulation (1), "owner" has the meaning specified in section 15.3 of the Fiji Small Craft Code.

(3) Any work undertaken by the Marine Board in licensing hire and drive vessels shall be charged for as if it were a special survey.

Dated at Suva this 26th day of July 1990.

**T. VAKATORA**  
Minister for Infrastructure and  
Public Utilities

## THE FIJI SMALL CRAFT CODE

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## SECTION 1

## INTRODUCTION &amp; DEFINITIONS

## SECTION 1

## INTRODUCTION &amp; DEFINITIONS

## 1.1 INTRODUCTION

1.1.1 This Code applies to vessels of less than 10 metres in length *trading commercially* and where indicated (Section 15) vessels operating as *hire and drive* vessels within the Fiji Islands Trade Area; and, in respect of the construction, survey and safe operation of vessels of this type the Marine Board shall be guided by the standards of this code.

1.1.2 Vessels of less than 10 metres in length shall not be allocated a tonnage. In respect of regulations, laws or other requirements which normally apply to a vessel in terms of its tonnage, such requirements for vessels of less than 10 metres in length shall be applied to its length as stated on its register.

1.1.3 The Marine Board may, subject to the principles embodied in these requirements, exempt a vessel, or vessels included in a specified class of vessel, from the application of any of the provisions of these requirements to the extent that the Marine Board is satisfied that compliance with such provision or provisions is unreasonable or impractical in relation to that vessel or those vessels.

1.1.4 Where in the case of a vessel provision is not made in these requirements to cover a specific matter, the Marine Board may determine what special provisions shall apply to that matter.

## 1.2 DEFINITIONS

Terms defined in Section 5 of the Marine Act, 1986 shall apply in these Small Craft Uniform Requirements. Although some of the terms are repeated in whole or in a modified form in these Uniform Requirements for convenience of reference the definition in the Act takes preference.

The following terms shall have the meanings set against them respectively:

- |                   |   |
|-------------------|---|
| Breadth           | — The Breadth measured in metres at the greatest breadth of the vessel on a straight line to the outside of planking at deck level or gunwhale height.  |
| Cargo Space       | — All spaces appropriated for cargo.  |
| Commercial Vessel | — Means a vessel which is not used solely for pleasure or recreation and the use of which is made, allowed or authorised in the course of any commercial transaction.                                       |
| Crew Space        | — Accommodation provided exclusively for use of the crew.   |
| Depth             | — The height in metres from the top of the keel to the top of the main deck beams at the side of the vessel at mid length; or, in the case of all open and well-decked vessels, to the top of the gunwhale. |

- Fiji Islands Trade — Operation of the vessel between any two ports or places in Fiji (except Rotuma) beyond the protection of the reefs.
- Harbour & Rivers Service — The operation of the vessel entirely within harbour or river limits where the waters are entirely protected and smooth.
- Length — The distance from the fore part of the hull to the after part of the hull or transom taken at the upper side of the uppermost weathertight deck; or in the case of open vessels, at the height of the gunwhale. The protrusion of a stempost or sternpost is not included in this measurement.
- Master — A person having command or charge of the vessel.
- Open vessel — A vessel which has no weathertight deck for the whole or part of the length of the vessel.
- Owner — The person exercising or claiming or discharging the right or obligations of ownership, and includes the Manager acting for a corporate body.
- Passenger — Any person other than—  
 (i) the Master and members of the crew, or other persons engaged in any capacity on board a vessel in the business of that vessel; and  
 (ii) a child under 1 year of age.
- Surveyor — Any surveyor of ships appointed under Part IV Section 57(1) of the Marine Act and as further defined in Section 12.2 of this Code.
- Seagoing Service — The operation of the vessel beyond the protection of the reefs.
- Short Coasting Service — The operation of the vessel generally within the protection of the land or reefs and as further defined in the Marine (Certificate of Competency and Manning of Vessels) Regulations, 1989.
- Vessel — Any ship or boat or other description of vessel used in navigation by water.

## SECTION 2

EXAMINATIONS, SAILING LICENCE AND  
ENGINE OPERATORS LICENCES

## SECTION 2

EXAMINATIONS, SAILING LICENCES AND  
ENGINE OPERATORS LICENCES

2.1 A sailing licence is a licence permitting the holder to take overall charge of a vessel within the operating limits and under the Special Conditions stated on the licence.

2.2 The Sailing licence is not to be used for the manning of commercial vessels trading beyond the Fiji Islands Trade Area.

2.3 The Sailing licence will contain the following information:

2.3.1 Name of the holder and number of licence and date of issue.

2.3.2 Area of operation: 1. A Specific Harbour/river area,  
or 2. A specific Shortcoasting area,  
or 3. A specific Sea Going area,  
or 4. Fiji Islands Trade area.

2.3.3 Name of the vessel or vessels to which the licence applies.

2.3.4 The nature of the operation:

1. passenger/cargo trade
2. yachts (including sports fishing and amateur diving operations)
3. Sailing vessel operation.

2.3.5 The signature and official stamp of the licensing officer.

2.3.6 The licence may only be held by Fiji Citizens, or persons currently holding a valid work permit for Fiji employment.

2.4 Requirements for candidates for a Sailing Licence are:

2.4.1 Minimum Age 20 years.

2.4.2 Three years previous sea-service in a deck capacity. At least one year of this service must have been performed in the type of vessel for which the licence is to be granted.

In the case of yachts the candidate may be permitted to include amateur service so long as it can be verified to the satisfaction of the licensing officer and is relevant to the type of service for which the licence is being issued. Holders of British Royal Yachting Association or U.S. Coast Guard amateur qualifications may be issued with an equivalent Sailing licence without further examination at the licensing officer's discretion.

2.4.3 Pass an eyesight test to Marine Regulatory standards.

2.4.4 Pass an examination based on the syllabus specified in Schedule 1 to this section.

2.5 The Engine Operators licence is a licence permitting the holder to sail as a person in charge of the main engines of a vessel not exceeding a total of 100 kilowatts power on voyages within the Fiji Islands Trade area.

2.6 Requirements for candidates for an Engine Operators licence are:

2.6.1 Minimum Age 18 years.

2.6.2 Three years previous Marine engineer or mechanical engineering service, which must include at least one year's sea going service.

2.6.3 Pass an examination based on Schedule 2 to this section.

## SCHEDULE 1

### EXAMINATION SYLLABUS

#### SAILING LICENCE—HARBOUR & RIVER CRAFT

The examination shall comprise (a) oral questions using instruments and models as applicable; (b) a practical demonstration of ability aboard a vessel in the applicable harbour or river.

- (a) Handling power boats, Effect of propellor on steering the boat. Berthing, unberthing alongside and stern to wharf. Effect of wind (and current if applicable). Turning short round. Securing to buoy. Anchoring. Man overboard.
- (b) Use and maintenance of statutory lifesaving and fire fighting appliances.
- (c) A working knowledge of the Harbour Regulations and Marine Regulations applicable to the Harbour or river, and type of craft.
- (d) The ability to steer by compass. Setting a compass on a small craft.
- (e) A working knowledge of the Collision Regulations; Steering and Sailing Rules; recognition of the lights for a power, sailing and towing vessel. Recognition of the sound signals for vessels manoeuvring.
- (f) Recognition of hurricane warnings both visual and by radio; Action to be taken.
- (g) A knowledge of the harbour lights, beacons, dangers, prohibited anchorages and general topography applicable to the particular harbour or river.
- (h) A working knowledge of marine engines and bilge pumps for small craft.
- (i) Safe handling of fuels and gas used in small craft.
- (j) Duties to other vessels and personnel in relation to Collision or distress.

#### SAILING LICENCE—SHORT COASTING SERVICE

The examination will include questions and demonstrations as for Sailing licence, Harbour and River Craft, and, in addition the following:

- (a) A practical voyage over part or all of the particular passage to which the licence would apply.
- (b) Knowledge of any Maritime regulations of Marine districts through which the route lies.
- (c) Use of a chart to identify beacons, dangers, prohibited anchorages, general topography, reef passages and sheltered anchorages along the route.
- (d) Use of a chart to select magnetic course.
- (e) Recognition of lights and shapes shown by vessels fishing, not-under-command, and engaged in underwater operations. A working knowledge of sound signals in restricted visibility.
- (f) A working knowledge of trim, stability and risk of slack water in bilges.
- (g) Passenger and Cargo documentation. Masters liability in carriage of passengers and cargo.
- (h) Use and recognition of distress signals.
- (i) Action on ground. Use of hand lead.



## SAILING LICENCE: SEAGOING SERVICE

The examination will include questions and demonstrations as for Sailing Licence—Short Coasting Voyage, and in addition, the following:

- (a) The practical voyage need not apply to the passages beyond the shelter of the reef.
- (b) The oral will include a full working knowledge of the Collision Regulations; action in heavy weather, use of sea anchor, collision; a working knowledge of local search and rescue procedures; recognition of visual signs of a tropical cyclone; recognition of the more important International Code flags and their single letter meanings.
- (c) A (2 hour) written paper on chartwork and pilotage based on the largest scale chart covering the entire passage to which the licence would apply as follows:
  - (C1) Given variation as per chart, and a deviation card, to convert true courses to compass courses and vice versa.
  - (C2) To find the True and compass courses between two positions without allowance for current or leeway. Calculation of speed, distance to run and estimated time of arrival.
  - (C3) Fixing position on chart by cross bearings.
  - (C4) A non Mathematical appreciation of the effect of the prevailing currents and tides in the locality and the effects of leeway.
  - (C5) Recognising the more relevant chart symbols.

## SAILING LICENCE: SAIL ENDORSEMENT

The sailing endorsement applies to the holder of a Sailing licence in either of the other categories according to the service in which the vessel will serve and will in addition be examined as follows:

- (a) Oral knowledge of the collision regulations particularly referring to vessels under sail (whether or not under power).
- (b) English names of parts of sails; standing and running rigging, nautical terms used in tacking and jibbing.
- (c) Use of lifelines and safety harness.
- (d) Organisation of crew into manouvering stations.
- (e) Reefing at sea, Choice of sails.
- (f) Heaving to under sail.
- (g) Use of sea anchor in heavy weather.
- (h) Man-overboard under sail.
- (j) A practical voyage under sail during which the candidate will demonstrate his skill, in and ability to communicate orders for:
  - (j1) tacking, jibing, reefing, changing sail, heaving to, picking up a man overboard under sail, berthing under sail.
  - (j2) Instructing passengers in safety drills.

## SCHEDULE 2

## EXAMINATION SYLLABUS—ENGINE OPERATOR

The examination shall comprise the following with emphasis on the practical application of the necessary Knowledge:

- (a) Engineering Knowledge—Oral and Practical
  - a.1 The working of internal combustion and compression ignition engines.
  - a.2 Engine maintenance.
  - a.3 Starting and reversing arrangements.
  - a.4 Two Stroke and four stroke cycles.
  - a.5 Circulation systems.
  - a.6 Lubrication Systems.
  - a.7 Care and changing of injectors.
  - a.8 Care and charging of batteries, fuses.
- (b) Marine Engineering Knowledge—Oral and Practical
  - b.1 Shaft couplings and bearings.
  - b.2 Stern glands and bushes.
  - b.3 Circulating systems.
  - b.4 Propellers.
  - b.5 Water Strainer.
- (c) Fire precautions—Oral and Practical
  - c.1 Precautions to be taken against outbreak of petrol, oil or electrical fires.
  - c.2 Use and recharging of fire extinguishers.
- (d) The Candidate should have attended an approved fire course.

## SECTION 3

## SAFETY MANNING

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## SAFETY MANNING

3.1 In this section, safety manning for a vessel means the minimum number of Certificated and Uncertificated persons required to Safely navigate the vessel as indicated in Table 1.

3.2 The Manning Committee may increase the total number of persons required to be carried, or require higher qualified persons to be carried, or both, where in the opinion of the Manning Committee the nature of the vessel or its voyage makes this requirement necessary. In particular, vessels carrying passengers should be required to increase the total number of crew in proportion to the number of passengers carried.

## SECTION 3

## TABLE 1

MINIMUM SAFETY MANNING FOR VESSELS LESS THAN  
10 METRES LENGTH

	<i>Harbours and Rivers Service</i>	<i>Short Coasting Service</i>	<i>Sea Going Service</i>	<i>Fiji Islands Trade</i>
POWER VESSEL	Master: SL* Engineer: E.OP Crew: 1(U)	Master: SL* Engineer: E.OP Crew: 2(U)	Master: SL* Engineer: E.OP Crew: 2(U)	Master: G5M Mate: G5M Engineer: G5E Crew: 2(U)
AUXILIARY SAILING VESSEL	Master: SL* Crew: 1(U)	Master: SL* Crew: 2(U)	Master: SL* Crew: 2(U)	Master: G5M Crew: 2(U)

Key: (U) Unqualified  
 G5M Grade 5 Master  
 G5E Grade 5 Engineer  
 SL\* Sailing licence endorsed for the given area, the vessel by name. The type of operation (power, sail/power, diving, sports fishing)  
 E.OP Engine Operator. The master may act as his own engine operator, if qualified, but total manning must not be reduced.

## SECTION 4

## SHIPPING OFFICE

## SECTION 4

## SHIPPING OFFICE

4.1 "Shipping Officer" in this part means the person who is the proper authority for dealing with the engagement and discharge of crew, entry and clearance of ships, registration of ships and other matters pertaining to the legal requirements of operating trading vessels.

4.1.1 The Shipping Officer is based at the Shipping Office Suva.

4.1.2 At Lautoka, Levuka, Labasa and Savusavu a Harbour Master or Customs officer may be delegated to act as Shipping Officer.

4.2 "Marine Checker" in this part is a person who is authorised by the Shipping Officer to inspect the condition of a vessel's loading and manning or safety certificates prior to departure or on arrival at a port.

4.3 "The Coasting Licence" is a licence, renewable quarterly or annually, which authorises a vessel to engage in trade in a particular area, and the total number of passengers and crew the vessel may carry.

4.4 "The Survey Certificate" is a Certificate issued subsequent to an inspection by a Surveyor which details the Safety equipment which the ship carries, and the particular area in which the vessel may trade, and any restrictions which the Marine Board deems necessary to impose due to the condition of the vessel or its equipment.

4.4.1 "The Interim Certificate of Seaworthiness". Where the Surveyors Report is completed immediately prior to the vessel's intended clearance outward, the Shipping Officer is authorised to issue an Interim Certificate of Seaworthiness, valid for a very limited period, in order to not to delay the vessel's clearance.

4.5 "The Fumigation Certificate" is a certificate issued by the Port Health Authorities stating that the vessel has been inspected and/or fumigated, and is healthy. This certificate is renewable half yearly.

4.6 "The Mates or Engineers Dispensation" is a document issued by the Marine Board permitting a person to act as a Mate or Engineer in a higher capacity than that for which he is qualified.

Such dispensation is only issued where:

4.6.1 No properly qualified Mate or Engineer is available without undue delay to the vessel;

4.6.2 The Dispensated officer has been orally examined and found competent for the specified voyage;

4.6.3 The dispensation should not exceed the length of one round voyage, or one month, whichever is longer.

4.7 Prior to clearing outwards the Master shall show to the Marine Checker the following completed documents:

4.7.1 All Bills of Lading of all cargo onboard;

4.7.2 the passenger list;

4.7.3 the Crew List.

4.8 For clearing outwards the Master shall show to the Shipping Officer the following documents:

4.8.1 The clearance book;

4.8.2 The valid coasting licence;

4.8.3 The valid seagoing certificate;

4.8.4 The fumigation certificate;

4.8.5 Any Dispensations in use.

The Shipping Officer will then, subject to an instructions from other authorities to delay the ship, sign the clearance book and allow the vessel to sail.

4.9 When entering either of the ports listed in 4.1.1 or 4.1.2 the master shall "Enter Inwards" by delivering the clearance book to the Shipping Officer, showing the amount of cargo and passengers to be discharged. At the same time the Master shall report any marine accident or incident, or change of crew which occurred during the voyage since previously clearing outwards.

## SECTION 5

## CONSTRUCTION

1. General
  2. Type of Vessel
  3. Crew Accommodation
  4. Passenger accommodation, berthed and unberthed
  5. Galley spaces
  6. Workmanship, Materials and Scantlings
  7. Constructional details (wooden vessels)
- Annex 1 Scantling tables  
Annex 2 Vessel plans 1 to 8

## SECTION 5

## CONSTRUCTION

## 5.1 GENERAL

The vessel shall conform to the following Rules and shall be constructed in accordance with approved specifications and drawings. Any variations of the scantlings set out in the Rules shall be included in the approved specification.

5.1.1 The design of the vessel shall be suitable for the service and type of operation for which the vessel is intended, with particular emphasis on stability and watertight integrity. The Marine Board may, at its discretion accept designs other than the designs specified in this section so long as such designs are of at least as high a standard.

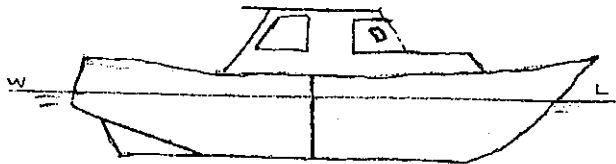
5.1.2 A vessel which has been licensed as a trading vessel by the Marine Board shall carry the following marks conspicuously shown on her hull as follows:

- (a) The name of the vessel on each bow;
- (b) The port at which the licence was issued, or the port of Registry if any, on the stern.
- (c) The loadline mark specified in section 6.

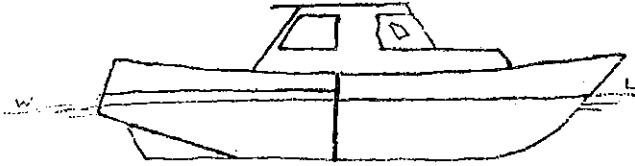
## 5.2 TYPE OF VESSEL

5.2.1 The structural configuration should normally be in accordance with one of the following designs:

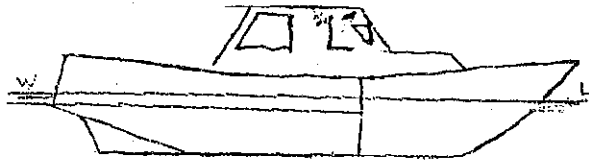
- (a) FULLY DECKED i.e. a boat having a complete weathertight deck situated above the waterline, or



- (b) **WELL DECKED** i.e. a boat having a stepped weathertight deck situated wholly above the waterline. The fore-deck should extend at least 30% of the length (L) of the boat, or



- (c) **OPEN COCKPIT** i.e. a boat having a weathertight foredeck, which extends at least 30% of the length (L) of the boat, situated wholly above the waterline, a transverse weathertight bulkhead positioned at the aft end of the foredeck to form a weathertight compartment and an open cockpit. The cockpit should preferably be fitted with a weathertight sole (i.e. deck or floor), which may lie below the level of the waterline.



### 5.3 CREW ACCOMMODATION

5.3.1 Vessels employed in Fiji Islands Trade, seagoing service and the short-coasting service shall have at least the accommodation, cooking facilities and sanitary arrangements prescribed hereunder:

- (a) Vessels authorised to carry thirty persons or more—
  - (i) sleeping accommodation for all members of the crew;
  - (ii) a fire box or other cooking facilities;
  - (iii) two cubicles each containing a lavatory.
- (b) Vessels authorised to carry less than 30 persons—
  - (i) sleeping accommodation for all members of the crew;
  - (ii) a fire box or other cooking facilities;
  - (iii) one cubicle containing a lavatory.
- (c) Vessels authorised to carry less than ten persons—
  - (i) sleeping accommodation for all members of the crew;
  - (ii) a fire box or other cooking facilities.

5.3.2 In all vessels where required, the places allotted to the crew for sleeping quarters shall be of such size and dimensions as to provide for each man to be accommodated therein, a space of not less than 72 cubic feet (2 m<sup>3</sup>) and of not less than 12 square feet (1 m<sup>2</sup>) measured on the floor or deck of such places, and shall be equipped with—

- (i) at least two ventilation openings not being port-holes or doors, one for inlet and one for outlet, these openings to be of not less than 6 inches (150 mm) in diameter;

- (ii) port-holes, windows or pieces of heavy glass in the decking above to allow for the entry of sufficient light during day-light hours for reading purposes;
- (iii) electric light, in the case of a vessel of which any other part is so lighted, or, in the case of any other vessels, kerosene lamps:

Provided that any place allotted to the crew for sleeping quarters shall be of such dimensions as to provide a space of not less than 216 cubic feet (6 m<sup>3</sup>) and of not less than 30 square feet (2.8 m<sup>2</sup>) measured on the floor or deck of such place.

5.3.3 The bunks for members of crew shall be at least 6 feet 3 inches in length by 2 feet 3 inches (1900 x 680 mm) in width, and where they are double tiered be at least 10 inches (250 mm) from the deck or flooring and have spaces between the lower and upper bunks of not less than 30 inches (760 mm) and a similar space between the upper bunks and the deck head or ceiling, and where the bunks are of built-in type and are built parallel with the side of the vessel, be at least 4 inches (100 mm) from the side of the vessel.

5.3.4 In all vessels places allotted to the crew as sleeping quarters shall be ventilated and lighted as efficiently as is practicable and to the satisfaction of the authority.

5.3.5 The interior of all places allotted as sleeping quarters or messrooms on steel vessels shall be either lined or cork-dashed.

5.3.6 All steel deck heads above places allotted as sleeping quarters or messrooms, shall be either covered with wooden decking on top or lined underneath with at least two and a half inches (60 mm) of an insulating material approved by the Board's surveyor.

5.3.7 The floors or deck of all places allotted as sleeping quarters or messrooms, shall be well caulked to prevent ingress of bilge water or effluvia from engines, fuel, bilges or cargo.

5.3.8 Where paint lockers and crews' sleeping quarters have a common wall, such wall shall have a metal or other approved fire resistant lining.

5.3.9 Where chain cables pass through sleeping quarters or messrooms, such chains shall be encased in air-tight metal casing.

5.3.10 Places allotted to the crew as sleeping quarters shall not be used for the storage of any supplies or goods other than the personal belongings of the crew members occupying such places.

5.3.11 Places allotted to the crew as sleeping quarters or messrooms shall be completely painted a light colour at least once a year.

5.3.12 All places allotted as sleeping quarters, messrooms, and lavatories shall be appropriately marked and in case of sleeping quarters shall indicate the number of persons they are to accommodate.

5.3.13 All lavatory cubicles on vessels shall have at least—

- (i) a floor space of 6½ square feet (0.6 m<sup>2</sup>);
- (ii) a width of two feet (600 mm);
- (iii) a ventilation opening of 4 inches (100 mm) in diameter.

5.3.14 All lavatory cubicles shall have a port-hole or window to allow for the entry of light and, in addition, shall on those vessel, in which any other part is so lighted, be equipped with electric light.

5.3.15 All lavatory cubicles shall have an impervious floor and the lavatories shall have a flushing apparatus with discharge over the side, at or below water level.

5.3.16 The interior of all lavatory cubicles shall be completely painted at least once every six months.

5.3.17 All engine rooms shall be provided with ventilation and shall not be used for sleeping quarters except with the special permission of the Marine Board. Provision shall be made to ensure noxious or exhaust gases can not be discharged into any enclosed space to which any person has normal access.

5.3.18 Vessels employed in the Fiji Islands Trade, Seagoing and short coasting service shall carry in appropriate storage tanks at least the following quantities of fresh water: 6 gallons (27 litres) for each person the vessel is authorised to carry up to a maximum requirement of 40 gallons (180 litres).

#### 5.4 PASSENGER ACCOMMODATION—BERTHED AND UNBERTHED

5.4.1 Berths for passengers travelling as berthed passengers shall be the same standard as specified in 5.3.2 to 5.3.12 inclusive.

5.4.2 Each unberthed passenger shall be provided with seating accommodation of at least 18 inches x 12 inches (460 mm x 300 mm).

5.4.3 Where the length of the voyage normally exceeds 6 hours, each unberthed passenger shall be provided with level deck space of 6 feet x 1 foot 6 inches (1830 mm x 460 mm), which may include the seating accommodation specified in 5.4.2.

5.4.4 The spaces specified in 5.4.2 and 5.4.3 shall be under a cover or awning, such that the passengers are adequately sheltered from rain and spray.

5.4.5 Access between passenger spaces, lavatories and passenger emergency stations shall be adequate.

5.4.6 Ladder steps shall have a rise of between 8 inches and 9 inches (200 mm and 225 mm) and shall be of robust construction.

#### 5.5. GALLEY SPACES

5.5.1 Galley cookers areas shall be well ventilated to prevent heat accumulation on a combustible surface. The Marine Board may require combustible bulkheads and deckhead close to the cooker to be insulated and steel lined.

5.5.2 Gas supplies for gas cookers shall be in standard gas cylinders securely fitted outside any enclosed space and so that any gas leakage, which may be heavier than air, can gravitate away over the ship's side. All piping between the cylinder and the cooker shall be approved by the Marine Board.

#### 5.6 WORKMANSHIP, MATERIALS AND SCANTLINGS

5.6.1 Workmanship shall be in accordance with the best marine practice and to the approval of the Surveyors.

5.6.2 Laminated construction may be used wherever specifically approved. Laminations shall be of kiln-dried timber, bonded with resorcinal glues and properly cured before working.

5.6.3 The type and layout of the vessel shall be as indicated on the builder's General Arrangement plan.



5.6.4 All materials, including fastenings, shall be as specified in the Rules and to the approval of the Surveyors. Timber shall be of good quality, reasonably seasoned. Hull timber shall be treated with an approved wood preservative.

5.6.5 Plywood shall be of Marine Standard. The end grain of plywood shall be sealed. Where plywood is to be used in a fishroom it shall be treated with an approved wood preservative.

5.6.6 All ironwork shall be hot galvanised or shot blasted and zinc sprayed or otherwise treated to the satisfaction of the Surveyor.

5.6.7 Where aluminium alloy is used it shall be of a marine grade. An approved method of fastening and insulating between dissimilar materials shall be used. Lead-free paints shall be used with this type of material.

#### 5.6.8 SCANTLING NUMERAL

- (a) The scantling numeral shall be the product obtained by multiplying the Length (L) by Breadth (B) by Depth (D).
- (b) The scantlings for any vessel shall not be less than those determined by reference to the appropriate Scantling Numeral. Scantlings are tabulated in Tables I to XII annexed to this section.

### 5.7 CONSTRUCTIONAL DETAILS (WOODEN VESSELS)

This subsection applies to vessels of wooden construction, but may be used as a guide to general requirements for construction in other materials, except that scantlings would require modifications to the particular material as approved by the Surveyor.

#### 5.7.1 KEEL

The keel shall be of an approved hardwood and preferably in one length, but when it is necessary to scarph, the length of scarph shall be not less than five times the moulded depth of the keel. The scarph shall be of lockfast design, fastened in accordance with the Rules and shall not be situated in way of main engine. Scarphs shall be kept clear of the hog and keelson scarphs by at least 5 frame spaces. A steel keel band or wooden false keel shall be fitted. In the case of vessels of the beaching type, the moulding scantling as given in the Rules shall be increased by not less than 25%.

#### 5.7.2 HOG

The hog shall be of an approved hardwood moulded to the form of the vessel and shall have a depth in accordance with the Rules. If scarphed, the scarph shall not be less than 5 times the moulding and shall be kept clear of the keel and keelson scarphs, by not less than 5 times frame spaces.

#### 5.7.3 STEM

The stem shall be of an approved hardwood sawn to shape, scarphed or tenoned to the keel, and connected by either a deadwood or heavy knee. In the case of a rounded fore-foot the scarph shall be of the lockfast design. In the case of a straight fore-foot, through fastened plates shall be fitted on either side of the stem and keel. A steel band or shoe shall be fitted. Where required an anchor cable clench plate shall be fitted.

#### 5.7.4 APRON

The apron shall be in one length of an approved hardwood sided and moulded to the form of the vessel and through bolted to stem.

### 5.7.5 FORE DEADWOOD OR KNEE

A fore deadwood or knee of an approved hardwood shall be fitted, sided to give adequate faying surface to plank ends, lipped over hog, scarphed to apron and through bolted to stem and keel.

### 5.7.6 STERNPOST

The sternpost shall be of an approved hardwood connected to the keel by tenon and heavy dovetail/skeg plates each side. In all cases the sternpost shall be such that the thickness of timber remaining on either side of the sterntube after the rabbet has been formed, shall not be less than one-quarter the thickness of the siding of the sternpost, as given in the Rules. If necessary the sternpost may be swelled in way of sterntube to meet this requirement.

### 5.7.7 AFTER DEADWOOD OR KNEE

The after deadwood or knee shall be of an approved hardwood fitted to keel and sternpost and swelled if necessary in way of the sterntube in accordance with the Rules. Dowels, or tenons shall be fitted at the joint with the keel.

### 5.7.8 OUTRIGGER

The outrigger on vessels with a canoe or cruiser stern shall be of an approved hardwood sided as the sternpost and fitted to the sternpost and after deadwood. Fashion pieces shall be fitted on each side of the sternpost to give a faying surface to the plank ends. The faying surface shall be not less than:

- 50 mm for vessels up to SN 30
- 75 mm for vessels of SN 45 and over

The fashion pieces shall be through bolted to the outrigger and sternpost.

### 5.7.9 TRANSOM

On transom stern vessels, the transom shall be constructed of either solid, single or double planking on a suitable framework. Where the single timber method is used, fashion pieces shall be bolted to the forward side in way of the plank ends to allow for additional plank fastenings clear of the end grain. Where the double planked method is used, oiled calico or other approved material shall be fitted between the skins and the transom shall be suitably stiffened with vertical and transverse stiffeners. The transom shall be connected to the horn timber by a suitable knee.

### 5.7.9 TRANSOM KNEE

A transom knee shall be fitted in accordance with the Rules. When the rudder gland passes through the transom knee, the siding of the knee shall be such, that not less than 25% of the siding of the knee remains on either side of the rudder gland hole.

### 5.7.11 STOPWATER

Softwood stopwater shall be fitted at all joints in way of plank rabbets.

### 5.7.12 FRAMING

All frames shall be of selected timber and may be either double or single type, steam bent or a combination of sawn and steam bent according to Type Classification.

### 5.7.13 SINGLE SAWN FRAMES

The frames can either be butted at the centre and fitted with floors, or the floors may be formed by the lower frame futtocks, fitted on opposite sides on alternative frame stations. The butts of the remaining futtocks shall be joined by a clamp of length not less than six times the siding of the frame on either side of the butt, and shall be staggered generally throughout the vessel. Frame floors sided as per frame shall be fitted to and extend across the hog for a length of not less than one-third the breadth of the vessel at that point. Clamps and floors shall be fastened to the frame by through bolts in accordance with the Rules. Suitable limber holes to provide adequate drainage shall be arranged and limber chains or equivalent fitted. Can't frames shall be tenoned or recessed into or connected with angle iron brackets to the fashion pieces.

### 5.7.14 DOUBLE SAWN FRAMES

Frame floors shall be fitted to and extend across the hog for the length of not less than one-third the breadth of the vessel at each frame station. The lower frame futtocks shall be butted on the centre line and be fastened to the floors by through bolts in accordance with the Rules. Butts of remaining double futtocks, shall be staggered and fastened in the same way.

5.7.15 Vessels with a Scantling Numeral of 45 and less may be framed throughout with bent wood frames. In vessels above this and with a Scantling Numeral of less than 140 framing may be of a combination of sawn and bent wood frames.

### 5.7.16 STRINGERS

Bilge stringers of an approved timber shall be fitted, and shall run from the apron to the transom or outrigger. All scarphs shall extend over two frames and be staggered port and starboard.

### 5.7.17 BREASTHOOKS

Breasthooks shall be of a suitable hardwood or steel construction of approved design. Breasthooks shall be fitted to beam and bilge stringers and fastened with at least three bolts in each arm, and through bolted to the stem and apron.

### 5.7.18 QUARTER KNEES

Quarter knees shall be fitted to bulwark rails on transom stern vessels. These shall be of wood or steel as for breasthooks, and fastened with at least three bolts in each arm.

### 5.7.19 BEAM KNEES

Lodging and/or hanging knees shall be fitted to all main beams and beams in way of gallows, winches and deck leads. These may be of an approved hardwood or steel and fastened with at least two bolts in each arm. Knees on ordinary beams shall be to the approval of the Surveyor.

### 5.7.20 BEAMS

All main beams shall be of an approved hardwood. Ordinary beams shall be of an approved timber. Main beams shall be spaced in accordance with the approved drawing and ordinary beams in accordance with the Rules. All beams shall be moulded and sided in accordance with the Rules and may be moulded 25 mm less at the ends. Beams shall be fastened with bolts at the beam sheld and fram heads. All beams shall have an adequate round of beam (camber). Half beams shall be sided as for ordinary beams and shall be housed and dovetailed into carlings.

### 5.7.21 BEAM SHELF

Where a beam shelf is fitted, it shall be of an approved timber and extend for at least three-fifths the length of the vessel. Scarphs shall extend over two frame spaces and be kept well clear of beam stringer scarphs and shall be staggered port and starboard. The shelf shall be through fastened at each frame.

### 5.7.22 CARLINGS

The carlings shall be of an approved hardwood, housed and dovetailed into the main beams. Lodging knees or steel brackets shall be fitted at each corner. Tie rods shall be fitted to carlings in way of openings exceeding 2 metres in length. Steel carlings may be fitted to the approval of the Surveyors. Tie rods of 12 mm diameter shall be spaced not more than 1.2 metres. When the length of the carlings exceeds 2.50 metres the moulding shall be increased by 10% and the carlings suitably supported by pillars.

### 5.7.23 PLANKING (Carvel)

The hull planing shall be of an approved timber. No plank width shall exceed four times its own thickness, except that the garboard and its adjacent strake and the two adjoining strakes to these aft to amidships, shall not exceed six times their thickness. All timber shall be free from sap, shakes and objectionable knots and normally worked heart to frame of lengths to ensure a good shift of butts. Butts shall not be spaced closer than four frame spaces in adjacent strakes and their shall be at least three passing strakes between butts on the same frame.

The butts of the garboard strakes shall be kept well clear of the keel and hog scarphs. Stealer planks may be fitted aft and shall not be less in width at their fore end than 1.5 times the plank thickness, to allow for adequate fastening. The butts ends of planking in steam bent frame construction shall be fastened to a butt strap of the same thickness as the planking and the butt strap shall have at least 6 mm of clearance at each frame to allow for drainage. Where the butt strap method is not used planks shall be scarphed, and the length of scraph shall not be less than five times the thickness of the planking.

### 5.7.24 PLANKING (Clinker)

The lap or lands of clinker planking shall be not less than the widths given in the Rules and at plank ends shall be bevelled and rabbeted to fair into the stem and stern rabbets and transom. Where possible strakes shall be in one length, but where scarphs are necessary these shall not be less than 6.5 times the plank thickness in length, and glued. Scarphs shall be feathered inside and stepped outside with the feather placed on a bent wood frame. Widths of planks shall not exceed 150 mm with the exception of the garboard strake which may be wider. There shall be at least three passing strakes between scarphs on the same frame. Wedges shall be fitted behind bent wood frames in way of risings, stringers, gunwales and elsewhere to the approval of the Surveyor.

### 5.7.25 PLANKING (OTHER THAN CARVEL OR CLINKER)

Other methods of planking will be considered subject to details being submitted for approval of the Surveyors.

### 5.7.26 RUBBING STRAKES

Rubbing strakes where fitted, shall be in accordance with the Rules. The sheer strake and lowest strake shall be of an approved hardwood. The siding of these strakes shall be 25 mm greater than the siding of the ordinary planking and they

may be tapered at the ends to run into the plank rabbet at stem and stern. The ordinary planking may be carried up to the deck with a rubber of an approved hardwood sided twice the thickness of the planking, fitted to the face of the sheer stake, and faced with a galvanised cope iron.

#### 5.7.27 BILGE STRAKES

The bilge strakes shall be of an approved timber and shall extend at least half the length of the vessel.

#### 5.7.28 BILGE KEELS OR ROLLING CHOCKS

Bilge keels or rolling chocks where fitted shall be of an approved hardwood fitted to the outside of the bilge planking and fastened with one through bolt at each frame. In the case of vessels with bent wood framing, the fastening shall be through the bilge stringer and planking shall be fitted with filling pieces in way of all fastenings.

#### 5.7.29 DECK PLANKING

The deck planking shall be of an approved timber, and if of soft wood suitable pressure treated with a preservative. Butts shall be spaced at least 1.5 metres apart and there shall be a minimum three passing stakes between butts on the same beam. Plank widths shall not exceed 125 mm, and butts on half beams should be avoided.

#### 5.7.30 COVERING BOARDS

Covering boards shall be fitted in way of the bulwark stanchions and carried to the outside of the sheerstrake, alternatively the sheerstrake may be carried to the top of the deck and a covering board fitted to the face of the stanchions and chocks fitted between the stanchions in way of the covering board and the sheerstrake.

#### 5.7.31 BULWARK

The bulwark stanchions shall be of an approved hardwood either fitted alongside frames or as a continuation of the frame upper futtock. The separate stanchions or extended upper futtock shall be fitted at every frame space for one-third of the length of the vessel forward and aft, and at alternate frame spaces amidships. Scantlings shall be as determined by the Rules, and the length of separate stanchions housed below deck, shall not be less than eight times the siding of the stanchions.

5.7.32 The bulwark rails shall be of an approved hardwood attached to the tops of stanchions by tenons and dump fastenings or rail dogs. Freeing ports shall be fitted to the bulwark each side with an area of 0.2 m<sup>2</sup>. Any gap between the bottom bulwark plank and the deck will be considered a part of the freeing port area.

5.7.33 The washstrake shall be fastened to the stanchions so as to facilitate easy removal for periodic caulking of the backs of the stanchions with galvanised nails.

5.7.34 Where horse pipes are fitted in way of bulwark planking, suitable pads shall be fitted alongside the stem apron and extended through covering boards and securely fastened to apron, topside planking and bulwark rails.

5.7.35 Fixed bulwarks shall have a minimum height 600 mm. This height shall be made up to a minimum of 700 mm by rails, or portable stanchions and wires. Openings between rails shall not exceed 380 mm.

5.7.36 BULKHEADS—The bulkheads shall be positioned as indicated on the builders approved drawing. One watertight bulkhead shall be fitted.

5.7.37 Where possible the after engine room bulkhead shall be watertight and entrance arranged clear of this bulkhead.

5.7.38 Watertight bulkheads where of wood shall be of double skin construction fitted with felt or calico between, suitably stiffened, or of other approved construction and shall be water tested. Non-watertight bulkheads may be constructed with tongued and grooved boarding, marine ply, or other approved material fitted on suitable stiffeners.

5.7.39 Bulkheads which separate machinery space from accommodation shall be constructed of incombustible material.

5.7.40 Where watertight bulkheads are pierced watertight glands or doors shall be fitted.

5.7.41 In all vessels of the open type having no complete watertight deck and scantling numeral of less than 60, one watertight bulkhead shall be fitted forward of the engine space, and extended in height to the top of the risings and secured at the top to underside of thwart. In vessels of this type having a scantling numeral of 60 and above a bulkhead shall be fitted at the end of the foredeck in addition to the engine space bulkhead.

5.7.42 **GUNWALES**—In all open type vessels having no bulkwarks, gunwales of an approved timber shall be fitted. Gunwale shall be of the box type fitted to the face of grown or bent frames with a capping fitted to the top and shall be through fastened at each frame. Where the framing is a combination of grown and bent frames, filler pieces shall be fitted in way of the bent frames. A breasthook shall be fitted forward and either quarter knees or a breasthook aft.

5.7.43 **RISINGS**—In all open vessels which do not have a watertight deck risings of an approved timber shall be fitted. The risings shall be through fastened at each grown or bent frame, and where framing is a combination of both, filler pieces shall be fitted in way of bent frames. The risings shall be at the height of the thwarts where fitted, and not less than one-third of the moulded depth below top of the gunwales in vessels having no thwarts. Where thwarts are fitted below the height of the risings an additional stringer shall be fitted.

5.7.44 **THWARTS**—In open type vessels thwarts shall be fitted where indicated on the approved drawing. The thwarts shall be connected to the risings by through fastenings, clenched over rovers or washers and by thwart knees fitted to the tops and lodging knees to sides. The latter shall be fitted to the after side of forward thwarts and forward side of after thwarts.

5.7.45 **FORECASTLE**—The forecastle where not used as accommodation, shall be fitted out as a store, with shelves and racks for the stowage of gear, and provided with an approved access.

5.7.46 **HOLD**—Where ceilings are fitted, they shall be of an approved timber, kept well clear of frames and ventilated by not less than two each side, self-closing swan-neck ventilators, situated one at each end. In each case a centre gully shall be fitted to drain into a pump suction well of the hold. All softwood shall be treated with an approved preservative.

5.7.47 **HATCHES**—The hatch coamings shall be of either approved hardwood dovetailed at corners, steel or other approved material, and be fitted with all necessary securing fittings and covers to ensure weather-tightness.

5.7.48 Wooden hatch covers shall have a finished thickness of at least 40 mm in association with a span of 1 metre and a width of bearing surface at each end of not less than 65 mm. Hatch covers other than of wood shall be of equivalent strength. All portable hatch covers to be permanently marked to indicate their correct

5.7.49 The height of hatch coamings above the deck shall be not less than 300 mm.

5.7.50 The forward store hatch shall be weathertight, constructed with a hinged cover and with securing clips. The hinges shall be fitted at the forward coaming. When the accommodation or the engine room is situated forward, an access companionway with a sill height complying with 6.3 and a weathertight cover-door shall be fitted.

5.7.51 Other deck openings which are essential for operations may be of the flush deck type, provided they can be closed weathertight with covers permanently attached to the hull structure.

5.7.52 LADDERS—Fixed and portable ladders, handholds and other devices shall be provided for the safe working of the ship at sea and in port and shall have adequate dimensions. All metal, rope and wooden ladders shall be of material, construction and strength to the approval of the Surveyor.

5.7.53 The treads on all ladders shall be flat and prepared to minimise slipping. Fixed vertical ladders shall be situated to give adequate toe clearance. Handholes shall be provided if the rungs or stringers are not suitable for this purpose.

5.7.54 Engine room and accommodation ladders shall be fitted with non-slip treads and adequate handrails and constructed with incombustible material.

5.7.55 Portable ladders shall stand on a firm base and shall be capable of being secured at the top.

5.7.56 ENGINE SEATS—Wooden engine seats shall be of an approved hardwood and shall extend at least twice the distance between the engine gear box output coupling and the forward engine holding down bolt centre, reduced in depth clear of the engine as necessary, and checked over every frame or floor, but kept clear of planking. They shall be stiffened with brackets at every second frame and reinforced with not less than three cross members. The side brackets and cross members where of wood shall be connected to the engine seats by bolting to angle bars of approved dimensions.

5.7.57 The engine seats shall be through fastened at each frame or alternatively through frames and planking. Provisions should be made to ensure that the bolts can be tightened during service. All bolts shall have plate washers. A steel plate, channel or angle bar shall be fitted to the tops of the engine seats extending throughout the length of the engine and gear box. The engine holding down bolts shall where practicable pass through the full depth of the seats or be secured by plate or barrel nuts recessed into the seats. Where the latter method is used, bolt lengths shall be varied so as to stagger recesses. Alternatively, where heavy top angles or channels are fitted to the engine seats, the angles or channels shall be secured through the full depth of the seats where practicable and the engine holding down bolts fitted through the top flange only.

5.7.58 In vessels constructed with bent wood frames, the engine seats shall be mounted on and notched over additional cross floors extending to the bilge on each side and spaced not more than three-quarters of the distance between engine seats.

5.7.59 Where steel seats are fitted their length shall be as in 9.1. They shall be fabricated and fitted with side brackets on every second frame and with not less than three intercostals. The seat shall be connected to the frames either by angles and brackets or by welded plates. The sole plate shall be adequate thickness for the type and size of engine to be installed. The method of construction in these cases shall be submitted to the Surveyors for approval.

5.7.60 For powers of 150 Kw (200 hp) and over the fitting of steel seats is preferred. Proposals for engine seats shall be submitted for the approval of the Surveyors.

5.7.61 For guidance the sidings of wooden engine seats shall be in accordance with the following:

<i>Maximum kw (hp)</i>	<i>Minimum Siding of Engine Seats</i>
Up to 22 kw (30 hp)	85 mm
Up to 75 kw (100 hp)	110 mm
Up to 130 kw (175 hp)	140 mm
Up to 185 kw (250 hp)	150 mm
Up to 225 kw (300 hp)	180 mm
Up to 300 kw (400 hp)	200 mm

5.7.62 POOP DECK OR CASING—Where a raised casing is fitted over the engine room and/or cabin, the plating shall not be less than 6 mm thickness and suitably stiffened.

### 5.7.63 WHEELHOUSE AND DECKHOUSE

Where an aluminium alloy wheelhouse is approved the plating shall be not less than 5 mm thickness with stiffeners spaced not more than 460 mm. Where built of steel the stiffeners may be placed not more than 730 mm.

5.7.64 A wooden wheelhouse shall be of hardwood framing with substantial coamings and planked with an approved timber, or arranged in panels of marine quality plywood. The top shall be covered with a first quality canvas and painted, or sheathed with nylon or other approved materials.

5.7.65 For constructions using material other than any of the above, details shall be submitted for the approval of the Surveyors.

5.7.65 In all cases access to the top of the wheelhouse shall be arranged.

5.7.67 Windows, at least one-third of which shall be of the opening type, may be of the metal type or wood framed railway type. Adequate window drainage shall be provided. Window glass shall be not less than 10 mm thick and toughened.

5.7.68 Linings shall be either plywood, plastic sheeting or other approved materials, special attention being given to fire prevention.

5.7.69 Where a deckhouse is fitted, the construction shall be similar to that required for the wheelhouse and be of wood, steel, aluminium or other approved material.

5.7.70 Sufficient handrails shall be provided outside of wheelhouse, deckhouse and casing and inside wheelhouse, passageways, accommodation and engine room.

### 5.7.71 RUDDER

The rudder shall have a stock of steel in accordance with the Rules with welded or keyed couplings. A watertight gland with a bearing shall be fitted to the hull. When the stock extends more than 460 mm above the inboard gland, an additional bearing suitably supported shall be fitted at top under deck. Stainless steel sleeving on the stock in way of bearings shall be fitted. The scantling shown in the Rules shall be regarded as a guide only. The actual size shall be determined by the length, shaft



horse power, speed of the vessel and type and area of rudder to be fitted. The lower pintle shall be fitted into a bushed socket at the skegplate, and a jumping band fitted below the rudder gland at top of rudder if required. Arrangements are to be made for the lubrication of bearings.

5.7.72 A steel quadrant or tiller shall be fitted to the stock. Stops shall be fitted to limit the angle of rudder to not more than 35° on each side.

5.7.73 If the rudder blade is of wood, steel straps shall be welded to the stock and fastened to the blade by through bolts. If the rudder blade is of steel it may be of single or double plate construction welded to the stock and fitted with suitable stiffeners. If of double plate construction it shall be fitted with suitable material and fitted with a drain plug. Pintless and gudgeons of steel or other approved metal shall be fitted.

#### 5.7.74 STEERING GEAR

The steering gear shall be of an approved type and size. A non-geared gypsy type of steering gear with wire leads may be fitted. An approved emergency steering arrangements shall be provided. Where hydraulic steering gears are fitted they shall be mounted on rigid seatings, to the approval of the Surveyors.

#### 5.7.75 MASTS

Masts as required for the type of vessel shall be fitted either of timber, steel, or other approved material.

#### 5.7.76 DERRICKS

Derricks if required for the type of vessel shall be supplied either of timber, steel or other approved materials. The maximum safe working load and maximum radius of operation of all derricks shall be stated in the approved specification. The derricks, their ropes, wires, guys, eyeplates and other associated equipment shall be designed to meet these loads. Derricks shall be tested as rigged for service to not less than 1.5 times the maximum working load. The maximum safe working load shall be permanently indicated on the derricks.

#### 5.7.77 FASTENINGS

All steel fastenings, unless otherwise specified, shall be galvanised. Bolts shall be made from rolled mild steel bar and the diameter shall be in accordance with the Rules. Where bolts are cropped, the exposed ends shall be coated with zinc paint. Flats and dumps shall be of length in accordance with the following Rules.

##### Thickness of Timber Length of Flats or Dumps

(mm)	(mm)
25	75
30	90
35	100
45	115
50	125
55	125
65	150
70	165
75	175
90	205
100	225

## 5.7.78 COPPER NAIL FASTENING

Thickness of Timber (mm)	Diameter of Nail (mm)
12	2.50
13	2.80
20	2.80
25	3.35
30	3.35
35	3.35
45	3.35
50	3.35
55	3.75
65	3.75
70	3.75
75	4.00
80	4.00
85	5.00
100	5.00
115	5.00
130	5.60
150	6.00

## 5.7.79 THROUGH BOLTS

Through bolts in these Rules mean either nut and screw or clenched bolts.

## 5.7.80 KEEL AND HOG

Shall be fastened together by flats or screws between every second frame space.

## 5.7.81 KEEL AND KEELSON

Shall be fastened through each floor timber by through bolts.

## 5.7.82 KEEL SCARPHS

Shall be fastened by nut and screw bolts, one through each frame floor and one between each frame in way of scraph.

## 5.7.83 FRAME FUTTOCKS AND CLAMPS

Shall be fastened by not less than four through bolts on each side of the butt. Not less than three bolts shall be fitted on each side of the butt.

## 5.7.84 FRAME FLOORS

Shall be fastened to hog and keel, with one through bolt at each floor. Buttocks shall be fastened to the frame floor by not less than four through bolts on either side.

## 5.7.85 BULWARK STANCTIONS

Shall be fastened by not less than 3 through bolts through frame and 2 through hull planking. The bolt sizes to be as for frame fastenings.

**5.7.86 BEAM STRINGERS**

Shall be fastened with one dump and one through bolt at each frame.

**5.7.87 BEAM SHELF**

Shall be fastened with one through bolt at each frame.

**5.7.88 BILGE STRINGERS**

The beam stringers, shelf and bilge stringers shall be fastened with one through fastening at each frame.

**5.7.89 STEM AND APRON**

The apron shall be securely fastened to the stem by through bolts.

**5.7.90 HULL PLANKING (CARVEL)**

Shall be fastened by two clenched fastenings at each sawn frame or bent wood frame, and two clenched copper fastenings in plank lands between each frame, where the frames are spaced more than 150 mm apart and one fastening where the spacing is less than 150 mm. Plank ends at stem and stern shall be fastened at the rabbets by not less than four screws in each plank. In the case of a transom stern, the planks shall be fastened at the transom with not less than three screws in each plank and two screws in each plank in way of the transom fashion pieces. Butts, if used, shall be secured to butt blocks or planks may be scarphed together.

**5.7.91 THROUGH FASTENINGS (PLANKING)**

In all cases whatever the method of planking adopted, all through fastenings in way of stringers shall pass through the planking.

**5.7.92 DECKING**

Shall be fastened at each beam with one flat or dump when the width of the deck plank is 100 mm or less and two flats or dumps when the width exceeds this. The fastenings shall be recessed and holes filled with edge grain dowels.

**5.7.93 BEAMS**

Shall be fastened to beam stringers and beam shelves by through bolts. Lodging and hanging knees shall be through fastened to beams and frames with not less than two bolts in each arm.

**5.7.94 ENGINE SEATS**

Shall be through bolted through frames or frames and planking at each frame.

**5.7.95 CARLINGS**

Shall be dump or screw fastened to beams and stiffened at each corner with a wooden knee or angle bracket.

**5.7.96 WOODEN BULKHEADS**

Shall be fastened to frames, beams and stiffeners with galvanised nails and screws. When of double skin construction all nail fastenings through planking shall be turned, or clenched on roves.

## 5.7.97 WHEELHOUSE

Shall be secured by through bolts and platewashers spaced not more than 115 mm apart.

## 5.7.98 MASTS

Tabernacles shall be through fastened to beams and stiffeners.

## 5.7.99 GALLOWS, WARPS, BOLLARDS AND LEADS

Shall be through fastened through beams. The space between the beams shall be fitted with filler chocks, and a steel plate or hardwood pad fitted to the underside of chocks and beams. Where leads are fastened to the bulwarks they shall be through bolted and bulwarks suitably stiffened.

## 5.7.100 PAINTWORK

All paints, varnishes, wood preservatives, anti-fouling and bitumen compositions shall be of approved commercial marine standard and quality. Colours to be of owner's choice. Paints used in engine room and accommodation spaces shall be of low flame spread characteristics.

Before any paint is applied, all timber which has not been previously pressure impregnated with preservative, shall receive not less than three coats of preservative liberally applied. All straight lengths of timber, such as decking, timber for bulkheads, floorings and ceiling, etc., shall be pressure treated with a preservative before fitting. All ends and surfaces exposed through cutting during fitting and fairing shall be liberally coated with preservative.

5.7.101 Except as may be otherwise specified herein the hull (internally) shall receive not less than three coats of paint. In way of ceilings and bilges this may be substituted by two coats of bitumen composition.

5.7.102 Hull (externally) above the waterline, shall receive not less than three coats of paint or varnish and below the waterline not less than two coats of bitumen composition, or two undercoats and one coat of anti-fouling composition. The anti-fouling composition shall be applied immediately prior to launching.

5.7.103 Wood superstructure shall be either varnished or painted. If painted not less than three coats shall be applied and if varnished four coats.

5.7.104 Bulwarks, stanchions and hatchways shall receive not less than three coats of paint.

5.7.105 Decks may be left unpainted, but when painted, paint shall be of the non-slip type or alternatively fine silver sand may be sprinkled over ordinary paint whilst it is still wet.

5.7.105 The hold, if painted shall receive not less than three coats of paint to the satisfaction of the Surveyors.

5.7.107 The cabin (except where lined with plastic faced sheeting) shall be either painted, grained, or varnished, at least three coats.

5.7.108 The engine room shall be coated throughout with at least three coats. Tanks and pipe work with the exception of copper or galvanised piping and all other metal fittings shall be painted with at least three coats of anti-corrosive paint.

5.7.109 Steelwork that is not galvanised shall be, wherever possible, shot-blasted and either metal sprayed or coated with an epoxy resin-based or other high duty steel primer. During construction all welding and cut edges and other breaks in the primed surface shall be thoroughly cleansed and coated with a suitable primer. Subsequently, the steel shall receive one further coat of primer all over, followed by one undercoat and one finishing coat.

5.7.110 Steelwork that is neither galvanised nor shot-blasted shall be thoroughly cleaned of all rust and scale and given two coats of high duty steel primer, followed by one undercoat and one finishing coat.

5.7.111 Aluminium alloys shall be degreased, etch primed and coated with a zinc chromate paint before working, and two undercoats and one finishing coat applied. Paints containing lead, mercury or copper shall not be used on aluminium alloys.

#### 5.7.112 PROTECTIVE OR UNDERWATER METALS

An approved method of cathodic protection shall be fitted to all vessels to reduce or eliminate corrosion.

#### 5.7.113 MARKINGS

The lettering and numbering of vessels shall be in accordance with the regulations for the Registry. Lettering and Numbering to Fiji Registry Requirements.

Draught marks shall be cut in and painted at bow and stern, port and starboard.

#### 5.7.114 CAULKING

Plank seams on vessels of carvel construction shall be caulked with best quality caulking cotton. All seams below the waterline shall be payed with pitch, marine glue or stopped with another approved composition. Topsides shall be caulked and stopped with best quality white or red lead putty and all seams shall be painted prior to stopping.

On vessels constructed with clinker type planking, the garboard seams and hood end seams shall be caulked with best quality caulking cotton, painted and stopped with best quality white or red putty or other approved composition.

The deck seams shall be caulked with best quality cotton, and payed with marine glue or other approved composition.

Caulking of planking and decks is to be carefully executed. When finished, caulking should be hardened down to approximately 9 mm below the surface of the plank to allow for paying up or stopping.

## SCANTLING TABLES I TO XII

TABLE 1

Scantling Numeral	KEEL		Stern Post Sdg.	Stem Sdg.	Apron Mld. (mm)	KEELSON		HOG	
	Mld. (mm)	Sdg. (mm)				Mld. (mm)	Sdg. (mm)	Mld. (mm)	Sdg. (mm)
10	125	90	SAME AS KEEL	SAME AS KEEL	65			25 × 150	
15	150	90	SAME AS KEEL	SAME AS KEEL	65			30 × 150	
18	150	100	SAME AS KEEL	SAME AS KEEL	75			40 × 165	
20	150	100	SAME AS KEEL	SAME AS KEEL	75			40 × 165	
25	175	100	SAME AS KEEL	SAME AS KEEL	75			45 × 165	
30	175	115	SAME AS KEEL	SAME AS KEEL	90			50 × 190	
45	180	125	SAME AS KEEL	SAME AS KEEL	90			50 × 190	
60	180	125	SAME AS KEEL	SAME AS KEEL	90			65 × 205	
70	180	125	SAME AS KEEL	SAME AS KEEL	90			75 × 215	
85	205	140	SAME AS KEEL	SAME AS KEEL	90			75 × 240	
100	230	150	SAME AS KEEL	SAME AS KEEL	100			90 × 270	

TABLE II  
FRAMING (SAWN FRAMES ONLY)

Scantling Numeral	Siding			Moulding at			Clamps Siding (mm)
	Single (mm)	Double (mm)	Spacing (mm)	Floor (mm)	Bilge (mm)	Deck (mm)	
10	50	30	305	90	75	50	25
15	50	30	305	90	75	65	25
18	50	30	305	90	75	65	25
20	50	30	305	100	75	65	25
25	50	30	360	100	75	65	25
30	60	40	360	115	90	75	30
45	65	45	360	125	100	75	40
60	65	45	360	125	100	85	40
70	65	45	380	125	100	65	40
85	70	50	380	140	100	85	45
100	70	50	380	150	115	90	45

TABLE III

SAWN AND BENT FRAMING

Scantling Numeral	Sawn Frames with Bent Frames Between						Spacing of Grown Frames with 1, 2, 3 Bent Frames			Bent Frames Only		
	Grown Frames			Bent Frames			One (mm)	Two (mm)	Three (mm)	Spacing (mm)	Sdg. (mm)	Mld. (mm)
	Sdg. (mm)	Floor (mm)	Moulding at Bilge (mm)	Head (mm)	Sdg. (mm)	Mld. (mm)						
10	50	90	75	50	30	20	—	510	660	150	30	20
15	50	90	75	65	35	20	—	540	710	165	30	20
18	50	90	75	65	40	20	400	585	760	180	40	20
20	50	100	75	65	40	20	400	585	760	180	40	20
25	50	100	90	75	45	20	430	620	810	190	45	20
30	60	115	90	75	45	25	465	665	875	205	45	25
45	65	125	100	75	45	30	465	665	875	205	45	25
60	65	125	100	75	45	30	510	725	924			
70	65	125	100	75	50	30	510	725	925			
85	70	140	100	75	50	35	510	725	925			
100	70	140	100	75	60	35	510	725	925			



**TABLE IV**  
**PLANING (CARVEL), STRAKES, STRINGERS, BEAM SHELF**

Scantling Numeral	Hull and Deck Planking (mm)	Strakes			Stringers		Beam Shelf (cm <sup>2</sup> )
		Sdg. (mm)	Bilge No.	Rubbing No.	Bilge (cm <sup>2</sup> )	Beam (cm <sup>2</sup> )	
10	20	45	1	—	20	—	—
15	20	45	1	—	20	—	—
18	20	45	1	—	25	—	—
20	20	50	1	—	25	—	—
25	25	50	1	—	30	—	—
30	25	50	1	—	30	—	—
45	30	55	1	—	35	—	—
60	30	55	1	1	50	65	65
70	30	60	1	2	50	75	65
85	35	60	1	2	50	75	65
100	40	60	1	2	65	90	65

TABLE V

## PLANKING (CLINKER), RISING, GUNWALES, CAPPINGS

Scantling Numeral	Hull Planking (mm)	Deck Planking (mm)	Risings		Gunwales		Cappings Sdg. (mm)
			Sdg. (mm)	Mld. (mm)	Sdg. (mm)	Mld. (mm)	
10	12.5	20.0	25	65	25	75	20
15	12.5	20.0	25	65	25	75	20
18	15.0	20.0	25	70	30	75	20
20	15.0	22.5	25	70	35	75	25
25	15.0	22.5	30	75	40	75	25
30	20.0	25.0	35	75	40	90	25
45	20.0	27.5	35	75	40	90	30
60	22.5	27.5	40	75	50	100	30

TABLE Va

## LAND OR LAP WIDTHS

Scantling Numeral	Plank Thickness (mm)	Width of Land or Lap (mm)
10	12.5	20
15	12.5	20
18	15.0	25
20	15.0	25
25	15.0	30
30	20.0	30
45	20.0	30
60	22.5	30

TABLE VI

## TRANSOMS

Scantling Numeral	Type (Thickness)		Fashion Piece Sdg.	Transom Knee Sdg. (mm)
	Double Skin Construction (mm)	Solid Construction (mm)		
10	10	30		75
15	10	30		75
18	15	40		85
20	15	40		85
25	20	45		100
30	20	45		110
45	20	45		110
60	20	50		115
70	20	50		115
85	25	50		125
100	25	50		125

## TABLE VII AND VIII

## BEAMS

Scantling Numeral	Close Spacing			Spacing (mm)
	Main Beams Siding (mm)	Ordinary Beams Siding (mm)	Moulding at Centre (mm)	
10	65	35	75	280
15	65	35	75	280
18	70	40	90	305
20	70	40	90	305
25	75	45	100	360
30	75	50	100	360
45	90	50	110	360
60	90	60	110	360
70	90	60	115	400
85	90	65	125	400
100	95	65	125	400

TABLE IX

## CARLINGS, BEAM KNEES, THWARTS AND KNEES

Scantling Numeral	Carlings		Beam Knees Hanging Sdg.	Beam Knees Lodging Sdg.	Thwarts Siding (mm)	Thwart Knees Siding (mm)
	Mld. (mm)	Sdg. (mm)				
10	—	—	—	—	45	30
15	—	—	—	—	45	30
18	—	—	—	—	50	40
20	—	—	—	—	50	40
25	—	—	—	—	50	45
30	—	—	—	—	55	45
45	—	—	—	—	60	45
60	110	90	75	75	—	—
70	110	90	75	75	—	—
85	115	90	75	75	—	—
100	115	90	75	75	—	—

TABLE X

## BULWARKS

Scantling Numeral	Stachions Siding (mm)	Planking Siding (mm)	Washstrake Rails			Stringers	
			Siding (mm)	Sdg. (mm)	Mld. (mm)	Sdg. (mm)	Mld. (mm)
70	75	20	25	125	50	100	50
85	85	20	25	125	50	100	50
100	85	20	25	125	50	100	50

TABLE XI

## BOLTS: MINIMUM DIAMETERS

Scantling	Keel: Apron Stem, Stern and Hog (mm)	Beams and Beam Shelf (mm)	Risings, Stringers and Gunwales (mm)	Frame, Champs and Futtocks (mm)
10	10	6	6	6
15	10	6	6	6
18	10	6	6	6
20	10	6	6	6
25	12	8	8	8
30	12	10	10	10
45	12	10	10	8
60	12	10	10	10
70	12	10	10	10
85	12	10	10	10
100	16	12	10	10

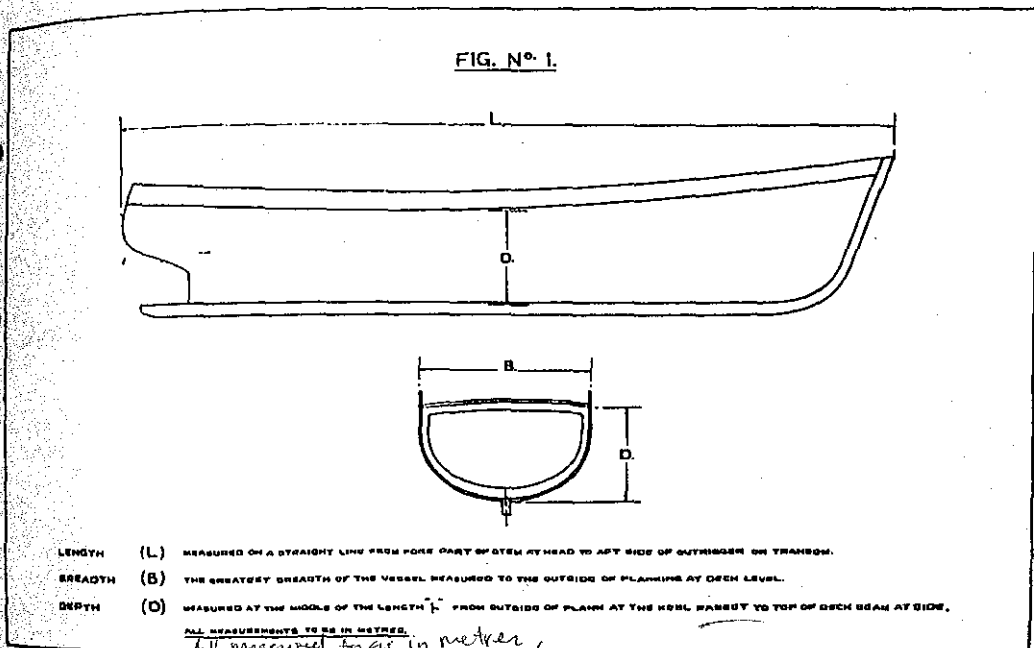
## TABLE XII

## RUDDERS

Scantling Numeral	Stock		Blade		Chains Dia. (mm)	Rods and Shackles Dia. (mm)	Wire Circ. (mm)
	Steel Dia. (mm)	Wood Sdg. (mm)	Steel Thk. (mm)	Wood Sdg. (mm)			
10	—	40	8	40	—	6	25
15	—	40	8	40	—	6	25
18	—	45	8	45	—	8	29
20	—	45	8	45	—	8	29
25	—	60	8	60	—	8	29
30	40	65	10	65	6	10	34
45	40	65	10	65	8	12	34
60	45	65	10	65	8	12	34
70	45	70	10	70	8	12	34
85	45	75	10	75	8	12	34
100	45	75	10	75	8	12	34

ILLUSTRATION OF NAMES OF PARTS OF A SMALL CRAFT

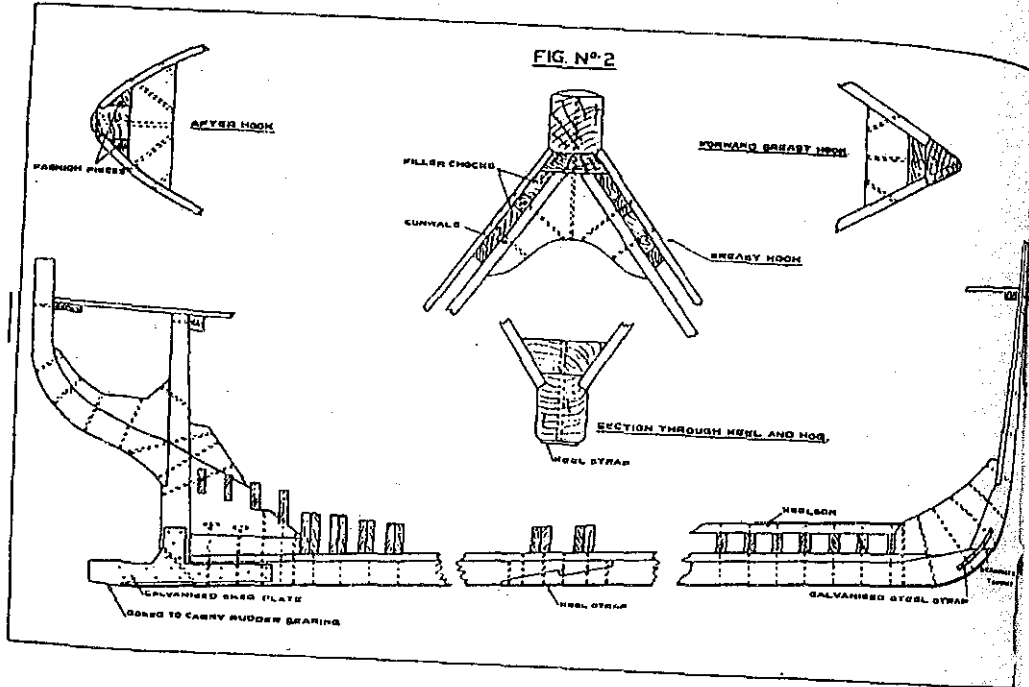
These 8 figures are intended as a guide to naming parts of a craft, and do not imply any exact constructional design.



- (L) Measured on a straight line from fore part of stem at Head to aft side of outrigger or transom
- (B) The Greatest breadth of the vessel measured to the outside of planking at open level.
- (D) Measured at the middle length "L" from outside of planking at the keel — to Top Deck Beam at side.



*Patent*



NO. 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100

FIG. N° 3

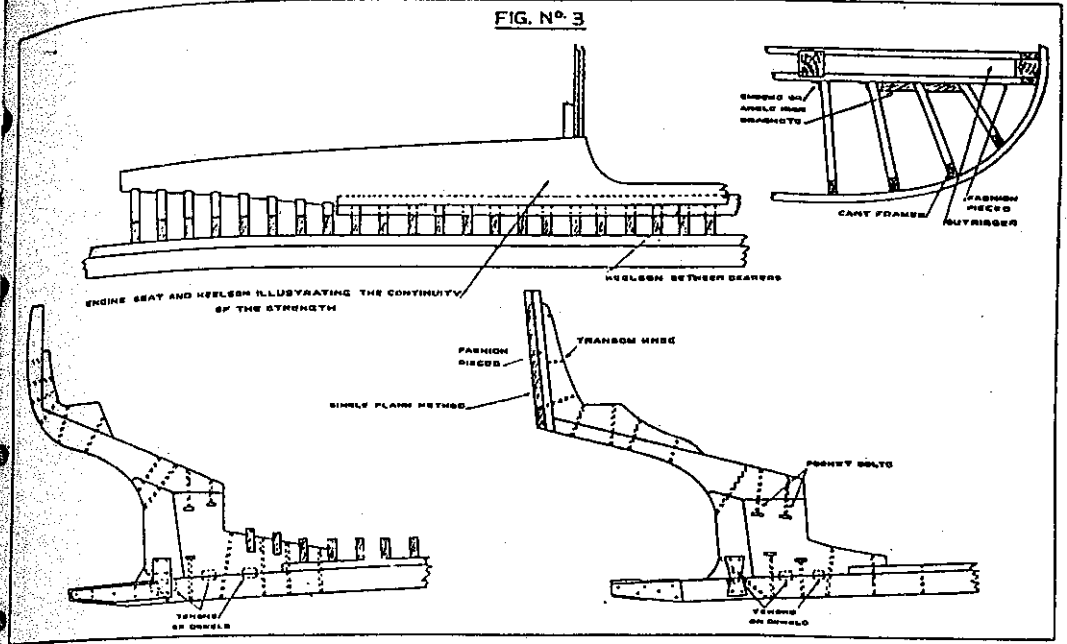


FIG. N° 4

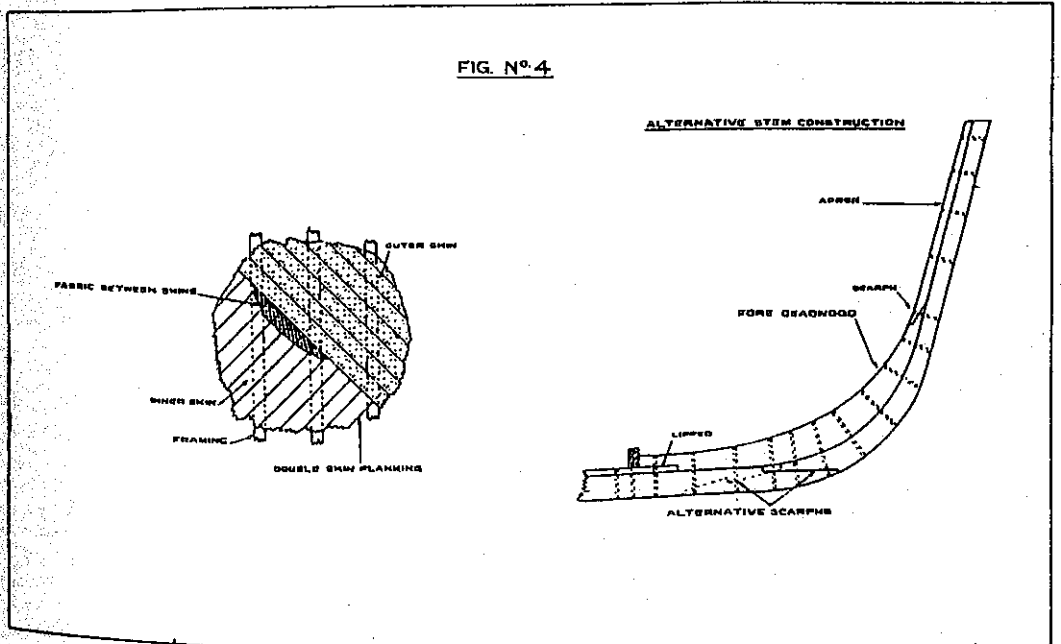


FIG. N° 5

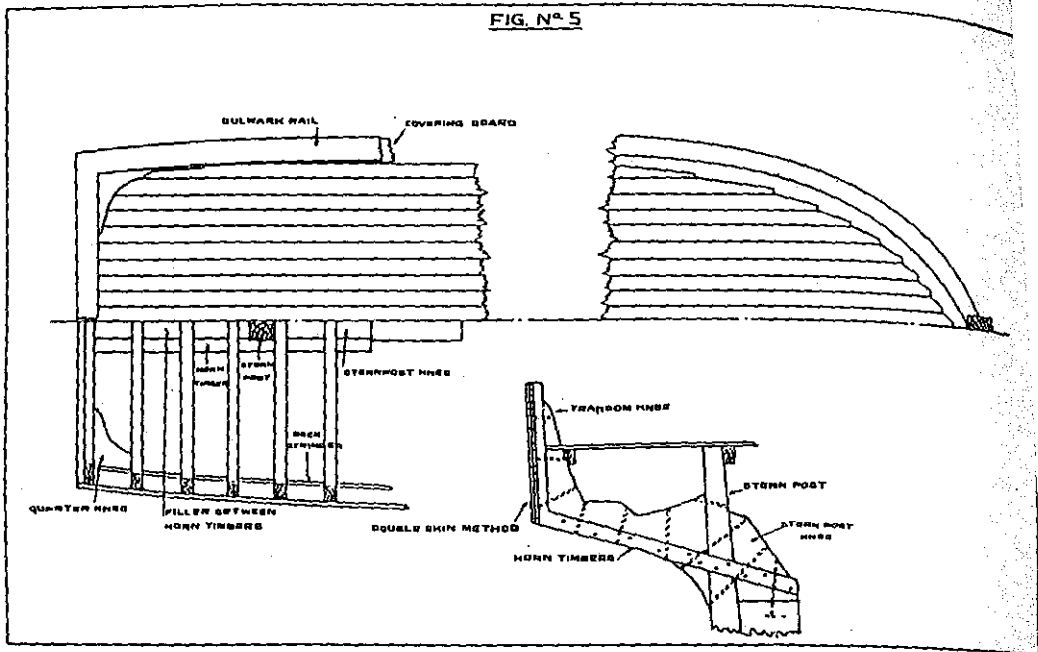


FIG. N° 6

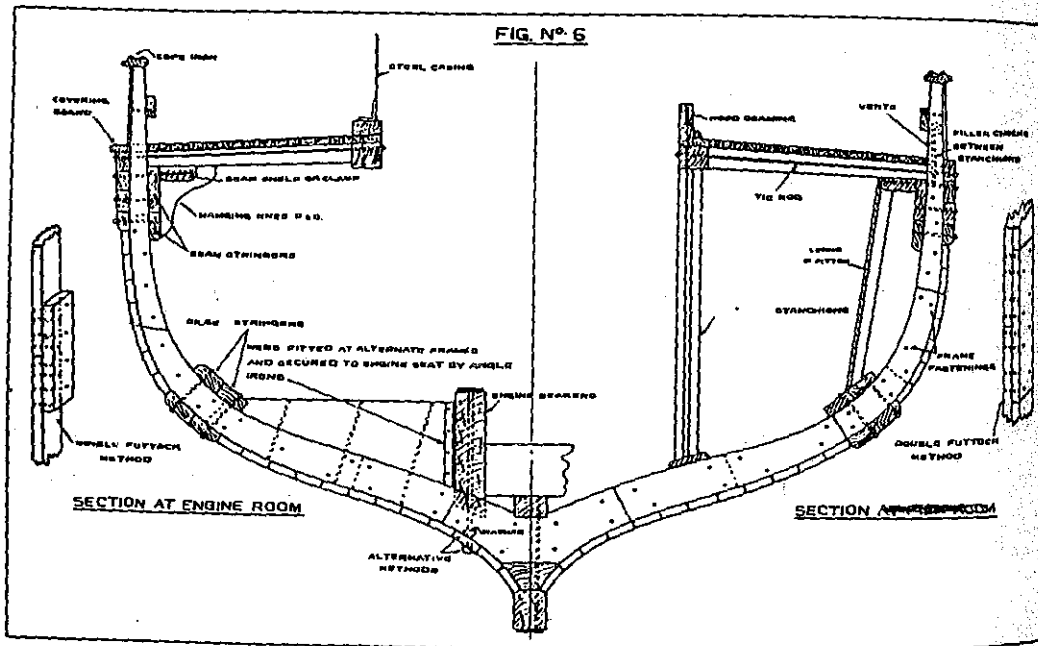


FIG. N° 7

BEAM AND BEAM KNEE CONSTRUCTION

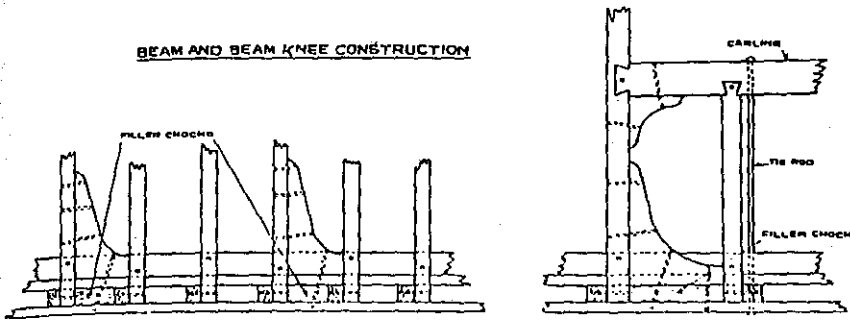
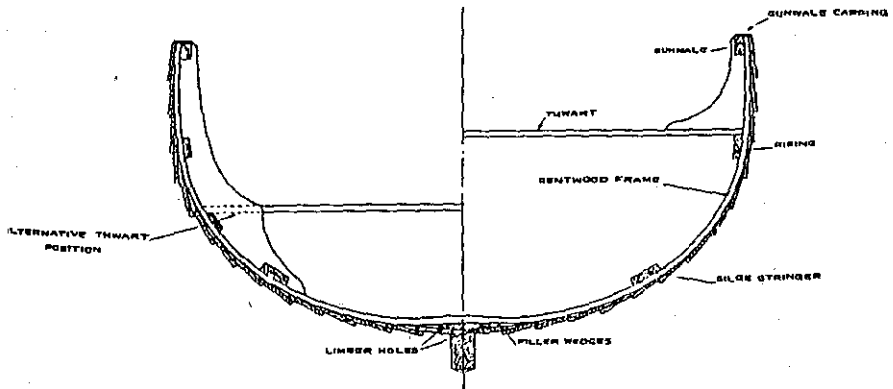


FIG. N° 8

CLINKER PLANKED OPEN TYPE  
VESSEL



Section 6

LOADLINES

6.1 All vessels licenced to trade shall be assigned a freeboard.

6.2 A loadline as described in para 6.4 shall be permanently marked, each side of the vessel amidships, so that the centre of the disc indicates the assigned freeboard below the upper edge of the freeboard deck. If there are portholes below the freeboard deck, the freeboard shall be calculated as below the lowest part of the port opening. The deck line shall, however, always be shown at the actual deckline. For vessels without a continuous deck the freeboard shall be measured below a fore and aft horizontal line through the lowest point on the gunwhale.

6.3 Vessels trading within Harbours and Rivers only may not be required to show the loadline mark, at the discretion of the Marine Board.

6.4 THE LOADLINE MARK

The loadline mark shall consist of:

6.4.1 A horizontal line 220 mm long and 20 mm wide.

6.4.2 A disc, centred on the upper edge of the line and of 80 mm outer radius, 60 mm inner radius.

The loadline shall be so cut in, welded on, or otherwise marked that it cannot be easily obscured or moved. It shall be painted a colour conspicuous from the hull colour.

6.5 FREEBOARD

6.5.1 For all vessels having a continuous watertight deck and where hatchways are secured watertight by steel covers or equivalent means:

200 millimetres

6.5.2 For all vessels having a continuous deck and where hatchways are secured watertight by wooden boards and tarpaulins:

250 millimetres

6.5.3 For all vessels which are open or only partly decked:

10 metres length.....	500 millimetres
6 metres or less in length.....	400 millimetres

Freeboards for intermediate lengths are to be obtained by linear interpolation.

6.5.4 In addition to the freeboard assigned in clauses 1, 2 or 3 above. The freeboard shall if necessary be increased for carriage of passengers, such that if all the passengers the vessel is licenced to carry are placed on one extreme side of the vessel on the uppermost deck, while the vessel is fully loaded, the resultant list will not submerge the loadline more than 50% of such freeboard assigned.

For this purpose it is assumed 13.6 persons weigh one ton.

6.6 CONDITIONS OF ASSIGNMENT

Vessels licenced to trade in the Fiji Islands Trade and the Seagoing service shall so far as possible comply with the conditions of assignment of vessels of their class. of 10 metres and over in length as specified in the "Fiji Maritime Code".

6.7 Vessels licenced to trade in the River Harbours and Inland Water service may meet a less stringent standard at the discretion of the Marine Board.

#### 6.8 VALIDITY OF THE ASSIGNED FREE BOARD

The assigned freeboard shall remain valid for the period of the validity of the Certificate of Seaworthiness subject to the vessel not having sustained alterations in design or operation nor excessive damage to hull superstructure, or watertight integrity.

6.9 The assigned freeboard shall be shown on the certificate of seaworthiness.

### SECTION 7

#### STABILITY

7.1 The stability of a vessel less than 10 metres in measured length may be considered satisfactory if the metacentric height (GM) in the worst anticipated condition of loading is not less than 0.75 m and the angle of deck edge immersion at the point of lowest freeboard is not less than 14°.

7.2 For the purposes of clause 7.1 above, the vessel may be subject to a Rolling Period Test and the GM obtained from the following formula:

$$GM = \left( \frac{F_r B}{T_r} \right)^2$$

where GM = metacentric height (metres)

B = moulded breadth of vessel (metres)

$T_r$  = time for one complete oscillation (i.e. for one complete roll port-starboard-port or vice versa) (seconds)

$F_r$  = rolling period factor determined from the following table:

<i>Conditions of vessels</i>	<i>Rolling period factor</i>
(a) Empty vessel.....	0.88
(b) Vessels carrying ballast.....	0.88
(c) Vessel fully loaded and with liquids in tanks comprising the following percentage of the total load on board (i.e. cargo, liquids, stores, passengers etc.)	
(1) 20 per cent of total load.....	0.78
(2) 10 per cent of total load.....	0.75
(3) 5 per cent of total load.....	0.73
(Order of accuracy of factors + 0.05)	
(Order of accuracy of factors -	

7.3 To determine the time for a complete oscillation (t) the following precautions should be observed:

- (a) The test should be conducted with the vessel in harbour, in smooth water and with the minimum interference from wind and tide.
- (b) Starting with the vessel at the extreme end of a roll to one side, and the vessel about to move towards the upright, one complete oscillation will have been made when the vessel has moved across to the other extreme side and returned to the original starting point and is about to commence the next roll.
- (c) By means of a stop watch, the time should be taken for about five complete oscillations, and this operation repeated at least twice more. If possible each time the operation is repeated the same number of complete oscillations should be timed to establish consistency within reasonable limits. From the total time for the total number of oscillations, the mean time ( $T_p$ ) for one complete oscillation can be calculated.
- (d) The roll may be induced by pulling on the mast with a rope, or by rhythmically lifting up and putting down a weight as far off the centreline of the vessel as possible—by sallying people from side to side in unison or by any other means.
- (e) As soon as the induced rolling has commenced, the means by which the roll has been induced must be removed and the vessel allowed to roll freely and naturally. Where weights are used from dockside cranes the weight is to be removed to the wharf. If the vessel's own derrick is used, the weight should be landed on the deck at the centreline. Where the roll is induced by sallying people from side to side, those persons should be returned to the vessel's centreline.
- (f) The timing of oscillations should only begin when it is judged that the vessel is rolling freely and naturally.
- (g) The moorings are to be slack and the vessel breasted clear of the dockside.
- (h) Care should be taken to ensure reasonable clearance under the keel and around the sides of the vessel.
- (i) Any weights on board of reasonable size which may be liable to move during the induced rolling should be secured against such movement.

7.4 This method shall only be applied to vessels possessing normal geometric characteristics (i.e. vessels having a L/B ratio of 4.0 or less). For vessels of other than normal geometric characteristics and vessels of normal geometric characteristics having a GM less than 0.75 m or angle of deck edge immersion less than 14°, the matter shall be referred to the Principal Surveyor, who may require an inclining test to be carried out. Where the GM is in excess of 0.75 m the Surveyor may permit the angle of deck edge immersion to be reduced to not less than 10°.

7.5 The worst anticipated condition of loading is to be taken as follows:

7.5.1 The vessel is fully loaded to her marks with homogeneous cargo and total of passengers and crew, less the fuel stores and water referred to in 7.5.2.

7.5.2 The water and fuel tanks are slack and some stores have been consumed as for on arrival condition after a longest expected voyage.

7.5.3 Passengers baggage is stored in the appointed place.

7.5.4 The total complement of passengers and crew, of an average weight of 75 kg each and centre of Gravity 1.0 m above the deck is standing on one extreme side of the vessel on the highest deck available, concentrated at 4 persons per square metre.

7.6 For the purposes of Clause 7.1 above it should be noted that the vessel's deckline for freeboard shall be considered as below the level of any openings in the hull which cannot be closed weather tight.

## SECTION 8

### ENGINEERING:

1. General
2. Machinery
3. Electrical
4. Personnel protection

## SECTION 8

### ENGINEERING

#### 8.1 GENERAL

8.1.1 The following general requirements shall apply—

- (a) Design—Corrosion and Abnormal Loadings  
Where any item detailed in this Section is subject to rapid corrosion, other rapid form of deterioration or to abnormal loading, such item shall be subject to special attention.
- (b) In any pipe system provision shall be made to avoid excessive stress in any part due to expansion and contraction resulting from variation in temperature or due to vibration and shall otherwise take account of the effects of corrosion and external mechanical damage.
- (c) Astern Power  
Where shaft power available for propulsion exceeds 5Kw, astern power shall be provided for adequate manoeuvrability under normal operating conditions.
- (d) Access to Machinery  
The design of a machinery space shall be so arranged as to permit reasonable access to all items of the installation which may require attention in service.
- (e) Machinery Identification  
All controls for operating the machinery, and all measuring devices, pumping systems, valves, cocks, air pipes sounding pipes, switches etc. shall be permanently marked with appropriate inscriptions clearly showing their purpose.
- (f) The provisions of this sub-clause need not apply if the surveyor considers it to be unnecessary.

#### 8.2 MACHINERY

##### 8.2.1 Main Engine

Subject to the next succeeding sub-clause of this clause, a vessel shall be provided with a main engine of a type designed and manufactured for marine use having regard to their intended purpose and shall operate on fuel having closed flash point of not less than 60°C.



Engines which operate on fuel having a closed flash point of less than 60°C may only be used on vessels of less than 7.5 m in length using outboard engines.

#### 8.2.2 Machinery Seatings

Each item of machinery shall be securely bolted to a rigid seating. Fitted and/or clearance bolts may be used and suitable arrangements are to be provided to prevent the bolts from becoming slack.

**Wood and Glass Reinforced Plastic (GRP).** Where the machinery seating are of wood or GRP the upper face of recesses to accommodate the nuts and washers of the holding down bolts are to be located at a depth, below the upper face of the seating, sufficient to ensure ample material in compression when the bolts are tightened.

#### Resilient Mountings

When resilient mountings are fitted the output shaft is to be connected to a flexible coupling. Satisfactory arrangements are to be made to transmit thrust.

#### 8.2.3 Instrumentation

Instruments shall be suitable for main use, capable of withstanding vibration and shock and be so installed and illuminated as to be readily visible.

#### Items Monitored

All engines essential for the safe operation of the vessel shall, to the extent that the design and manufacture allow, be provided with instruments indicating the following:

- (a) engine lubricating oil pressure;
- (b) engine jacket cooling water outlet temperature;
- (c) engine gear box lubricating oil pressure;
- (d) charging rate of generator; and
- (e) in the case of propulsion machinery, the rotational speed.

#### 8.2.4 Starting Arrangements

Where the main engine or engines are not fitted with hand starting to be capable of being developed on board without external aid. If for this purpose:

- (a) an electric generator or air compressor is required, the unit shall be power driven by a hand starting engine. A hand operated air compressor may be accepted and in the case of electric starting a standby set of batteries may be accepted.
- (b) a hydraulic accumulator is required, then the accumulator shall be capable of being pressurised by hand.

#### Materials

Exhaust pipes and silencers shall be of steel, copper or other approved material. The use of reinforced synthetic rubber hose may be permitted for exhaust pipes on engines having water cooled exhaust. Except for reinforced synthetic hose enclosed in a gastight trunk as required for protection of accommodation space all of the hose shall be readily visible.

#### Thermal Protection

Exhaust piping and silencers are to be water cooled or efficiently lagged. The exhaust system is to be so installed as to prevent the transfer of heat to readily combustible materials.

### Height of Discharge

Exhaust pipe discharges which are led through the hull below deck level are to be installed as high above the load water line as practicable and shall not be installed at a height less than 225 mm above the loadline. The Marine Board may approve a lesser height in cases where the pipe rises to an equivalent height within the hull in close proximity to the discharge end.

### Back Flooding

The exhaust system shall be so designed and installed as to prevent sea water or exhaust cooling water entering the engine manifold.

### Protection of Accommodation Space

An exhaust pipe which passes through an accommodation space shall be enclosed in a gas tight trunking.

### Location of Discharge

Where an exhaust pipe is led above the deck it shall be installed well clear of space openings so as to limit the products of combustion passing back into any space in the vessel.

### Layout-Support

Exhaust pipes shall be led to the point of escape with a minimum number of bends or elbows and be adequately supported.

## 8.2.6 Engine Cooling Systems

### Air Cooling

In air cooled engines the cooling air discharge shall be separately trunked to the open air.

### Water Cooling

In water cooled engines an adequate supply of sea water shall be provided for cooling purposes. A cooling water pump may be driven by the engine it serves or be independently driven. In vessels propelled by a single main engine exceeding 400 Kw brake power, provision is to be made for an emergency supply of cooling water from a separate power pump which may be driven by the engine.

## 8.2.7 Ventilation of Machinery Spaces

### Aspiration

Adequate ventilation shall be provided in the engine room and all other enclosed machinery spaces. The volume of air provided shall be not less than that necessary for the efficient aspiration and efficient operation of the main engines and other machinery. Such ventilation shall be obtained with all access openings closed.

### Ventilator Sizes for Natural Ventilation

The engine room shall be furnished with an inlet and exhaust ventilator each of which is to have a minimum size of 100 cm<sup>2</sup>. Outlet ventilators shall not discharge within one metre of a possible source of ignition. Ventilators shall be so located that exhaust air will not be taken into supply vents.

## 8.2.8 Gear Boxes

Gear boxes shall be of the marine type and suitably matched to the prime mover with which they are to be used. When coupled to the engine it shall not be possible to exceed the limiting power, torque, speed or thrust of any component of the gear box.

### 8.2.9 Propeller Shafting

The diameter of the propeller shall not be less than that recommended by the manufacturer and shall be subject to the decision of the Surveyor.

### 8.2.10 Universal Joint Couplings

Universal joints may be incorporated in the propulsion shafting between the engine and thrust block. The installation shall be such as to limit the stresses set up by cyclic irregularities. Effective arrangements are to be provided to prevent damage to the hull or structure of the vessel due to flailing of the shaft should the universal joint elements fail to service.

### 8.2.11 Stern Bearings

Grease lubricated white metal bearings, or water lubricated bearings which are lined with rubber composition or other suitable material, shall not be less in length than four times the diameter of the propeller shaft.

### 8.2.12 Fuel Systems for Fuel Flashpoint of 60°C or over

- (i) **Fuel Tanks Forming Part of the Hull Structure** Fuel tanks forming part of the vessel's hull structure shall comply with the relevant provisions of the Construction Section.
- (ii) **Free-Standing Non-Portable Metal Fuel Tanks.** Free-Standing non-portable metal fuel tanks shall be substantially constructed of carbon steel, stainless steel, copper or marine grade aluminium alloy. No part of the fuel tank shall depend on soft solder for tightness. Where a dimension parallel to the longitudinal axis of a tank exceeds 1 m, baffles spaced not more than 1 m apart may be required. The minimum thickness of carbon steel used in the construction of a fuel tank shall be determined using the dimensions of the largest unsupported panel but shall not be less than 3 mm.
- (iii) The pressure test of a tank shall be carried out prior to its installation in the vessel.

#### Installations with Non-Portable Fuel Tanks

##### (iv) Fuel Tank Pressure Test

A fuel oil tank shall be subjected to a test equivalent to 2.5 m of fresh water above the top of the tank or to the maximum head to which the tank may be subject in service, whichever is the greater.

##### (v) Fuel Tank Location

Taking account of the possibility of overflow, leakage or rupture, fuel storage tanks and piping should be arranged to minimize the possibility of fuel coming into contact with a hot surface or electrical components which may result in outbreak of fire. Fuel tanks should not be fitted over stairways and ladders, hot surfaces and electrical equipment. However, where this is unavoidable, each tank shall be provided with a self draining save-all. The Authority may waive this requirement where the fuel tank is supplied as an integral part of the engine.

##### (vi) Fuel Tank Venting

The vent pipe for a fuel tank shall be of size sufficient to prevent generation of pressure. Where the tank filling is effected by pumping through the filling line, the area of air escape shall not be less than 1.25 times the area of the filling pipe. The pipe shall terminate in a gooseneck, the top of the bend not being less than the height of the bulwark or the top of the guard rail. Where the pipe outlet exceeds 18 mm in

diameter a corrosion resistant wire gauze screen shall be fitted. The open area of the screen shall be not less than the cross-sectional area of the vent pipe. Where the Authority considers the provision of a suitable vent pipe is not practicable it may permit a small vent hole in the filling cap.

- (vii) **Fuel Tank Inspection Opening**  
A suitable manhole or handhole to facilitate cleaning and inspection shall be provided except that this requirement may be dispensed with in the case of free-standing non-portable tanks which have a capacity of less than 800 litres.
- (viii) **Fuel Shut-off**  
A shut-off valve or cock shall be fitted in each tank outlet line. Non-metallic piping and fittings shall not be fitted in the line between the tank and this shut-off valve or cock.
- (ix) **Fuel Tank Filling**  
Each fuel oil tank shall be provided with a permanent filling pipe of suitable material led from the deck to the top of the tank. Where the Authority considers that a flexible section is necessary between the deck and tank fitting, the flexible section shall be of reinforced synthetic rubber piping which is resistant to fuel, salt water and vibrations. It shall be fastened to the deck fitting and tank fitting with corrosion resistant clips.
- (x) **Fuel Tank Contents Measurement**  
Suitable means shall be provided for determining fuel tank contents and they shall be such that in the event of a tank being overfilled, spillage through them shall not occur.
- (xi) **Fuel Tank Drain**  
Each fuel service tank having a capacity of 400 litres or more shall be fitted with a drain valve or drain cock, the open end of which is blanked with a screwed plug. Tanks having a capacity less than 400 litres shall be fitted with a screwed drain plug.

#### 8.2.13 Fuel System for Fuel with a Flashpoint less than 60°C but not including Installations which Employ Portable Fuel Tanks.

- (i) **Gravity Feed Fuel System**  
Engines employing a gravity feed fuel system will not be permitted except that this requirement may be waived in the case of small engines with a tank not exceeding 10 litres capacity.
- (ii) **Fuel Tank Capacity**  
Fuel tanks shall be no larger than necessary for the intended service of the vessel but shall be of sufficient capacity to prevent them having to be filled at sea. No loose cans of fuel shall be carried on board a vessel for this purpose.
- (iii) **Fuel Tank Location**  
Fuel tanks shall be securely installed in position as remote from the engine and exhaust pipes as practicable. When they are installed in a compartment the compartment shall be well ventilated. Provision is to be made to allow, as far as practicable, the external inspection of the tanks and fittings.
- (iv) **Fuel Tank Filling Pipe**  
Fuel tanks shall be provided with a filling pipe so arranged as to prevent fuel spilling entering the vessel. The filling pipe is to extend internally to near the bottom of the tank and shall be fitted with a

watertight cover. Where the Authority considers that a flexible section is necessary between the deck and tank fitting, the flexible section shall be of a reinforced type having a synthetic rubber inner tube and be resistant to fuel, salt water, and vibration. It shall be secured to deck and tank fittings with corrosion resistant metal clips

(v) Fuel Pump Suction

When a fuel pump is employed, the fuel shall be drawn from the tank by means of a pipe extending internally from the top of the tank to near the bottom of the tank. An anti-syphon device shall be provided in the line.

(vi) Fuel Tank Venting

A vent pipe shall be led from each tank to an open position where no danger will arise from escaping vapour.

(vii) Fuel Piping

Fuel piping shall be of seamless steel or heavy gauge copper. The piping shall be connected by metal to metal joints of the conical type or by other acceptable means. Where cone nipples are used they are to be welded. Olive type compression fittings shall not be used. Connections in pipes shall be kept to a minimum and shall be so located as to be readily visible and accessible. A short length of flexible piping may be fitted in the section of line between the engine and bed and the fuel lift pump. Such flexible piping shall be of metal braided reinforced type having a synthetic rubber inner tube and must have a high resistance to salt water, petroleum products and vibration.

(viii) Electric Bonding

All elements of the fuel installation shall be electrically bonded.

8.2.14 Fuel System for Fuel with a Flashpoint less than 60°C and which Employ Portable Fuel Tanks.

(i) Portable fuel tanks shall:

- (a) be not more than 30 litres capacity;
- (b) be designed and constructed to allow ease of handling and be provided with means for locating and securing against movement;
- (c) be manufactured from metal which is corrosion resistant or coated to provide protection from corrosion and where necessary shall have mated parts that are galvanically compatible;
- (d) have all service and vent openings above the full contents level;
- (e) be fitted with a fuel contents gauge;
- (f) have base areas in proportion to their height to minimise upsetting.

(ii) Where the vessel is fitted with a flush or sealed deck, portable fuel tanks shall be situated above that deck in such a position as to prevent any spillage of fuel from draining below the deck.

(iii) Where portable fuel tanks are fitted, the fuel lines shall be of heavy duty synthetic rubber fitted with bayonet type fittings which when disconnected will automatically shut off fuel from the tank.

8.2.15 Shiplside Valves and Sea Water Piping

(i) Inlet and Discharge Valves—General

All sea inlet and overboard discharge pipes shall be fitted with screw-down valves or cocks unless required otherwise by the Load Lines Section and except that:

- (a) discharge valves or cocks shall not be required in the case of discharges (including sanitary discharges) having bore diameters

not exceeding 50 mm and the lowest points of which are not less than 230 mm above the load water line; and

- (b) discharges which are led through the vessel's side from spaces above the main deck may be fitted with non-return valves in lieu of screw down valves or cocks.
- (ii) **Requirements for Valves and Cocks**  
Valves and cocks shall be of bronze, cast steel or equivalent material. Where a valve with a screwed cap is a sea injection valve or a valve controlled by an extended spindle, the cover shall be secured so that it cannot slacken when the valve is operated.
- (iii) Shipside valves and cocks with a bore greater than 50 mm shall be of the flanged type. Valves and cocks not greater than 50 mm bore may be of the screwed type.
- (iv) Valves and cocks of the screwed type shall be secured to the hull of the vessel by means of a suitable skin fitting or standpipe. The finished wall thickness of any such fitting or stand pipe shall not be less than the thickness of the hull plating to which it is attached.
- (v) The valves or cocks must be so fitted that they are readily accessible at all times.
- (vi) Gratings shall be fitted on the outside of the hull, to all sea water inlets. The clear area through the grating shall be not less than twice the area of the valve connected.
- (vii) **Pipe Materials**  
All pipes that can be placed in communication with the sea to be of heavy gauge copper or steel. Suitable reinforced synthetic rubber piping having a high resistance to salt water, fuel oil, heat and vibration, and capable of operation under suction without collapse and resultant reduction in effective area, may be used provided that the length of piping does not exceed half the beam of the vessel, the run of piping is direct as practicable and it is adequately supported. When installed the rubber piping shall be readily visible and protected against mechanical damage and contact with hot surface.
- (viii) **Securing or Flexible Pipe**  
The method of securing a flexible pipe to a rigid pipe or fitting shall be by corrosion resistant clips or pressed ferrules.

#### 8.2.16 Bilge Pumping Arrangements

- (i) Subject to paragraph (ii) every vessel shall be provided with a pumping system capable of pumping from and draining any water tight compartment in the vessel.
- (ii) A watertight compartment less than 7% of the total under deck volume may be drained into the adjacent compartment by means of a self-closing valve or cock. The valve or cock shall be fitted outside the compartment to be drained and shall be operable from a readily accessible position.
- (iii) **Number and Capacity of Pumps**  
Vessels shall be provided with 2 bilge pumps with a capacity of 4.0 Kl/hr.
- (iv) A power pump may be substituted for a manually operated pump. A power pump may be driven by a main engine, and auxiliary engine or by an electric motor. However, where 2 power pumps are required, each pump shall not be dependent on the same source of power. A bilge pump shall be of the self priming type or be provided with a suitable

priming device. Non-metallic bilge piping may be used so long as it shall have a high resistance to salt water fuel oil, heat and vibration and be capable of operating under suction without collapse and resultant reduction in effective area.

(v) Strainers

Bilge suction shall be fitted with a mudbox strum box or strainer. The Authority may give special consideration to the aforementioned arrangements having regard to the accessibility of a bilge suction. Strainer holes shall not be greater than 10 millimetres diameter and the aggregate area of the holes shall not be less than twice the area of the suction pipe.

(vi) Back Flooding

Bilge piping arrangements shall be so arranged as to prevent water passing from the sea into holds or machinery spaces. The bilge connection to any pump which also draws from the sea shall be either a screw down non-return valve, or a cock which cannot be opened at the same time to the bilges and to the sea.

(vii) Pipe Sizes

No main or branch suction piping is to be less than 32 mm in diameter. The diameter of the bilge piping shall not be less than 25 mm.

### 8.2.17 Sounding Devices and Sounding Pipes

(i) A suitable means shall be provided for determining the liquid content of:

- (a) any watertight compartment, which is not part of the machinery space, including a cofferdam and a double bottom tank; and
- (b) any cofferdam and double bottom tank which is located in the machinery space.

(ii) Where a sounding pipe is fitted it shall:

- (a) for a pipe located outside of the machinery space, extend to a readily accessible position on deck;
- (b) for a pipe located in a machinery space, extend to a readily accessible position. It shall extend to deck level or to a lesser height if the pipe is furnished with a cock having a parallel plug with a permanent secured handle so loaded that on being released it automatically closes the cock; and
- (c) terminate in such a position that there is no danger of over flow spillage on to hot surfaces or electrical equipment.

(iii) The upper end of a sounding pipe shall be provided with means of closing to prevent the free entry of water.

(iv) A sounding pipe shall be as straight as practicable and if curved to suit the shape of the vessel, the curvature shall be sufficient to permit the passage of a sounding rod or a sounding chain.

(v) A sounding pipe shall be of metal not less than 4.5 mm in thickness and be not less than 32 mm internal diameter. A striking plate shall be fitted under the lower end of the pipe.

### 8.2.18 Steering Gear

(i) Number of Means

All vessels except twin screw vessels shall be fitted with two effective independent means of steering, one of which may be a hand tiller, except that where the normal means of steering is a hand tiller an alternative means need not be provided. The secondary or emergency gear shall be capable of being brought speedily into action.

## (ii) Design

The steering gear arrangement shall be of adequate strength and sufficient to steer the vessel at maximum speed. The steering gear shall be so designed that it is not damaged at maximum astern speed.

## (iii) Components that transmit torque, tensile stresses or shock loads shall not be of ordinary cast iron or other similar non-ductile material.

## (iv) Rudder movement should be 35° port and starboard.

## (v) Rudder Stops

Effective means shall be provided to limit vertical movement of the rudder. Effective stops to prevent the rudder coming into contact with the propeller or hull shall be provided.

## 8.2.19 Windlass

(i) A mechanical lifting device provided in a vessel to meet the requirements of the Miscellaneous Equipment Section shall constitute a windlass or capstan. Cable stoppers, claws or similar fastenings shall be provided as necessary between the windlass or capstan and the hawse pipe. The windlass or capstan is to be designed for immediate dropping of the anchor and with an efficient brake.

(ii) For an anchor mass of less than 50 kg, the windlass or capstan may be hand operated provided that the applied effort shall not exceed 155 N when lifting the anchor and total length of cable fitted.

(iii) For an anchor mass of 50 kg and above a power operated windlass or capstan shall be provided. It shall be capable of lifting one anchor and 35 m of its chain cable plus a 20 per cent overload at a speed of not less than 7.5 m per minute.

## 8.3 ELECTRICAL

## 8.3.1 General

(i) This clause shall apply where the electrical supply does not exceed 31 volts D.C.

(ii) Details of electrical power supply arrangements for radio shall comply with requirements of the Radio Equipment Section.

(iii) In every installation all necessary precaution shall be taken to limit electrical equipment from affecting navigational aids.

(iv) Electrical installations associated with an engine using fuel having a closed flash point of less than 60°C, shall be specially considered by the Authority.

## 8.3.2 Distribution

(i) The distribution of electrical power shall be by the two wire insulated system. The use of a hull return for lighting or power distribution is not permitted.

(ii) The voltage drop in any circuit shall not exceed 10% of the design voltage.

(iii) The connected load so determined is not to exceed the rating of the fuse or fuses required to protect the conductors.

## 8.3.3 Switchboards

Switchboards shall be constructed using an insulating material that is mechanically strong, non-hygroscopic and non-flammable.



### 8.3.4 Navigation Lights

Each navigation light shall be protected in each active conductor by a fuse or circuit breaker. Switches and protective devices for these lights shall be located in the wheel house.

### 8.3.5 Battery Charging Equipment

There shall be fitted suitable control equipment for generators and batteries including ammeters, isolating switches, voltage regulators, cut outs and fuses or circuit breakers.

### 8.3.6 Fittings in Exposed Positions

Plugs and sockets in exposed positions shall be weathertight and sockets are to be provided with blank caps. External sockets shall be at least 300 mm above the deck and be combined with a tube of compatible material to enclose cables passing through the deck.

### 8.3.7 Electrical Equipment—Low and Medium Voltage

In every installation which is AC or where the DC voltage exceeds 32 the electrical equipment and installation shall be such that the vessel and all persons on board are protected against electrical hazards and shall conform with the relevant provisions of the Regulations for the Electrical and Electronic Equipment of Ships issued by the Institution of Electrical Engineers of the United Kingdom or the relevant provisions of a classification society and the earthing arrangement requirements of equipment manufacturers. All work shall be carried out by electricians recognised by the Authority.

## SECTION 9

### LIFESAVING EQUIPMENT SPECIFICATIONS

#### SECTION 9

#### LIFESAVING EQUIPMENT SPECIFICATIONS

#### 9.1 GENERAL

9.1.1 Unless otherwise specified in this section all equipment shall meet the standards required by the SOLAS CONVENTION.

#### 9.2 APPROVED BOAT

##### 9.2.1 Construction and Capacity

- (a) Every approved boat shall be an open boat constructed with rigid sides, or an inflatable boat of a design type approved by the Fiji Marine Board.
- (b) The boat shall be of such form and proportions that it shall have ample stability in a seaway and sufficient freeboard when loaded with its equipment and the number of persons it is licenced to carry.

- (c) The maximum number of persons the boat is certified to carry shall be calculated as follows:

$$\text{No.} = \frac{A}{0.372}$$

Where A is the surface area in the boat available to persons sitting so higher than the thwarts;

OR,

The number of persons for which the boat is successfully swamp tested according to sub-clause 3,

whichever is the less number.

- (d) The length of the boat shall be not less than 3.0 metres nor more than 6.0 metres.
- (e) All thwart and side seats in the boat shall be fitted as low in the boat as practicable and bottom boards shall be fitted in rigid boats.
- (f) The boat may be square-sterned and shall have a mean sheer at least equal to five per cent of its length.
- (g) The boat shall be fitted with internal buoyancy appliances which shall be so placed as to secure stability when the boat is fully laden under adverse weather conditions.
- (h) Every boat shall be fitted with internal buoyancy appliances which shall consist either of air cases or of buoyant material or inflatable tubes of an approved design such that damage to one tube will not prevent the boat from maintaining the minimum buoyancy and stability required.
- (i) The total volume of the internal buoyancy appliances shall be such that it will float the boat its total personnel and its full equipment when the boat is flooded and open to the sea so that the top of the gunwale amidships is not submerged.
- (j) The centre of mass of the buoyancy shall be situated above the flooded centre of Gravity of the boat.

### 9.3 EQUIPMENT

9.3.1 An approved boat shall be equipped with:

- (i) A single complement of buoyant oars and one spare buoyant oar provided that there shall never be less than three oars; one set of crutches attached to the boat by lanyard or chain.
- (ii) Two plugs for each plug hole (except where proper automatic valves are fitted) attached to the boat by lanyards or chains; a bailer; one anchor and 20 metres of anchor line.
- (iii) A painter of sufficient length and size secured to the forward end of the boat.
- (iv) A line becketed to the gunwale to enable persons to cling to the boat if upturned or upright.
- (v) One litre of fresh water for each person in the carrying capacity of the lifeboat.
- (vi) Two red hand held flares and one hand held orange smoke signal.

- (vii) Retro-reflective tapes of an approved type (each tape being not less than 300 millimetres long and not less than 50 millimetres wide), fitted on top of the gunwale of the boat and on the outside of the boat as near to the gunwale as possible and spaced so that the distance between the centre of a tape and the centre of the tape next in line is not greater than 500 millimetres.

Note: The small items of equipment including water, flares and smoke signal may be kept in a buoyant container which may be stowed in a suitable position in the vessel at the discretion of the Fiji Marine Board.

#### 9.4 SWAMP TEST

9.4.1 Every approved boat, or type of boat shall undergo a swamp test which shall consist of completely swamping the boat in seawater with the full complement of adults and all equipment on board.

9.4.2 The boat shall maintain its stability in this condition with its gunwale above the water and all personnels mouths above water when sitting upright on the bottom of the boat.

#### 9.5 LAUNCHING ARRANGEMENTS

9.5.1 The boat shall either have davits of such construction as that the boat can be lowered safely into the water with its full complement of persons and equipment on board, or be of such light construction and carried at a sufficiently low point in the vessel that it can be launched safely and upright by hand and the personnel board direct from the vessel, or, subject to the Fiji Marine Board approval, be towed astern of the vessel.

9.5.2 The boat shall be stowed so that it may be easily launched from either side of the vessel when the vessel is listed. In the Harbours, Rivers and Short-coasting trade the boat may be towed.

9.5.3 The boat shall be marked with the ships name, and the words "certified for . . . . . persons" in a conspicuous place.

#### 9.6 BUOYANT APPARATUS

##### 9.6.1 Construction and Capacity

- (a) A buoyant appliance shall be manufactured from buoyant approved by the Marine Board.
- (b) The encasing material shall be a material which:
- (i) retains its shape and strength when subject to the range of temperature which may be encountered in service and is durable in sea water.
  - (ii) protects the buoyancy material from ultra violet light and physical damage;
  - (iii) is fire retardant or it shall be painted with an approved fire retard- ing paint.
- (c) A buoyant appliance shall be capable of withstanding a drop test, the height of which shall be equivalent to that of the deck on which it is stowed above the vessel's light waterline but in no case shall be less than 6 metres.
- (d) A buoyant appliance shall be effective and stable and when floating either way up and shall not require adjustment before use.

(e) Buoyant grab lines shall be fitted all round the appliance. The grab lines shall be secured to the appliance at not more than 460 mm centres nor less than 300 mm centres and interlaced to prevent movement. The depth of the loop when wet shall not be less than 150 mm and not more than 200 mm. The grab lines shall be of rope not less than 7 mm diameter. The fastenings securing the grab lines to the appliance shall be strong enough to permit the appliance being lifted by the grab lines.

(f) The number of persons that the appliance shall be deemed fit to support shall be equal to:

$$\text{No.} = 70 \frac{(V - W)}{(1000)} \quad \text{Where No.} = \text{Number of persons.}$$

$V = \text{Volume in cubic metres.}$   
 $W = \text{Weight of appliance in kgs.}$

(ii) the number of grab line loops whichever number shall be less.

(g) A buoyant appliance shall be coloured a highly visible colour.

(h) A buoyant appliance shall not exceed 180 kg in weight unless suitable means are provided to enable it to be launched and, where the weight of the appliance exceeds 136 kg but does not exceed 180 kg in weight, suitable handles or rings shall be fitted to enable it to be launched by hand.

(i) The buoyant appliance shall be fitted with retro-reflective tapes of an approved tape (each tape being not less than 300 millimetres long and not less than 50 millimetres wide) on the top and bottom of the buoyant appliance, spaced, around the perimeter of the appliance so that the distance between the centre of a tape and the centre of the tape next in line is not greater than 500 millimetres.

(j) Buoyant apparatus shall be painted a conspicuous colour, marked with the name of the vessel and the words "certified for . . . . . persons".

## 9.7 INFLATABLE LIFERAFTS

9.7.1 Inflatable liferafts shall meet either the SOLAS Standards or the Fiji Maritime Code, Section 10, Appendix C or other equivalent standard as approved by the Authority.

9.7.2 The Authority will require the Master to produce a currently valid certificate issued by an approved Inflatable liferaft Servicing Agent in respect of every such liferaft carried.

## 9.8 LIFEJACKETS

9.8.1 Lifejackets shall meet either the SOLAS Standards, or the Standards of the Fiji Maritime Code, Section 10:

Appendix H . . "Coastal Lifejacket", or

Appendix I . . "Sheltered Waters Lifejacket"

**SECTION 10****RADIO EQUIPMENT****SECTION 10****RADIO**

10.1 A vessel of less than 10 metres is not required to carry a radio telephony transmitter, but if it does so it shall comply with the requirements of this section.

10.2 A vessel's Radio installation shall be licenced by the Posts and Telecommunications. The licence is valid for 12 months and is renewable on the first day of each year.

10.3 The Radio installation is subject to inspection by a Radio Surveyor prior to the issue of a licence.

10.4 The licence shall state the call sign by which the vessel shall be addressed in radio telecommunication, and the frequencies on which the operator may transmit.

10.5 The Radio telephone operator shall hold a Restricted Radio Telephone Operators Certificate, for which he is required to pass an examination.

10.6 The vessel so licenced shall carry, in addition to the radio telephony transceiver, the following equipment:

10.6.1 A clock, showing the silence periods;

10.6.2 An operators manual, showing in particular the distress procedures and simple instructions for an unskilled person to use the transmitter in an emergency.

10.6.3 A log book for recording of test calls and distress messages transmitted or received.

10.7 The power supply for the transceiver shall be provided by batteries which shall not be of a dry cell type. There shall be a means of charging the batteries such that the charging process shall not cause damage to the Radio equipment. If the batteries are not used exclusively for the Radio equipment, there shall be a means of isolating other loads in an emergency. There shall be a means of testing the charge condition of the batteries.

10.8 The Radio equipment and Aerial shall be installed to the satisfaction of the Radio Surveyor.

10.9 The transceiver shall be capable of transmitting and receiving on the distress frequencies of 2182 kh<sub>z</sub> and 6215.5 kh<sub>z</sub>.

10.10 Small vessels may be permitted to operate, under licence by Posts and Telecommunications, Citizen Band Radio Service for short distance communications. Such radio service is not intended to provide distress, calling and watch facilities, and is not monitored by Maritime Coast Stations.

**SECTION 11****MISCELLANEOUS EQUIPMENT:**

1. General
2. Types of miscellaneous

**SECTION 11****MISCELLANEOUS EQUIPMENT****11.1 GENERAL**

11.1.1 The term "Miscellaneous Equipment" includes any item of Equipment which may be required for Safety of Navigation, Safety of Crew, passengers or any other person on board for legitimate purposes, in port or at sea and which item is not required to be provided by any other Section of this Code.

11.1.2 Navigation lights, shapes and sound signals. All vessels shall be provided with at least a full set of Navigation lights, shapes and sound signals as are required by the International Collision Regulations, and which are detailed in 11.2 of this Section.

11.1.3 Navigation lights shall be capable of operating from both batteries and main engine.

11.1.4 Vessels to which this code applies, when licenced to operate only in Rivers and Harbours, or Short Coasting areas will, under Rule 1(b) of the International Collision Regulations, not be required to show N.U.C. Lights nor the N.U.C. balls nor anchor ball.

11.1.5 In respect of 11.1.4 above, Shipmasters are reminded that:

11.1.5.1 No person may anchor a vessel in a fairway so as to obstruct the approach to a wharf.

11.1.5.2 Small craft under way within the limits of a harbour shall keep out of the way of Ocean Going ships underway or tugs engaged in towing.

11.1.6 "Total number of persons" in this section means the total number of persons the vessel is licenced to carry.

## 11.2 TYPES OF MISCELLANEOUS EQUIPMENT.

## 11.2.1 NAVIGATION LIGHTS, SHAPES AND SOUND SIGNALS

## 11.2.1.1 Power driven and auxiliary sailing vessels.

Item	Fiji Islands Trade & Seagoing Service			Rivers, Harbours and Short Coasting Service		
	<12M	<7M	<7Kn	<12M	<7M	<7Kn
All round white light	* 2 mls *	2 mls		2 mls		
Masthead light	Nil	Nil		Nil	Nil	
Side lights	1 ml	optional; 1 ml		1 ml	optional; 1 ml	
Stern light	Nil	Nil		Nil	Nil	
Anchor light	2 mls	Nil		2 mls	Nil	
N.U.C. lights	2 mls	Nil		Nil	Nil	
Whistle	*	*		*	*	
Bell	*	*		*	*	
Black balls	Nil	Nil		Nil	Nil	

\* on vessels of less than 12 metres length a masthead light and stern light  
\* may be carried instead of the all round white light.

11.2.1.2 Vessels regularly engaged in towing or underwater operations shall, in addition to the above carry the appropriate lights and shapes for their operation as specified in the International Collision Regulations.

## 11.2.2 COMPASS

A Magnetic Steering compass shall:

11.2.2.1 be so placed, forward of the wheel, that the helmsman can view directly ahead of the ship to abeam each side and also the readings of the compass card while steering;

11.2.2.2 be as near to the fore and aft centre line as is practical;

11.2.2.3 be illuminated. The wiring shall be twin flex, and the power source shall not cause a deviating effect on the compass;

11.2.2.4 be suspended in gimbals;

11.2.2.5 be so located and equipped that it can be properly adjusted;

11.2.2.6 have a card of not less than 100 mm diameter;

11.2.2.7 operate effectively as a magnetic compass in the event of power failure;

11.2.2.8 be adjusted annually, and also after any welding or major steel construction alterations have been made to the ship;

11.2.2.9 not be placed in the vicinity of Radio, Radar or other electronic equipment. Where, in very small vessels this is impossible to achieve, a compass adjuster shall check the compass with the electronic equipment both operating and not operating. For a difference of more than 2° in the result, alternative sighting for the compass and or the electronic equipment shall be required.

### 11.2.3 CHARTS AND NAUTICAL PUBLICATIONS

11.2.3.1 The vessel shall be provided with charts to suit her normal trade. This does not mean that a vessel licenced to operate in Fiji Islands Trade must carry every Fiji Chart. It is sufficient that for the intended round voyage there is a chart to cover: the whole area; passage charts; and a number of large scale charts of sheltered anchorages enroute for emergency purposes.

11.2.3.2 The charts should be clean and corrected up to date.

11.2.3.3 Parallel rules, dividers, pencil and rubber shall be provided.

11.2.3.4 The Fiji Marine Department Nautical almanac for the year provides virtually all the almanac information necessary for the small vessel.

11.2.3.5 A chart table or space with adequate illumination shall be provided.

### 11.2.4 GANGWAYS

11.2.4.1 Where the distance from a wharf to the ship's deck is more than 2 feet (600 mm) either vertically, horizontally or at an angle, causing inconvenience to persons with lawful access, the Master shall provide a gangway or ladder of adequate strength and stability, and in the case of the gangway, guard rails 3 feet (900 mm) high.

11.2.4.2 The boarding area shall be lit at night.

### 11.2.5 ANCHORS AND CABLES

11.2.5.1 For vessels of less than 10 metres in length the number and weight of anchors shall be as in Table I, where  $L_m$  is the registered length of the vessel in metres and  $H_m$  is the height of the uppermost part of the highest Superstructure in metres above the load waterline.

11.2.5.2 The lengths and sizes of anchor cable shall be as in Table 2. The anchor is assumed to be a Admiralty pattern stockless anchor with an assumed holding power of three times their own weight. Certified approved high holding power anchors may be approved at a lesser weight than given by Table 1.

11.2.5.3 Where a vessel is required to carry two anchors of a specified weight any one anchor may differ by not more than 10 per cent from such weight; but the total weight of both anchors shall be not less than twice the specified weight.

11.2.5.4 Where anchors are not accompanied by a manufacturers Certificate of test and the surveyor is in doubt as to their strength or holding ability, the Surveyor may require that the anchor is tested to a holding power of three times its weight (while using a rope anchor line).

11.2.5.5 A windlass is not required for anchors of less than 30 kg which do not use chain cable exclusively.



11.2.5.6 ANCHOR WEIGHTS (Kg)

Lm	Hm													
	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
6 & less	7	10	12	13	15	18	1 anchor required							
7	9	11	14	16	18	20	22	2 anchors required						
8	10	12	15	17	20	22	25	30						
9	12	15	17	20	22	27	30	35						
10	14	17	20	22	27	30	35	40						
	50													

11.2.5.7 ANCHOR CABLES

The length of the anchor cable shall be at least 50 metres.

	Admiralty Stockless					+ Chain Length Between Anchor & Rope
	Anchor Weight Kg	Short Link Chain-Diam in mm	Manila Diam in mm	Polyprop Diam in mm	Nylon Diam in mm	
Rope may be used in lieu of Chain	7	8	14	12	10	3 m
	7-13	8	16	12	10	3 m
	13-18	8	18	14	11	3 m
	18-25	8	20	16	12	3 m
	25-38	10	24	18	14	6 m
	38-44	12	24	22	16	6 m
	44-51	13	28	24	18	6 m

11.2.6 VESSEL RECORD BOOK

11.2.6.1 The master or person in charge of the vessel shall keep a Vessel Record Book, and shall enter in it at least the following items:

- (a) Time and dates of departure from and arrival at each port of call and passing each major landmark.
- (b) Deaths, disappearance, injury or illness of any person on board.
- (c) Emergency drills or procedures.
- (d) Details of grounding or other accident of the vessel.
- (e) Details of any assistance given to another vessel.

11.2.6.2 The Master shall produce the Vessel Record Book to the Shipping Officer or a Marine Inspector on demand.

11.2.7 VESSEL CLEARANCE BOOK

The clearance book contains the various licences and certificates currently valid for the vessel which shall be produced to the Shipping Officer as specified in section 4.

## 11.2.8 FIRST AID AND MEDICAL STORES

11.2.8.1 A medical cabinet or first-aid case of suitable size for storing all the items required as in 11.2.8.2 (medical scales) shall be located on or near the bridge in a secure place. Emergency lighting, which may be a portable torch, shall be available.

### 11.2.8.2 Medical Scales.

Item	Quantity		
	Harbours and Rivers	Short Coasting and Seagoing	Fiji Waters
Asprin tablets.....	50	50	100
Vegetable laxative tablets.....	—	40	40
Antiseptic solution.....	250 ml	250 ml	250 ml
Soft paraffin.....	50 g	50 g	125 g
Anti-biotic Ointment.....	—	—	15 g
Zinc Ointment.....	—	50 g	100 g
Scissors.....	1	1	1
Thermometer.....	—	1	2
Tourniquet.....	—	—	1
Applicators (wood).....	—	—	25
Bandages gauze medium.....	5	10	10
Bandage triangle.....	—	1	1
Burn & wound dressings (box).....	1	3	3
Lint (small).....	3	3	3
Cotton wool (rolls).....	1	2	2
Basins (round, enamel).....	—	—	1
Safety pins.....	10	10	10
Disinfectant.....	250 ml	1 ltr	1 ltr

## SECTION 12

### SURVEYS AND CERTIFICATES OF SURVEY

#### SECTION 12

#### SURVEYS AND CERTIFICATES OF SURVEY

12.1 Types of Survey are defined as follows:

**Initial Survey:** A survey for a newly registered vessel which not only covers all survey conditions but establishes her trading area and passenger capacity, and would normally include a loadline survey.

12.1.2 An Annual Survey, (including sighting hull on a slipway) of hull, superstructure, deck and engine machinery, cargo gear, navigation and safety equipment, safety and fire appliances, conditions and assignment of loadline.

12.1.3 Semi-Annual Sight Survey: Within 6 months of completing the Annual survey, a sight survey is conducted to ensure that the ship and, particularly, the safety equipment have been kept to standard, but without requiring the vessel being slipped.

12.1.4 Special Survey: In the event of damage being sustained by the ship, such as grounding, fire, engine breakdown, bad weather damage etc. The master is required to report such damage and call for special survey. The Surveyor may inspect underwater damage by diving, or slipping the vessel at his discretion. Another case for Special Survey is when the owner wishes to alter the terms of the trading licence and trade in a different way or carry out significant conversions.

12.1.5 Extension Sight Survey: A sight survey may be held at Surveyor's discretion, to extend the validity of the Seagoing Certificate, if the forthcoming voyage may not be completed until after expiry of the certificate, or there is delay in availability of the slipway which is beyond the control of the shipowner. The shipowner may be required to prove that the delay in preparing for a full survey is beyond his control.

12.1.6 Loadline Survey: A survey, preferably carried out on the slip, to establish the minimum freeboard that a trading vessel must maintain, and establish where the loadline mark is to be placed on the hull.

## 12.2 Gazetted Surveyor

A surveyor of lifesaving appliances, hull or machinery, or combined, duly appointed by the Minister, and the appointment advertised in the *Fiji Gazette*. The surveyor may board a vessel at any reasonable time for the purpose of his duties and may recommend withdrawal of an existing seagoing certificate, or detention of a vessel.

## 12.3 Surveyors Report

A report made by a Surveyor at the time of survey as to condition of a vessel, and recommendations as to the issue of a Certificate of Survey.

## 12.4 Procedure to Survey of a Vessel

12.4.1 The owner shall apply to the Shipping Officer for survey of his vessel, pay the prescribed fee and receive a receipt stating name of vessel, locality, and type of survey to be conducted.

12.4.2 The owner presents the receipt at Surveyor's office requesting a survey within 24 hours. This implies that the vessel is ready for survey and that all repairs and equipment are, to the best of his knowledge, up to the standard as specified in this Code.

12.4.3 The Surveyor boards the vessel and carries out the survey with the owners representatives in attendance, who should normally be the Master and/or Chief Engineer as appropriate. If the vessel is not ready for survey the surveyor will leave the vessel and inform owners representative the reason. If the survey proceeds, and surveyor is not satisfied with certain items, he will state in writing to the owner the items which are to be renewed or repaired and note these items on his Surveyors' Report. The Surveyor is not obliged to advise shipowners how to carry out repairs and shall not offer his services as consultant. In the event that the Surveyor repeatedly attends the vessel at the request of the owner or his representative without the repairs making significant progress, the Shipping Officer may charge a further survey fee.

12.4.4 When the Surveyor is satisfied that the vessel is up to standard, the Surveyors Report is completed, recommendation for issue of Survey Certificate stated and signed by the Surveyor, and delivered to the Shipping Office. The Shipping Officer makes out a Survey Certificate, and presents it to the President of the Fiji Marine Board for his signature. The Shipowner may request, and be granted, an Interim Certificate of Seaworthiness should he wish to clear his vessel immediately.

**SECTION 13****EMERGENCY PROCEDURES AND SAFETY OF NAVIGATION****SECTION 13****EMERGENCY PROCEDURES****13.1 EMERGENCY STATIONS**

The Master shall ensure that each crew member joining the vessel is properly informed of emergency station duties.

Emergencies in this part include:  
fire, collision, abandon ship, manoverboard.

13.2 It is recommended that crew emergency practice procedures are conducted at intervals not exceeding 3 months, and a statement to that effect is entered in the vessel's Record Book.

13.3 Emergency Station duties should include:

13.3.1 Knowing the position of and use of all lifejackets, liferafts, lifeboats, fire extinguishers, bilge pumps, distress signals;

13.3.2 Mustering and controlling passengers in each emergency situation.

13.3.3 Use of distress signals.

**SECTION 14****COLLISION REGULATIONS—LOCAL HARBOUR REGULATIONS****SECTION 14****COLLISION REGULATIONS—LOCAL HARBOUR REGULATIONS****14.1 HARBOUR REGULATIONS AFFECTING SMALL VESSELS' NAVIGATION.**

14.1.1 Vessels shall not navigate within 100 yards (91 metres) of the Western face of Kings Wharf Suva, or berth or unberth at that face at such times a red pennant (or red light) is being flown at the Port Masters Office, without the permission of the Port Master.

14.1.2 Rafts of logs moored in a harbour shall be marked by red light at night, visible all round at least one mile.

14.1.3 Vessels shall not be anchored in the fairway of any channel or so as to obstruct the approach to any wharf.

14.1.4 Every launch, barge, lighter, rowing boat, sailing boat or similar craft, when under way within a harbour shall keep out of the way of Ocean Going ships under way or tugs when engaged in towing.

14.2 All vessels shall comply with the International Regulations for preventing collisions at sea. (The Collision Regulations).

14.2.1 The lights, shapes and sound signals for powered vessels less than 10 m length are summarised in Section 11.2.1 of this Code.

14.2.2 Particular attention is drawn to the following Rules of the Collision Regulations:

Rule 9(b)—a vessel of less than 20 metres in length or a sailing vessel shall not impede the passage of a vessel which can safely navigate only within a narrow channel or fairway.

Rule 9(g)—Any vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel.

## SECTION 15

### HIRE AND DRIVE VESSELS

#### SECTION 15

##### HIRE AND DRIVE VESSELS

15.1 The term "Hire and Drive Vessel" means any boat or vessel which is let for hire or reward or for any other consideration whatsoever, including boats or vessels provided in conjunction with holiday establishments or hotels for the use of guests or tenants and which the hirer uses solely for pleasure.

15.2 The term "hirer" in this part means a person who hires the vessel or uses the vessel while under hire.

15.3 The term "Owner" in this part, includes a part owner and a person who has for the time being possession of the vessel, but does not include a hirer or a person who has a right to take possession of the vessel under a Hire purchase agreement and has not yet exercised that right.

15.4 The term "Limited Area" in this part refers to that area of water to which the Owners operating licence refers.

15.5 The owner shall obtain a licence from the Fiji Marine Board to operate Hire and Drive Boats, renewable annually. The licence shall state the name(s) of the Owner(s), the boundaries of the limited area(s) in which the Hire and Drive boat(s) may be used by their Hirer, and a general description of the type of boat(s) available for hire. The licence shall be displayed in the beach office in a position clearly visible to the hirer.

15.6 The owner shall operate his business from a beach office from which he shall observe the entire limited area. He shall have a display board showing the limited area, and advising on safety precautions. He shall make available adult and child lifejackets on request.

15.7 The Owner shall have the right and responsibility to refuse or restrain a hirer who attempts to operate a Hire and Drive boat in a manner dangerous to himself or other persons, or who is believed to be under the influence of alcohol or drugs.

15.8 The Owner shall be responsible for maintaining his boats in good order, identifying them by name or number; providing them with safety equipment appropriate to their use, and marking the boat with the maximum number of persons it may carry. In the event that an employee of the owner is in charge of a boat, whether or not the hirer is on board, the owner is responsible for the competence of the driver.

15.9 Any vessel which is operated by the Owner for hire beyond the limits of the limited area shall be individually registered with the Fiji Marine Board as a Trading vessel.

15.10 The Owner shall keep one boat in reserve for his own use in the event of a marine accident within the limited area, and shall be responsible for rendering assistance to a hirer or employee who is in danger at sea in or near the Limited Area.

15.11 The Owner shall be responsible for reporting to the Marine Board any injuries or marine accidents involving hire and drive boats under authority.

## SECTION 16

### SAFETY EQUIPMENT REQUIREMENTS

#### SECTION 16

#### SAFETY EQUIPMENT REQUIREMENTS

16.1 All vessels in Fiji Islands Trade, Sea Going and Short Coasting Service Areas:

- 1 clock
- 1 barometer
- 1 Standard magnetic Compass, with reflector to the steering position or, one steering compass. A means of taking compass bearing (Fiji Waters only)
- 1 handlead or Echosounder
- International Code Flags N, C
- Charts and plotting instruments suitable for the area of operation
- The Fiji Marine Nautical Almanac for the year
- 1 Gangway capable of being used on either side of the vessel, or other safe means of access approved by the Marine
- 1 Board Windlass (for anchors exceeding 30 kg or where chain only is used) anchors and cables
- 6 Hawsers and warps
- Navigation lights, shapes and sound signals
- First-Air Kit for the total number of persons
- Vessels Record Book
- 1 approved boat (or inflatable liferaft) for 60% persons the is certified to carry
- One such boat shall be for at least 6 persons
- Buoyant apparatus for the remainder
- Lifejackets: 1 per person plus 5% of children lifejackets
- 2 Lifebuoys: 1 with a light attached
- 1 with 30 metres buoyant line attached
- 4 parachute rockets
- 4 hand flares
- 2 portable fire extinguishers (Class B) in machinery space
- 1 portable fire extinguisher (Class B or C) in galley
- 1 portable fire extinguisher (Class A or general) per each accommodation space, and the bridge
- 1 power bilge pump } to bilge in each main watertight sub-
- 1 hand bilge pump } division of the vessel

## 16.2 ALL VESSELS HARBOURS &amp; RIVERS SERVICE AREAS

- 1 Steering compass
- Charts of the area of operation
- A safe means of access to and from the shore
- Anchors and cables
- 1 windlass (for anchors exceeding 30 kg or where chain only is used as anchor cable)
- The Fiji Marine Nautical Almanac for the year
- Navigation lights and sound signals
- First-Aid Kit for the total number of persons
- Vessels Record Book
- 1 approved boat ( or inflatable liferaft) for 6 persons together with buoyant apparatus, so that the buoyant apparatus and such boat are together sufficient for 60% for the total number of persons
- Lifejackets: 1 per person plus 5% of childrens lifejackets
- 2 Lifebuoys: 1 with a light attached;  
1 with 30 metres buoyant line attached
- 3 parachute rockets
- 3 hand flares
- 3 portable fire extinguishers (Class B) in machinery space
- 1 portable fire extinguishers (Class B or C) in galley space
- 1 portable fire extinguisher (Class A or General) per each accommodation space, and the bridge
- An efficient hand bilge pump per watertight subdivision of the vessel

## 16.3 EXEMPTIONS

16.3.1 The Marine Board may exempt a vessel from full compliance with subsections 1 or 2 in respect of vessels operating in a very limited and sheltered area and under such operational control as to render full compliance with this section unnecessary.

16.3.2 The Marine Board may exempt a vessel from the requirement to carry an approved boat (or inflatable liferaft) or buoyant apparatus where the vessel itself is so constructed and fitted with internal buoyancy that it will itself comply with the design and operation requirements of an Approved boat.