

GUIDANCE NOTE NO: 11/94

REVISION NO: 2

Hire & Drive Vessels - Survey Requirements for the Design, Construction, Operation and Inspection of "Houseboats"

GENERAL:

This guidance note should be read in conjunction with the Northern Territory Marine (Hire and Drive Vessel) Regulations. Information as required by Section 8 of the Regulations is detailed below. Having regard to the material from which its hull is constructed, the houseboat shall be constructed in accordance with the appropriate sections or subsections of the USL Code in respect of its hull, machinery and equipment, except as may be provided elsewhere in this guidance note.

DEFINITION:

The term "houseboat" means any boat, vessel or pontoon having a fixed house above the deck with accommodation which may be used by persons residing on board and which is propelled by mechanical power.

1. APPLICATION:

- 1.1 These requirements shall apply to all Hire and Drive houseboats operating in the Northern Territory of Australia.
- 1.2 The length of a Hire and Drive houseboat shall not exceed **20** metres. In addition the pontoons must not exceed 20 metres length.
- 1.3 The number of Persons carried shall not exceed **12**.
- 1.4 The vessel must **not** have a potential speed of more than 10 knots. However, actual speed limit permitted will be determined by the surveyor.

2. STABILITY

- 1.1 A houseboat for Class E (smooth water operations) shall comply with the following elementary stability test :-

When a number of persons equal to the total number for which the vessel is required to be certificated are placed on one side on the uppermost deck at its extreme breadth, then the angle of heel shall not exceed 7 degrees from the upright provided also that the freeboard of the hull on the heeled or immersed side measured from the inclined waterline to the intersection of the edge of the main deck line and the main hull at its lowest point shall not be less than 50% of the freeboard when in the upright position.

- 1.1 A houseboat for Class D (Restricted to Harbours) shall comply with USL Code Section 8.C.1.3.2 CAT 'R' criteria.

3. SUBDIVISION & BUOYANCY

A. HOUSEBOATS SHALL COMPLY WITH EITHER 'A' **OR** 'B'.

- 1.1 Manufacturers of pontoons that are to be used on Hire and Drive houseboats are to submit plans showing full details of the pontoons. These details should include information such as the estimated maximum weight of the houseboat complete with all its equipment, or, alternatively the maximum weight that the pontoons can support at their designed draught.
- 1.1 Pontoons may be constructed of steel, aluminium alloy, fibreglass or other materials acceptable to the Department.
- 1.1 Each pontoon is to be provided with brackets or other suitable arrangements for attaching the deck structure supporting the house unit.
- 1.1 Each compartment within each pontoon is to be air tested to a pressure of 3.5 kPa to ensure that all welds are watertight. To achieve this it is recommended that a 12mm bore clear plastic tube be set up in the form of a "U" tube with one side connected to the compartment being tested and the other end open to atmosphere. Water is then poured into the "U" tube until it reaches a height of 300 mm on each side of the "U". The correct pressure will be reached when the water on one side is 360 mm above the level of water on the other side of the "U" tube. It is essential that there is not too much water in the "U" tube so that any accidental overpressure of air will be released by blowing the water out of the tube.
- 1.1 A test record sheet which gives full details of the air pressure test is to be prepared and completed by the pontoon manufacturer and is to be signed by the person carrying out the tests on behalf of the pontoon manufacturer.
- 1.1 A metal plate is to be permanently attached to each pontoon with the following details typed or engraved in the plate :-

Manufacturer's Name
Date of Manufacture
Identification Number

This plate should be attached near the aft end of each pontoon in such a position as it will be easily visible and protected from damage.

- 1.1 When the pontoon drawings have been approved and construction of the pontoons is underway, the Marine Safety Branch should be advised.

B. ALTERNATIVELY

- 3.8 (a) The hull of a houseboat shall be sub-divided into watertight compartments so arranged as to provide an adequate reserve of buoyancy with any one compartment flooded;

OR:

- (b) the hull of a houseboat shall be filled with one (1) cubic metre of approved foam buoyancy per 800 kg of flooded mass.

4. STRUCTURAL FIRE PROTECTION

The general construction of the vessel shall be such as to minimise fire hazards insofar as it is reasonable and practicable. The following provisions should be made :-

- (a) The engine compartment where fitted should be lined with non combustible material such that, when submitted to the standard fire test, the average temperature of the unexposed side will not rise more than 139 degrees centigrade above the original temperature for 30 minutes. This requirement is not necessary where the sides of the compartment do not form the boundary of an adjoining compartment and the sides are made of steel.
- (b) The cooking area should be protected by non combustible material or material having a low flame spread characteristic.

Where the cooking stove is located within 300 mm of combustible material it should be protected by a metal sheet which has an air gap of at least 6.5 mm between the combustible material and the metal.

There must be no combustible material located within 750 mm above the stove.

- (b) All exposed lining surfaces in the accommodation spaces shall be of low flame spread material.

5. SAFETY EQUIPMENT

Every Hire and Drive houseboat shall carry the following equipment :-

- (a) Navigation lights to comply with the USL Code.
- (b) A sound signalling device, which may be electric or other power operated horn, whistle or siren.

- (c) An electric signalling torch.
- (d) Two fire extinguishers of minimum fire rating 30 B (E).
- (e) Two fire buckets of 9 litre capacity each fitted with a two metre lanyard.
- (f) One lifebuoy with 27.5 metres of line attached.
- (g) One approved coastal type lifejacket for class 2D vessels or for class 2E vessels PFD type 1 to AS 1512 for every person the Houseboat is certified to carry.
- (h) Anchor and cables as per USL Code.
- (i) A first aid kit of a common proprietary brand containing at least the following items :-

Sunburn Cream	Bandages	Calamine Lotion	Scissors
Adhesive Plaster	Dressings	Cotton Wool	Splinter Probe
Antiseptic Cream	Finger Stall	Crepe Pressure Bandage	Antiseptic Solution
First Aid Pamphlet	Splinter Forceps	Aspirin	Gauze
Safety Pins			

- (j) One boat hook.
- (k) A hand bilge pump with a capacity of not less than 90 litres per minute provided that the bilge pump may not be required on a houseboat with pontoon hulls having one compartment sub-division.
- (l) One smoke detector in accommodation space.

6. INSTRUCTIONS TO BE DISPLAYED

Instructions shall be available on board for the following :-

- (a) Correct and safe handling of the vessel. This should include procedure when approaching other vessels and approaching mooring area.
- (b) Correct and safe operation of the machinery, fuel system and pumping system.
- (c) Stowage and use of lifejackets.
- (d) Advice on how to shut off the L.P. Gas System in event of Fire.

In addition to the above a copy of the Certificate of Inspection must be displayed in a prominent position.

7. MACHINERY

7.1 ENGINES

7.1.1. Houseboats may be propelled by :-

- (a) Inboard engines that operate on fuel having a flash point of not less than 60 degrees centigrade; or
- (b) Outboard engines with fuel storage arrangements acceptable to the Department.

7.1.2. Engines shall be provided with instrumentation necessary to ensure their satisfactory operation.

7.1.3. All exposed moving parts of machinery shall be guarded as necessary to protect persons from injury.

7.2 EXHAUST SYSTEMS

- (a) 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 exhausts.
- (b) Exhaust piping and silencers which are not water cooled must be effectively insulated.
- (c) Exhaust piping must be so designed that any back flow of water cannot enter the engine manifold.
- (d) Exhaust gas piping which passes through accommodation must be enclosed in a gas tight casing.

7.3 VENTILATION OF MACHINERY SPACES

Adequate ventilation shall be provided in the engine compartment. The volume of air provided must be sufficient to provide air for aspiration of the machinery when running at full power and additional air to provide cooling. Australian Standard AS 2387 provides guidance.

8. FUEL TANKS AND FUEL SYSTEMS

Fuel tanks shall be :-

- (a) Soundly constructed from carbon steel, stainless steel, copper or marine grade aluminium alloy.
- (b) Designed for a working pressure of not less than 28 kilopascals.

- (c) Subjected to a test equivalent to 2.5 metres of fresh water above the top of the tank or to the maximum head, whichever is greater. This test to be witnessed by a Marine Surveyor from the Department of Planning and Infrastructure.
- 8.1 A fuel tank that is independent of the hull shall comply with the following provisions :-
- (a) It shall be securely installed clear of the engine and exhausts and in such a position that should there be any spillage during filling the fuel will not come into contact with any hot machinery.
 - (b) The tank supports and hold downs shall fasten the tank securely and shall be insulated from the tank by non-abrasive and non-absorbent material.
 - (c) A shut off valve or cock shall be fitted at each tank outlet line. Non-metallic piping and fittings shall not be fitted in the line between the tank and the shut off valve or cock.
 - (d) In the case of fuels with a flash point of less than 60 degrees centigrade all elements of the fuel system shall be electrically bonded. The fill pipe shall extend to within 50mm of the bottom of the tank on all tanks with a capacity greater than 30 litres. The fuel outlet shall be by means of a syphon tube extending to within 12mm of the bottom of the tank. Gravity feed is only permitted in tanks not exceeding 10 litres.
 - (e) In the case of fuels with a flash point of 60 degrees centigrade or more the fill pipe need only be taken to the top of the tank and the outlet may be fitted on the side or end plates.
 - (f) Fuel tank vent pipe shall be of sufficient size to prevent a generation of pressure. Where the fuel tank is filled by pumping, the vent pipe must have an open area at least equal to 1.25 times the area of the filling pipe. The vent pipe must be provided with a corrosion resistant anti-flash gauze so fitted that it does not reduce the open area of the pipe. It is usual to make the gauze into the form of a cone and insert it inside the vent pipe. In order to be effective the gauze must have good metal to metal contact with the pipe.
 - (g) Where portable fuel tanks are fitted for outboard engines the fuel lines shall be of heavy duty synthetic rubber fitted with bayonet type fittings which when disconnected will automatically shut off the fuel from the tank.
 - (h) Fuel piping shall be seamless steel or heavy gauge seamless copper. Where flexible piping is used it should be as short as possible and be of metal braided reinforced type having a synthetic rubber inner tube. It shall be capable of containing fuel after being subjected to a 2.5 minute exposure to free burning kerosene.

- 8.2 Fuel tanks for generator sets should be so installed that persons hiring the houseboat do not have to decant fuel into the tank. If the tank does not contain sufficient fuel for the period of hire then a fuel transfer pumping and piping system should be installed. This system should be so installed that it is not possible to overfill the generator set supply tank.

9. STORAGE OF FUEL FOR SKI BOATS

In the case of houseboat owners wishing to carry additional fuel for speed boats or jet ski boats, an application must be lodged with the Marine Safety Branch indicating by means of drawings the location and size of the proposed storage area. In addition the owners should advise the company which is responsible for insuring the vessel that they will be carrying additional fuel which will be decanted by the persons hiring the vessel.

The following are the basic requirements :-

- (a) The fuel must be stored in a flammable liquid cabinet built according to Australian Standard AS 1940.
- (b) The maximum quantity to be kept is 120 litres preferably in 6 drums each with capacity of 20 litres.
- (c) The cabinet must be located so that any ignition source is at least 3 metres away.
- (d) The fuel must not be decanted on the houseboat.
- (e) The cabinet must be vented, with gauze flash arresters fitted to the vents. The cabinet must be protected from excessive temperature by a shade structure.
- (f) The containers must be of an approved type.
- (g) The Hirers must be made aware of their responsibilities regarding these conditions and sign a statement acknowledging them.
- (h) The cabinet must be removed from the vessel when not used in a ski boat hire situation.
- (i) Vessels where this storage unit is to be fitted must be capable of carrying the extra weight and thereby maintaining the required freeboard and reserve of buoyancy.

10. ELECTRICAL INSTALLATION

- 10.1 Electrical installations shall be carried out by licensed electricians. Standards Association of Australia AS 1103 Part 6 provides guidance for drawing up wiring diagrams.

10.2 Installations exceeding 32 volts.

- (1) In addition to confirming with this section the installation must comply with the Standards Association of Australia Wiring Rules AS3000.
- (2) If it is intended to be connected to a public electricity supply system, it must conform with such requirements of the Supply Authority as may apply.

10.3 General Requirements.

- (a) Switchboards, distribution boards and fuse boxes should not be located in proximity to equipment which may give off flammable vapours such as fuel tanks, L.P. gas cylinders and batteries. It is recommended that the minimum segregation between flammable containers and sources of ignition be at least 2 metres. If there is difficulty achieving the 2 metre segregation, a plan should be submitted for consideration by the Surveyors of the Marine Safety Branch.
- (b) All circuits supplying power outlets with alternating power voltage above 32 volts should be fitted with earth leakage circuit breakers. (Residual Current Device complying with AS 3190) Builders should consult the manufacturer of the generating unit to see if it would be compatible with an earth leakage circuit breaker. A generating set which allows the frequency to fluctuate may cause the protective circuit breaker to trip frequently.
- (c) All circuit breakers, switches, fuses and alarms shall be labelled.
- (d) Navigation lights shall be on a separate circuit with each light individually fused or fitted with overload circuit breaker.
- (e) The Surveyor must be provided with the name of the Electrical Contractor or person in charge of installing the Electrical System.
- (f) Batteries shall be of sufficient capacity for their intended service, and shall be contained in a tray not less than 100mm deep which shall be lined with lead, fibreglass or other acid resistant material. Batteries located in the open deck shall be protected from the weather. Battery compartment to be ventilated.
- (g) Engine starter leads shall be as short as is compatible with the safe stowage arrangements for the batteries and shall be taken direct to the starter via the starting relay contacts with the relay mounted directly on or adjacent to the starter motor.

- (h) For Installation above 32v the insulation resistance between conductors and conductors and earth, shall be measured, on completion of installation, with all fuses in place and all circuit breakers closed. The resistance must not be less than 1000000 Ohms when all consuming devices disconnected.

The installation may be sub divided to any desired extent. A 500 volt insulation tester, arranged to indicate resistance in ohms should be used to check the installation.
- (i) Tests must be made to ensure that all earth continuity conductors and earthing leads are connected to the frame of the apparatus and to the pontoon structure or hull.
- (j) The Electrical Contractor or Person responsible should provide a written statement to the effect that the Electrical Installation was installed, tested and found to comply with all the appropriate requirements. A wiring diagram must be lodged with this Department.

11. SHIPSIDE VALVES AND PIPING

All water inlets or discharges below the waterline shall be fitted with metal valves or cocks secured direct to the hull. These valves or cocks must be readily accessible and provided with permanently attached handles or handwheels. Where lengths of synthetic rubber hose are fitted to river water pipes, two corrosion resistant pipe clips must be fitted at each end of all pipes over 25mm bore.

12. LIQUEFIED PETROLEUM GAS INSTALLATION

- 12.1 Liquefied petroleum gas cylinders must be constructed, tested, marked, maintained and re-tested in accordance with Standards Association of Australia L.P. Gas Code AS 2030.S.A.A. Code AS 1596 stipulates the criteria for installation of L.P. Gas Cylinders.
- 12.2 A.G. 601 Installation Code for Gas Burning Appliances and Equipment obtained from the Australian Gas Association provides guidance for installing gas consuming equipment. A.G. 603 Gas Distribution Code provides guidance for fitting the mandatory regulators.
- 12.3 Appliances with a continuous burning pilot light or other continuous flame devices shall not be installed below the main deck and shall be fitted with a device which automatically shuts off the gas in the main supply line to the appliance when the pilot light or continuous flame is extinguished.
- 12.4 A compartment containing a gas burning appliance must be ventilated by two permanent openings, one near the top and one near the bottom or a suitable louvred door ventilating the room. Each ventilator must have a clear area of at least 325 square millimetres per megajoule per hour of gas input to all appliances within the compartment. The lower edge of the top ventilator shall not be less than 75mm above the top of the draught diverter relief opening of the appliance. The lower edge of the lower opening shall not be more than 100mm

above the floor of the compartment containing the appliance. Both ventilators must be of a vertical height of at least 50mm and a width of at least 100mm.

- 12.5 The area within 1 metre of an L.P. Gas cylinder shall be kept clear of readily ignitable materials such as paper, oily rags etc.
- 12.6 The cylinder or cylinder carrier must be secured by fastenings designed to withstand a load, in any direction, equal to 4 times the weight of the cylinder when full.
- 12.7 L.P. Gas cylinders must be stored so that there is no source of ignition within an arc with a 1 metre radius above the cylinder and an arc with a two metre horizontal radius. Cylinder valves must not be less than 1 metre horizontally from an opening into a structure and not less than 150mm below a window or opening into a structure. In cases where there is insufficient space to achieve these distances it is permitted to insert a non combustible baffle.
- 12.8 A cylinder compartment must be constructed of fire resistant material or be lined with fire resistance material.
- (a) It must be vapour proof to the inside of the House Structure.
 - (b) It must have drainage for gas vapour which must be at least 1 square centimetre for each 10 kilogram of cylinder water capacity. this outlet must be at least 2 metres from a source of ignition.
 - (c) There must not be any electrical equipment within the compartment.
 - (d) Have means of securing all cylinders in a vertical position with valves uppermost.
 - (e) Regulators may be mounted within the compartment.

12.9 Pipework

Copper pipes may be used but must have clips fitted at every metre for vertical runs and every 400mm for horizontal runs. The pipe clips must be compatible with the piping so that corrosion is not set up. Suitable grommets must be fitted to protect the pipe where it passes through a structure.

- 12.10 Unflued space heaters should not be fitted but may be accepted if they are used solely in living areas which can be isolated from the sleeping areas. **Where appliances are fitted in a living area at least 2 ventilators must be provided with one at a distance of not more than 150mm from the floor and the other at a distance of not more than 300mm from the ceiling.** They should be fitted on opposing walls. If floor ventilation is provided the opening should be located where it cannot be covered. These ventilators must be provided in addition to any other ventilators required or windows fitted.

LIVING ROOM LENGTH MINIMUM	FREE AREA OF VENTS
up to 4 metres	240 square centimetres
4 to 5 metres	300 square centimetres
5 to 6 metres	360 square centimetres
REFRIGERATOR CAPACITY	MINIMUM FREE AREA OF VENTS
up to 100 litres	325 square centimetres
100 to 200 litres	450 square centimetres
200 litres or greater	650 square centimetres

12.11 A gas detector shall be fitted with sensors fitted as low as possible near the deck close to locations where gas could go down into and create a hazard.

13. ACCOMMODATION

13.1 Headroom in accommodation spaces must not be less than 1.9 metres.

13.2 Passageways under 4.5 metres length shall not be less than 600mm wide. Passageways of 4.5 metres and over shall not be less than 800mm wide.

13.3 Bunks shall have a minimum length of 1.9 metres and a minimum width of 600mm between bunks. Arrangements shall not be more than two high with a minimum vertical distance of 600mm between bunks. Aisles between bunks shall not be less than 600mm.

13.4 Not less than two avenues of escape shall be provided from all general areas available to the persons on board. Opening windows having a minimum clear opening of 460mm vertically and 410mm horizontally and have sufficient accessibility may be used as one avenue of escape.

13.5 Doors to all accommodation spaces shall be capable of being opened from inside the spaces without the use of a key.

13.6 All toilets and washbasins shall be fitted with adequate plumbing. A toilet compartment shall not be less than 700mm square and its interior vertical and deck linings shall be covered with materials impervious to water.

13.7 **Each accommodation sleeping space shall be provided with a ventilator having an open area of not less than 80 square centimetres for each person using the space. This is in addition to any opening windows. This requirement will not be required for air-conditioned spaces.**

13.8 It is recommended that window glass meet Australian standard 1288-1989, Safety Glazing Materials (human impact considerations).

14. DECKS

(a) Where an area of open deck space on a houseboat is intended to be used as a sundeck, that area shall be so constructed that it is capable of supporting the maximum number of persons that the houseboat is certificated to carry.

- (b) A person shall not be allowed on any awning or roof of a Hire & Drive houseboat unless that awning or roof is of such strength as to be capable of supporting the maximum number of persons that the houseboat is certificated to carry and is fitted with safety rails in accordance with paragraph (c).
- (c) Handrails or equivalent protection must be fitted at the perimeter of all deck areas that persons are permitted to use. The handrails must be at least 750mm high and have intermediate rails not more than 230mm apart. Strong wire netting may be permitted instead of intermediate rails. The handrails or wire netting should be capable of withstanding a horizontal thrust equivalent to 4 times the average weight of an adult. (approx 75kg)
- (d) Access gates fitted in deck handrails must be fitted so that they can only open inwards. Securing bolts or locks should be so fitted that young children would have difficulty unlocking the gate.
- (e) All decks should have a non slip surface.

15. SEWAGE SYSTEM

Houseboats to be fitted with a sewage system to satisfy all authorities. It is recommended that a sewage holding tank with a capacity of at least 180 litres be fitted. The pipe connecting the toilet pan to the tank should be at least 75mm diameter, the outlet pipe, the flushing pipe and the air pipe should all be at least 40mm diameter.

If the sewage tank is suspended between the Houseboat pontoons some thought should be given to protect it from damage from floating logs.

Owner to obtain clearances from Conservation Commission, PAWA and any other authority, for collection and disposal of waste water and rubbish.

16. VISIBILITY

Every houseboat shall be constructed with a view to allowing maximum possible visibility for the helmsman from the operating position. Use of rear vision mirrors to improve visibility astern may be specially considered.

17. SURVEYS

Houseboats will be required to undergo annual safety equipment survey, an out of water hull survey every two (2) years and in the case of inboard engines a shaft survey every four (4) years.

18. DINGHIES

Dinghies used by houseboat hirers shall comply with Guidance Note 10/94.

19. FRESHWATER

Adequate quantity of fresh water shall be stored on board for the number of passengers and number of days vessel will be away. Full description of the tanks with sketch are required for approval.

20. RADIO EQUIPMENT/MOBILE PHONE

Depending on the area of operation radio equipment or mobile phone may be required.

Signed by: Sri Srinivas

Date Issued: 18 March 2008

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