AUSTRALIAN EMERGENCY MANUAL

FLOOD RESCUE BOAT OPERATION

NATURAL DISASTERS ORGANISATION

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AMENDMENT LIST

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FOREWORD

THE PURPOSE OF THIS MANUAL IS TO PROVIDE A BASIC REFERENCE FOR FLOOD RESCUE BOAT OPERATIONS IT IS INTENDED FOR USE IN PLANNING, TRAINING AND OPERATIONS BY ALL RELEVANT DISASTER.EMERGENCY PERSONNEL AND ORGANISATIONS.

THIS MANUAL HAS BEEN DEVELOPED BY A NATIONAL WORKING PARTY REPRESENTING STATE AND TERRITORY EMERGENCY SERVICES. THE WORKING PARTY WAS INITIATED AND SPONSORED BY THE NATURAL DISASTERS ORGANISATION

THIS MANUAL IS ISSUED IN LOOSE LEAF FORM TO FACILITATE AMENDMENT AND INSERTION OF INDIVIDUAL ORGANISATIONAL SUPPLEMENTS.

AS SITUATIONS CHANGE AND IMPROVED TECHNIQUES ARE DEVELOPED THE FLOOD RESCUE BOAT OPERATION MANUAL WILL BE AMENDED AND UPDATED BY THE NATIONAL WORKING PARTY.

PROPOSED CHANGES SHOULD BE FORWARDED TO THE DIRECTOR GENERAL, NATURAL DISASTERS ORGANISATION, AT THE ADDRESS SHOWN BELOW THROUGH THE RESPECTIVE STATE TERRITORY COUNTER DISASTER ORGANISATION.

THE USE OF TRADE NAMES IN THIS MANUAL IS NOT INTENDED TO BE RESTRICTIVE, PREFERENTIAL OR PROMOTIONAL, RATHER, TRADE NAMES ARE USED WHERE DESCRIPTIVE CLARITY IS REQUIRED

INTERNATIONAL AND COMMONWEALTH GOVERNMENT ENQUIRIES SHOULD BE SENT TO THE DIRECTOR GENERAL NATURAL DISASTERS ORGANISATION PO BOX 1020 DICKSON, ACT 2602 AUSTRALIA.

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CHAPTER ONE

GENERAL INSTRUCTIONS TO CREWS

INTRODUCTION

1.01 **KNOWLEDGE**

Crews of Flood Rescue Boats (FRBs) should have the following minimum knowledge prior to becoming involved in rescue operations .

a. State/Territory boating regulations;

b. safety rules of boating;

c basic principles of seamanship;

d. knowledge of boat and motor;

e. basic navigational skills;

f. knowledge of their own strengths and weaknesses;

g. local knowledge of area of involvement; and

h. basic first aid skills.

1.02 Above all, a good deal of commonsense is absolutely necessary.

1.03 In addition to the above knowledge operators should know the general policy and organisational directives which affect and operation of the FRB

1.04 **QUALIFICATIONS**

Crews must also have attained the necessary qualification to operate FRBs as laid down by their respective organisations.

TASKS

1.05 FRB crews will undertake tasks only when instructed to do so by the Authority, under whose control they are operating.

1.06 Some tasks which could be allocated to flood rescue boats are:

a. saving of life;

b. evacuation of persons from flood threatened areas;

c conveying of persons to hospital for medical attention;

d. conveying essential flood relief officials to isolated areas or on flood activities;

e conveying of essential food stuffs, supplies and equipment within flood areas;

f. conveying fodder supplies to isolated stock;

g. rescue and recovery of livestock:

h. assistance in search and rescue on inland waterways: and

i body recovery.

ALLOCATION OF TASKS

1.07 To maintain proper control over appointed tasks and to avoid duplication, individuals who approach boat crews for assistance should be courteously referred to the appropriate Emergency Service Headquarters (HQ). The senior member of the crew (generally the coxswain) should use their own discretion when a request for assistance is made. If the request is of an urgent nature, the HQ should be informed by the most convenient means and the task carried out. In any case, the task must be reported to the HQ as soon as possible.

1.08 Under normal procedures, the crew should await directions from their HQ, but the Coxswain must bear in mind that where danger to life exists the first and foremost consideration must be for the crew.

1.09 **RECORDING OF TASKS**

It is the responsibility of the Coxswain to maintain a log listing such information as:

a. a chronological listing of tasks;

b. operating hours;

c. fuel consumption.

d. passenger\cargo details;

e. equipment serviceability; and

f. any other relevant information which may be required by unit SOPs.

KNOWLEDGE OF BOAT AND MOTOR

1.10 Operators will never know everything about the boat and motor which they are required to operate in flood conditions. However they must make every effort to familiarise themselves with the characteristics of the boat, its limitations, and above all, the behaviour patterns of both boat and motor.

1.11 No two operating areas are the same, and all boats handle differently. The difference can only be learned with practice.

1.12 **LIMITATIONS**

The limitations of any boat are of two kinds. Firstly, the physical limitations built into the boat by the designer and by the motor installed on the boat. Secondly, those limitations imposed by government regulations and Emergency Services which are safety limitations.

1.13 Irrespective of the type of limitations, the professional boat operator must know all those which affect the boat.

KNOWLEDGE OF ONESELF

1.14 Operators may completely fulfil all other requirements but if they lack the knowledge of themselves they are endangering not only themselves but all those who ride with them.

1.15 Knowledge of oneself means and includes such things as knowing your job and recognising your own strengths and weaknesses. Knowing what you can do and not being afraid to say no to those tasks which you know are beyond your capabilities is important. If you exceed your capabilities you may place at risk the lives of all involved.

LOCAL KNOWLEDGE

1.16 USE OF GUIDES

Local knowledge is a great asset. Nevertheless, there may be times when you are required to work in unfamiliar areas. In these circumstances it is preferable to use the services of a guide, if possible. However, bear in mind that the guide may not be reliable, as many of the features which are normally used for orientation purposes, especially at night, may be submerged. If time and facilities permit, first fly over the area in which you will operate.

1.17 MAPS

When acquiring local knowledge, each crew member should endeavour to learn the water conditions which may exist in times of flood. In all cases, obtain the latest available maps of an area and as many types as possible. The various types may give additional information which will assist in the build up of local knowledge.

1.18 NAVIGATION

Continually practice navigational procedures. A FRB crew must always know its exact location.

1.19 Once a guide and relevant maps have been obtained, and perhaps after an overflight of the area has been undertaken, launch the FRB and carry out a reconnaissance of the area in which you are likely to have to operate. There is no substitute for this. Dont make your first trip in flood waters an emergency trip, if it can be avoided.

PERSONAL FLOATATION DEVICES

1.20 STANDARDS

Crews are to wear personal floatation devices which comply with Australian Standards, at all times when operating Flood Rescue Boats in hazardous conditions.

1.21 PASSENGERS

All passengers must also comply with the above life jacket rules. If they refuse to wear a life jacket they are to be prevented from boarding the FRB.

1.22 Consideration should be given to the wearing of suitable helmets in conjunction with personal floatation devices when conditions warrant them.

COMPLETION OF OPERATIONS

1.23 On completion of operations for the day, the crews final responsibility is to check and service the boat and its equipment and to prepare the boat for the next crew or next days operation. It should be appreciated that the boat may be called out again immediately.

1.24 **SERVICEABILITY**

Any spare time between tasks can be used to advantage to maintain the boat and equipment in a serviceable condition. Under no circumstances, after the completion of a task, is the boat to be stored in an unserviceable condition.

1.25 All equipment must be stowed in its proper place and the boat log book filled in.

1.26 **DEFECTS**

All crews, before leaving HQ, must check the log to ensure that all defects have been rectified, and if not, ensure that everything is serviceable prior to commencing any task. Log books must also be brought up to date.

1.27 Batteries must be placed on charge to ensure that they are ready for the next operation.

COMMONSENSE

1.28 FRB crews must be able to operate under adverse conditions, and all operators must have commonsense. It is not possible to lay down all the procedures which should be used in every situation. Therefore, each crew member must apply commonsense to every situation.

1.29 FRB crews must be able to operate safely and effectively under varied and adverse conditions.

CREW MEMBERS

1.30 FRB crew must be well trained and efficient teams. The safety of boat, passengers and equipment on board is directly dependent on the ability of crew members to perform their particular jobs. All crew members should hold a current first aid certificate, be able to swim and tread water.

CREW RESPONSIBILITIES

1.31 The crew of a FRB normally consists of a Coxswain and two Crewmen who must be qualified to hold their respective positions.

a. **Coxswain**

The Coxswain is the senior member of the crew The Coxswain has charge of the boat and has all the responsibilities of command. Beside boat operation, these include proper maintenance of the boat and its equipment while it is under the Coxswain's control and strict enforcement of all safety measures.

b. **Responsibilities of the Coxswain**

The Coxswain is responsible for·

(1) checking the boat each operational day to ensure it is in all respects ready for use;

(2) knowing the rules of the road and regulations affecting the particular area of operation;

(3) knowing the buoyage system (if applicable);

(4) making certain that the boat is properly and securely loaded,

(5) making certain crew and passengers are fully briefed on, and observe all safety precautions;

(6) knowing and using visual and radio communication procedures and signals· relating to the operation of the boat,

(7) being as familiar as possible with the area of operation;

(8) acquiring the latest possible weather, flood and navigational data available, including maps or charts of the area of operation if available;

(9) ensuring all standing operating procedures laid down by the control authority are adhered to;

(10) keeping records and reports of the boats condition and activities;

(11) ensuring minor maintenance and repairs within the capabilities of the crew are carried out;

(12) securing of the boat and its equipment on completion of operations; and

(13) conducting training for crew members, to ensure efficient working of the boat and continuity of crew skills.

c. **Crewman**

The Crewman should be able to operate a flood boat in the event of the Coxswain being disabled.

d. **Responsibilities of the Crewman**

The Crewman is responsible to the Coxswain for:

(1) ensuring the boat is ready for each days operation;

(2) handling lines and stowing equipment safely within the boat;

(3) operating any signalling radio equipment carried in the boat;

(4) acting as lookout whilst underway; and

(5) assisting in the seating and control of any passengers carried in the boat.

NIGHT OPERATIONS

1.32 Because of increased hazards it is not recommended that FRBs be used in flooded areas at night or during periods of poor visibility. Only tasks of a most urgent nature should be carried out under these conditions.

1.33 Due to reduced visibility the hazards are increased and the coxswain must consider the risks before accepting a task at night

USE OF LIGHTS

1.34 There are advantages and disadvantages relating to the use of spotlights at night in FRBs. Coxswains need to consider the situation and their own personal preferences when deciding on the use of lights. Navigation lights, in accordance with State/Territory regulations should be fitted to all FRBs.

CHAPTER TWO

STATE/TERRITORY BOATING REGULATIONS

NOTE: Each State/Territory is to insert details on their own Boating Regulations, Licensing etc and details on any particular State/Territory SOPs.

CHAPTER THREE

SAFETY

INTRODUCTION

3.01 The first consideration for any person operating a FRB is the safety of the occupants, the boat and its equipment. The safe and competent operation of a boat under any conditions requires seamanship. Seamanship is basically a mixture of commonsense, observation and experience.

GENERAL BOAT SAFETY

3.02 The main considerations for the safe operation of boats are listed below:

a. **The Weather** - Before operations obtain all the latest forecast information including:

(1) wind direction and speed;

(2) tide times/predicted flood heights;

(3) wave height/current speed; and

(4) times of daylight/nightfall.

b. **The Boat** - Check the seaworthiness of the boat, motor and equipment. Ensure that the boat is suitable for the task to be performed.

c. **Fuel** - Always check fuel before leaving shore. Carry sufficient for the task plus a minimum of 1/3 reserve. Be aware of the amount of fuel consumed by your motor under operating conditions

d. **Loading** - Be conscious of the load being carried, its weight and distribution. Ensure there is sufficient freeboard for the prevailing conditions. Distribute the load evenly to ensure good trim. Restrain any load to avoid movement. Keep the centre of gravity low.

e. **Seating** - Occupants must sit on the seats provided or if no seats are provided they must sit on the floor. They must not sit on the gunwales or on the foredeck. Hands must not be placed on the gunwales or outside the boat as they may be crushed or injured. Occupants must be seated such that their waist level is below the gunwales or fixed rails.

f. **Speed** - Obey all speed limits laid down and where no speed limits apply ensure speed is related to conditions prevailing. Avoid high speed turns or violent manoeuvres. When approaching any landing, reduce speed to allow a gentle, controlled docking

g. **Reversing** - Where possible avoid reversing in shallow water. The propellor on a reversing motor is at its greatest risk of striking a submerged obstruction which may cause serious damage to the propellor or the motor.

h. **Familiarity** - Become familiar with the boat and its equipment before use, and know the limitations of the boat, equipment and crew. Obtain all possible information about the area of operation.

i. **Attention** - All crew members must maintain their attention on safety. Dont permit horseplay Always think before acting and use caution

j. **Care/Maintenance of Personal Floatation Devices (PFDs)**

(1) PFDs should never be used as seats, cushions, packing or as fenders on boats.

(2) Regularly check PFDs for damage, (battery acid damage, zips, torn straps etc). Repair or replace, where necessary.

(3) Stow and clean PFDs in accordance with manufacturer's instructions.

SAFETY RULES

3.03 The following is a summary of basic safety rules which should be observed:

a. **Do Not:**

(1) Overload your boat Always distribute the load evenly, keeping the centre of gravity as low as possible Keep an eye on the freeboard.

(2) Jump onto the gunwale. Step into the centre of the boat to keep it stable.

(3) Forget the bungs in the boat before launching.

(4) Race the boat. The purpose of the powerful outboard motor is to combat fast running water in flood areas, not for racing.

(5) Leave the boat if it is swamped or capsized. An approved FRB is designed to remain afloat even if it capsizes or is swamped. It is safer to remain with the boat by holding onto the grablines until such time as a rescue can be effected.

(6) Stand up in the boat. Though the crewman may stand to observe the surrounds, others must not do so. If you have to move around in the boat remember, "one hand for the boat, one hand for yourself", and keep as low as possible.

(7) Permit horseplay in the boat.

(8) Drink and drive. Do not allow crew members or the coxswain to handle the boat while under the influence of alcohol or any drugs.

b. **Do:** Balance or trim the boat correctly. Distribute the weight evenly passengers, equipment, and crew.

(2) Keep the centre of gravity low in the boat. This is achieved by correct placement of equipment and by seating passengers.

(3) Know the boat. Every boat and motor has its limitations. Learn what you can expect from the boat and motor.

(4) Carry out a Pre-embarkation Check. Before launching the boat check the list of essential items, carry out a radio check, and ensure you are prepared for the task.

(5) Carry sufficient fuel and check it from time to time. All FRBs should carry a spare full fuel tank.

(6) Obtain local information and familiarise yourself with the locality in which operating.

(7) Prepare and practice emergency plans and drills. A plan must be prepared by the crew to deal with all emergencies in the boat, i.e. a fire plan, abandon ship, man overboard, etc

(8) Consider others and remember the wake The wake can cause additional damage to other boats and property in flood areas; large shop windows can be broken by creating too much wake Always reduce speed through anchorages and keep clear of swimmers

(9) Check the boat before casting off, carry out a check of boat and motor. Check the boat for seaworthiness and ensure the motor starts easily.

(10) Check the equipment., As with the Pre-embarkation check, conduct an end of day-task check and ensure all life saving equipment is serviceable and stowed correctly.

(11) Ensure that there are sufficient personal floatation devices for crew and passengers and that they all wear them correctly

(12) Travel at a speed consistent with regulations and appropriate to conditions.

(13) Brief the crew and passengers. Ensure that the crew is fully briefed on the task, and understand the requirements It is important that the passengers are briefed on:

a. where to sit;

b. what to do;

c what you are doing; and

d. how to wear a life jacket correctly.

This will give them confidence in what you are doing.

(14) Obey the rules of the road.

c. **Remember:** A well trained crew and a well prepared boat will be able to carry out the tasks with a minimum of risk and a minimum of effort, and should be successful in all they attempt.

3.04 FLOOD WATER BEHAVIOUR

a. **Rapids** - A rapid occurs where the bed of a river slopes steeply or where there are constrictions in its width or depth. Frequently both conditions are present, there is a definite increased angle to the bed and either the banks close in or there is an island, or other obstructions reducing the width of the stream.

b. **Warning Signs** - Signs indicating an underwater obstruction can vary from a 'V' shaped ripple on the surface, which may be caused by a fence post or similar object, to a stationary wave caused by a rock or large fixed object. (See Fig 3.1)

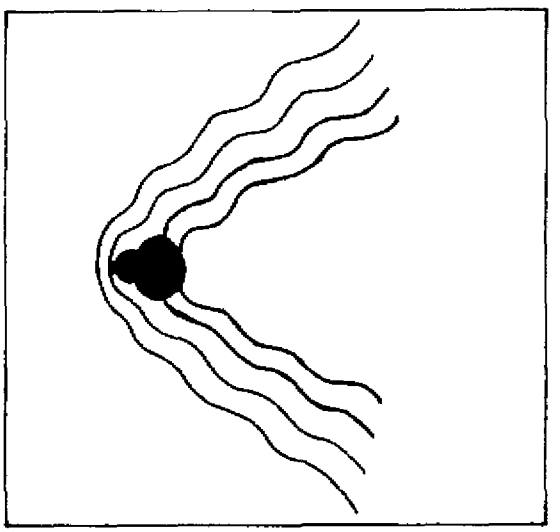


Figure 3:1
Surface Ripple

At sea or on large bodies of water such as lakes, the whole surface of the water may be moving and travelling in a pattern. In a rapidly moving body of water such as a flood, however, the waves are caused by the flow hitting an obstruction, and the waves will be stationary. The effect of the obstruction is modified by a number of factors, including water:

(1) depth,

(2) speed; and

(3) volume.

c. **Water Depth** - In a simple case water hits the obstruction and is forced upwards, if there is considerable depth or little flow, the effect is ironed out between the obstruction and the surface. (see Fig 3:2). The obstruction should offer little hazard to a boat.

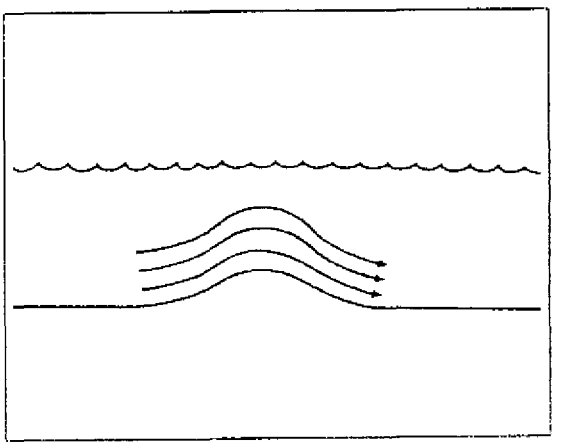


Figure 3:2
Deep Obstruction

If the water is shallower the bump caused by the water being forced upwards may appear as a wave on the surface (see Fig 3:3)

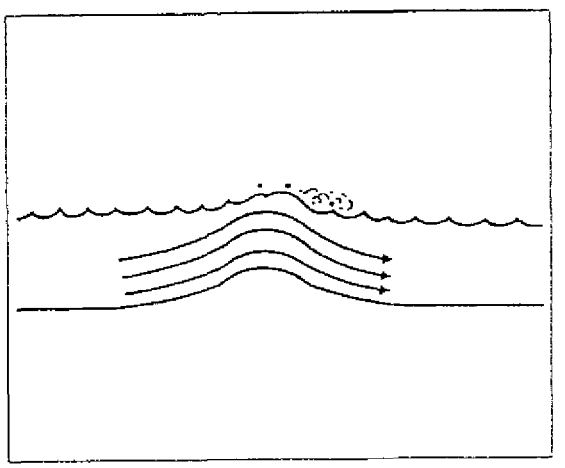


Figure 3:3
Shallow Obstruction

The wave may swing slightly with variation in the flow, but it is always over the same area. If the obstruction is very close to the surface or actually breaking through it, the water will not continue its smooth flow but will be broken drips and spray. Where there is obvious sign on the water surface, there is likely to be a hazard. (see Fig 3:4)

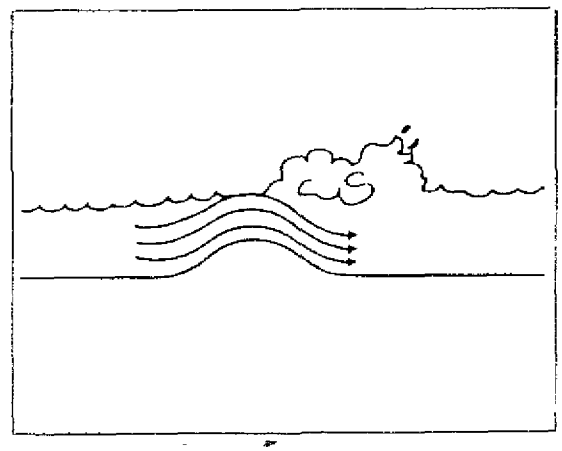


Figure 3:4
Shallower Obstruction

d. **Water Speed** - With the same size obstruction and the same depth the speed of the water can cause different effects. The obstruction which causes only a smooth bump at 5km/h may cause a broken wave at 10km/h.

e **Water Volume** - Variations in water level can alter the characteristics of rapid water considerably. It is never advisable to assume that because a patch of water has been negotiated previously it will be passable at a later time.

f. **Smooth Water** - A large wave may be caused by fast water hitting a patch of deep still water. The effect here is for the fast water to curl back on itself. This is particularly noticeable where water flows over a weir or elevated section of road embankment. (see Fig 3:5)

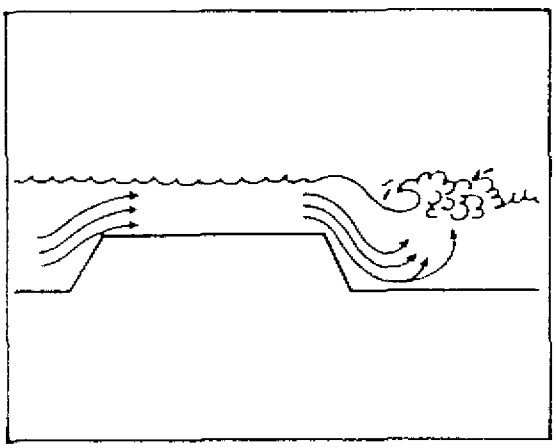
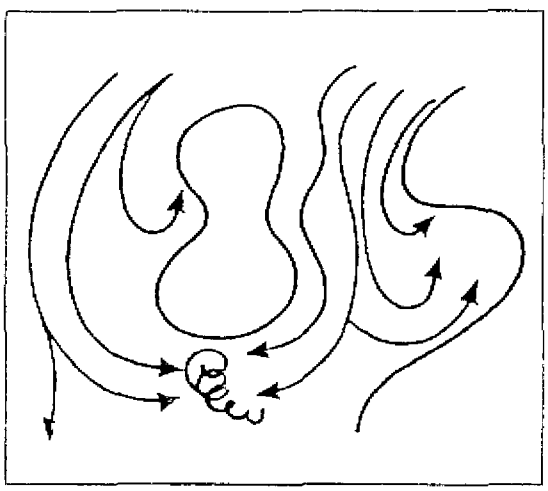
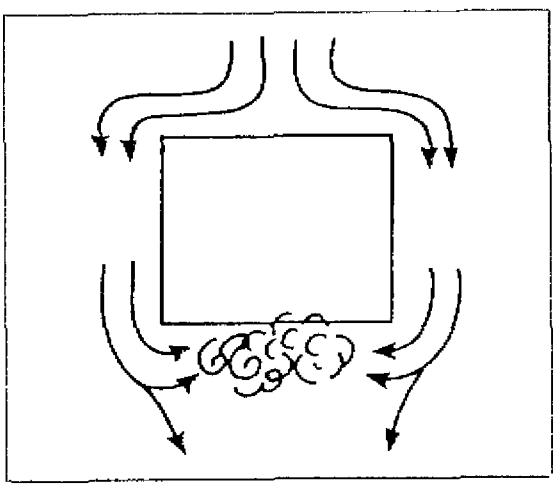


Figure 3:5
Water 'Curl Back'

g. **Whirlpools** - Whirlpools may be caused by the water changing speed and turning back behind the shelter of a rock, bridge, building or a bay in the bank. (see Fig 3:6)



Currents around Banks etc.



Currents around a Structure

Figure 3:6

While operating in fast flowing waters all boat crews should be aware of the effect of obstructions and currents on the boat, particularly when carrying heavy loads or when fitted with low-powered motors. Unless great care is taken a boat may foul an obstruction and be holed, capsized or the motor may be damaged.

h **Flood Hazards** - The following additional hazards may be encountered when operating in flood water:

(1) CURRENT CROSSING - Avoid direct crossing in fast flowing water, as logs, trees and other debris may be encountered. Any object moving swiftly in flood waters is a hazard to boats. If possible, cross the current at an angle as this will give greater control of a boat and, with a good lookout, will make collisions less likely.

(2) APPROACHES - If approaching a jetty, wharf, flooded house or any floating object, travel slowly and approach from downstream if possible. Use extreme care as any miscalculation may have serious consequences.

(3) MAN-MADE DANGERS - Power lines, fences, roads, and other constructions are often very difficult to see in flood conditions A sharp lookout must be maintained to avoid hitting such obstacles. Where such obstacles may exist, speed should be kept to a minimum. It may also be necessary to rig the motor for shallow water running.

For particular detail on electrical safety, refer to 'Electrical Safety Handbook for Emergency Personnel' published by the Electricity Supply Association of Australia

(4) ANIMALS - Snakes and insects as well as drowned and swimming stock can be hazards in flooded areas. Particular care should be taken of panicking animals attempting to board boats. Crews should be watchful of snakes where craft are driven through overhanging trees or where landings are to be made. Starved domestic or feral pigs, isolated by flood waters, have been know to attack people.

(5) CHEMICALS - Flooded factories and properties often are a source of floating chemical containers. All drums and containers should be avoided. Many chemicals, particularly if mixed with others, may explode, cause burns or form toxic gases.

(6) WATER CONTAMINATION - Floodwater is usually contaminated and should never be used for drinking. Crew members should not swim in floodwaters, unless necessary, particularly where chemicals or sewerage may have been released.

(7) WEEDS - Weeds are a hazard as they often become entangled in propellors. This is usually indicated by:

a loss of power; or

a change in motor noise.

The quickest method of clearing a weedfouled propellor is to reverse the motor. This permits the weed to unwind from the propellor. If this fails, stop the motor, lift it clear of the water and clear the propeller by hand. Reduce speed in weedy areas and continually observe the cooling water outlet to check that water is still being pumped through the motor. Periodically or as required, stop the motor, clean the propeller and water intake completely of weeds then continue on with the operation. If necessary, the motor may be rigged for shallow water running by using a shallow water bracket.

(8) LOSS OF MOTOR POWER - Should the motor stop for any reason when operating in flood waters, the procedure is as follows:

(i) Get the way off the boat. This is done by dropping anchor or passing a line around a tree, fence, post etc. If an anchor is not carried, or there are no trees or posts available, or it is not possible due to the speed of the current to get a line around a fixture, then the oars must be used for steering. This means they must be used and positioned for rowing and are not to be used as paddles.

(ii) Only after the boat has stopped moving with the current, do you try to start the motor or trouble shoot. Many boats have been wrecked, or capsized due to the loss of the motor and while action was being taken to rectify this, the boat has struck trees or obstacles with disastrous results.

(9) RIVER RISE - All Coxswains must be aware of the rapid rate at which rivers can rise and fall and the effect fast moving waters will have on the boat and motors performance. If caught unaware, a boat can be forced against obstacles, the motor may stall and the boat be overturned or take in water and sink. Caution is required. All equipment should be adequately stored and secured so that in the event of a capsize, the equipment will not be lost. Crews operating in bays or estuaries of the sea must also be aware of tidal rise and fall and its effect.

(10) ROADS AND HIGHWAYS - During flood operations, roads can be used as relatively safe and obstruction free areas for FRBs to move along, providing there is sufficient depth of water. Remember the deepest water is on the sides of the road.

(11) FUEL ECONOMY - At times fuel economy will become paramount due to operational requirements. Fuel saving without appreciable loss of speed can be obtained after the boat is at full plane (where it is safe to do so) waters with full throttle open. This is achieved by throttling back slightly from the full speed position. It is always recommended in FRB operations that some reserve throttle speed is maintained to counter the unexpected when speed is required.

3.05 PERSONAL EQUIPMENT

a. **Clothing** - When operating during floods, weather conditions may change rapidly and crews should be prepared accordingly. Consideration should be given to protection from sunburn, cold and insects when selecting suitable clothing. Consideration must also be given to the effect clothing will have freedom of movement and personal floatation. The wearing of wetsuits is an option that may be appropriate

b. **Footwear** - Always use footwear while operating FRBs. Bare feet are easily injured by objects in the boat and crew members will often have to wade in debris-strewn shallows. Footwear should provide protection, support and warmth for feet and ankles. The wearing of woollen socks will assist in the protection of feet from sharp objects and cold. Gum boots or thongs must never be worn in FRBs.

CHAPTER FOUR

EQUIPMENT

INTRODUCTION

4.01 All FRBs must carry the equipment required by state.territory boating regulations. as set out in Chapter 2 of this manual.

4.02 All equipment must be kept in a good state of repair and properly stowed in an accessible place where it will not interfere with the effective operation of the boat.

4.03 Crew members must know the location of all equipment, how to use it and when it should be used The crew of a boat are responsible for briefing passengers in the use of safety equipment on their boarding the boat.

EQUIPMENT LIST

4.04 The equipment recommended to carry in a FRB is:

a. **Basic Equipment**	**Quantity**
Life Jackets: in accordance with AS1512	1 for every person up to the anticipated loading
Oars with Rowlocks to match	1 pair of each
or Paddles	1 pair
Anchor complete with Chain and Line attached	1
Danforth or similar	1
Reef Anchor, galvanised metal Bucket or Bailer, min. 9 litre fitted with Lanyard of not less than 2m	1
First Aid Kit (waterproof)	1
Approved Fire Extinguisher	1
Torch, waterproof with spare batteries	1
Spotlight, complete with batteries	1
Drinking Water (10 Litre minimum)	1
Bolt Cutters	1
Wire Cutters	1

Axe/Hatchet	1
Bow and Stern Lines (10m x 12mm)	1 of each
Boat Hook	1
Towing Bridle	1
Knife, Sheath	1
Fuel tank complete with Fuel Lines	2
Propellor	2 spare
De-watering Spray (WD 40 or similar)	
Ropes	as required
Split Pins	
Shear Pins	
Spare Bungs	
Tool Kit (complete)	
Safety Chain (motor to transom)	
Radio complete with Antenna	
Navigation Lights	
Maps, Charts and Compass	

b. **Special Equipment**

Stretcher

Space Blankets

4.05 SPECIAL EQUIPMENT

Special Equipment as required for particular tasks will need to be added to the above list.