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Manual



South African Small Craft Association

Promoting Safety Afloat

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INTRODUCTION

With the expansion of boating on inland waters and an increase of serious incidences, there was a clear need for standards, control and education.

Any person who takes a small vessel to sea must hold a South African Maritime Safety Authority Certificate of Competence. This requirement is in terms of the Merchant shipping Regulations of 2002. (Tidal lagoons and rivers are treated as part of the sea for the purposes of administering the Merchant Shipping Regulations). As from 2009, any one taking a vessel on any body of water will require this certificate of competence.

Certification

Skippers of motor driven vessels less than nine metres and powered by more than 15 horsepower, require a small vessel certificate of competence in accordance with the regulations. Certificate for restricted skippers 'Day Skipper (local waters) Certificate is limited to lagoons, rivers and/or ports. Only persons over the age of 16 may apply for a competency certificate. An adult who has such a certificate must accompany any person under the age of 16. A person under the age of 16 may operate a power vessel with propulsion of 15 horsepower or less.

In order to qualify for the national small vessel certificate of competence for sheltered waters one must:

- a) Be 16 years of age or older.
- b) Participate in a course of four hours duration.
- c) Have logged at least 25 hours sea time.
- d) 60% pass mark or higher, on a written one-hour (closed book) examination.
- e) Complete a practical evaluation.

A certifying authority may suspend or cancel a Certificate of competency if the holder:

- a) Is convicted of an offence or for dishonest conduct relating to the act.
- b) Is found to have conducted him/herself in a negligent or incompetent manner whilst in charge of a vessel.
- c) Obtained the certificate fraudulently or on wrong information.

The holder of a Certificate of Competence should keep his/her original certificate along with a safety certificate for their vessel or a certified copy, available for inspection at all reasonable times.

Note that safety at sea is your responsibility. If you are the skipper of a small vessel, the safety of the vessel and most specifically her crew is your responsibility. As the skipper, you must also ensure that the vessel is operated in accordance with the collision regulations and the law in force in the area. The conditions and limitations of the local certificate of fitness and the instructions and specifications set out by the boat manufacturer and supplier of the propulsion machinery. You must also comply with the conditions and limitations of your certificate of competence. You may not operate the vessel in a careless manner and without due consideration for other persons. You must also take into account, the weather and sea conditions, the

visibility, the presence of other people in the water, other vessels and hazards in the area and the manoeuvrability of your vessel, with special reference to its stopping and turning capability.

There is no guarantee that the safety equipment that you are required to have on your vessel is going to save your life, but it does improve the chance of your survival when you find yourself in distress. The chance is greatly improved when you know how to use the equipment.

The following factors can be considered as the major causes of small boat accidents:

- a) Alcohol use (i.e.: a six pack plus the effects of the sun).
- b) An incompetent or inexperienced skipper.
- c) Overloading (reducing reserve buoyancy) and overpowering.
- d) High speed in rough weather.
- e) Raising the centre of gravity to high (top heavy).
- f) Failure to keep a proper lookout.

No person may operate a vessel if he/she is not physically able and of sound mental health. No person may operate a vessel or any of her equipment or safety appliances while under the influence of intoxicating liquor or a drug having a narcotic effect. No person may refuse to have a blood or breath specimen taken if required to do so. The limits are as laid down in the National Road Traffic Act of 1996 of 0.05 mg per 1000ml of breath specimen.

You will note that most of the causes for small boat accidents can be avoided by plain common sense. If you have a feeling that the situation or conditions are not right, respect those feelings and seek proper advice, or don't go to sea.

Vessel Registration

In regards to the Merchant Shipping Regulations, 2002, it is required that 'approved markings' are to be displayed on all sports and recreation vessels going to sea and a certificate of fitness to be issued by SAMSA or by an authorised agency. (Local authorities i.e. SAN Parks, cannot be appointed as authorised agencies but they can exercise control over recreational boaters in internal waters under their jurisdiction.) This includes a hull survey as well as a survey of all the safety equipment and appliances. This certificate of fitness is valid for approximately one year. An authorised agency, i.e. SASCA or SAMSA, will issue this certificate. The penalty for taking an unseaworthy vessel to sea is R10 000.00 or six months in prison. A vessel may temporarily lose its certificate of fitness when it is damaged, but can be reinstated once the vessel has been repaired to the manufacturer specifications.

No skipper may operate a vessel beyond the maximum distance applicable to the category of vessel concerned. All vessels' registration or licence numbers must be easily visible and clearly identify the vessel's category (U-R-3859). It will be easily seen whether the vessel is working within its boundary.

All vessels will display a permanent number of contrasting colours on either side of the vessel, on the bulwark either near the bow or the stern where it is clearly visible. Every vessel must be registered and re-registered every 12 months. The registration certificate will comprise of the following:

- a) The owner's name, identification number and address.
- b) The type of boat, engines and numbers.

- c) The overall length of the boat.
- d) The list of safety equipment.
- e) The vessel's registration number and category.
- f) The amount of buoyancy required.
- g) Number of persons that can be carried on board.

The owner of the craft must ensure that the condition of the craft and her safety equipment and appliances comply with the regulations for the duration of the safety certificate.

The owner of the vessel must inform the authority of the change of address of the owner, change of ownership of the craft, if it is withdrawn from service, if it has been stolen, if the craft has been abandoned, lost or destroyed at sea. If the craft becomes unseaworthy, no longer complies with the certificate of fitness, or has been altered in any way, the certificate of seaworthiness becomes temporarily suspended until such a time when the vessel can be re-surveyed and reinstated.

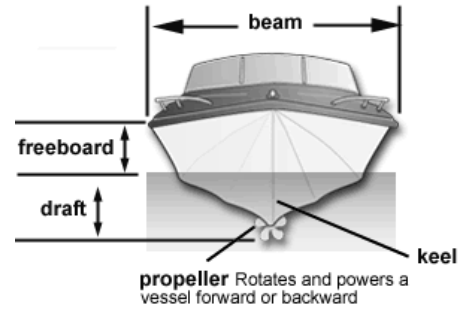
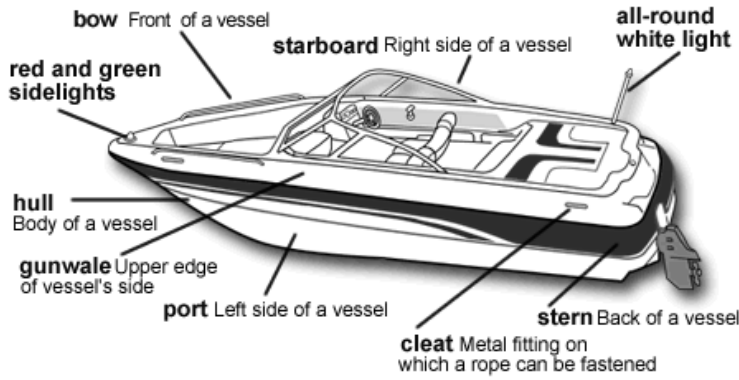
The vessels numbers may be revoked if the authority believes that the craft was obtained fraudulently, or under false information, or if the numbers cease to be valid. The registration authority may give suggestions it sees fit regarding the removal of markings, and the handing over of the safety certificate. The owner of the craft must comply upon demand of the authority or relevant agency. At this time a new set of numbers may be issue.

A vessel may only be used during daylight hours unless the vessel and a competent certified person have been night rated. These vessels may not be used to go to sea unless designed, constructed and certified seaworthy in accordance with SAMSA regulations.

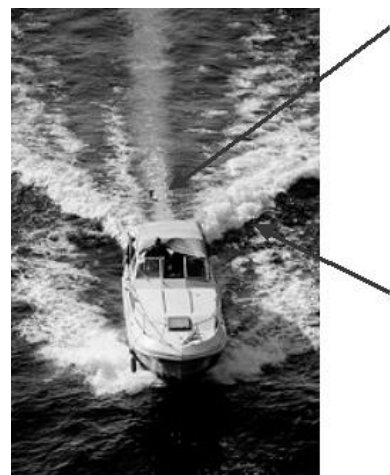
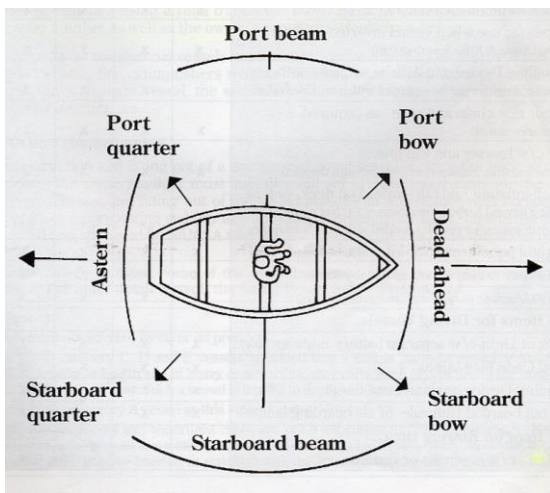
The Merchant Shipping Regulations will be enforced on all bodies of water in South Africa. All the control and safety measures in the regulations for intertidal waters such as vessel markings, skipper certification, skipper sobriety vessel buoyancy and construction apply.

CHAPTER ONE - NAUTICAL TERMINOLOGY

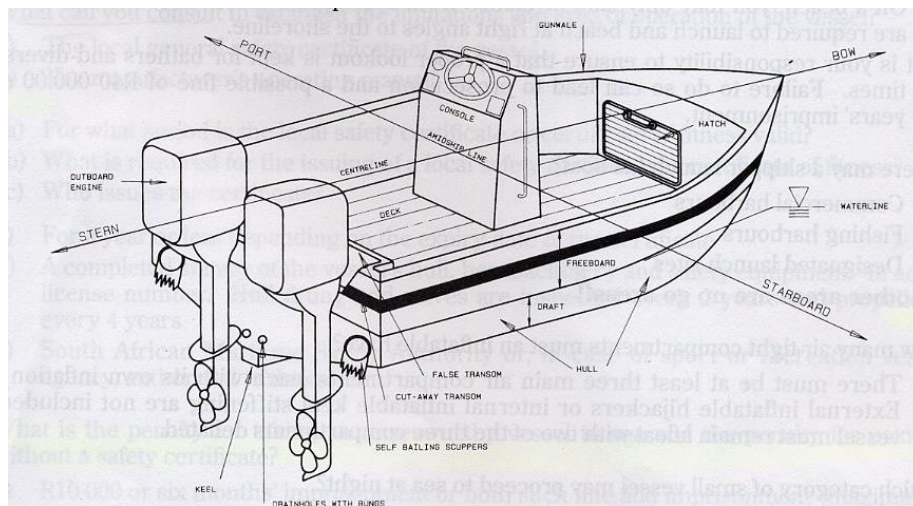
Abeam	off to the side, 90 ⁰ to the fore and aft line.
Ahead	engaging the engine to move the boat forward. Looking ahead, or to the front.
Astern	engaging the engine to move the boat astern. Looking astern or behind.
Aweigh	when the anchor becomes free from the bottom. The anchor is aweigh.
Bow	the front or forward end of the boat.
Cast off	let go the mooring lines or to free the vessel from the quay or dock.
Cavitation	aerated water around the propeller, causing it to lose effectiveness.
Cleat	a T-shaped fixture on a boat, used for securing ropes.
Displacement hull	is a heavy hull and designed to cut through water or waves.
Draft	the depth of the water, measured vertically, from the waterline of a floating vessel to the deepest part of the vessel.
ETA	estimated time of arrival.
ETD	estimated time of departure.
Ebb tide	water movement exiting the lagoon, river, estuary. Also referred to as the tide going out.
Fender	a device hung over the side of the boat to cushion contact with the quay and other objects.
Forward	the fore-end of a boat. Fore of the midships line.
Fore aft line	the line passing through the centre of the boat from the fore to the aft.
Freeboard	the height measured vertically from the waterline to the gunwale or topside of the boat.
Gunwales	the top edge of a boat's side. Usually the top of the bulwark.
Helm	the means of steering a boat by a wheel or tiller.
Keel	the backbone of a vessel. It runs from bow to stern
Planing hull	a light hull designed to glide over the waves.
Port	the left-hand side of the boat when facing forward
Scupper	an opening in a boat's hull above or through the watertight deck. Used for draining water over the side.
Slack tide	when the tide is neither coming in nor going out. It occurs at the change of tide.
Starboard	the right-hand side of a boat when facing forward.
Stern	the aft end of the boat.
Transom	a flat vertical stern, where the engines are mounted.
Underway	means the boat is not at anchor, made fast to the shore or aground. She could be drifting. Making way means that the boat is moving through the water.
Wake	the pattern of waves caused by the boat making way through the water.
Wash	the area of disturbed water caused by the propeller.
Weighing anchor	the process of lifting the anchor from the bottom onto the boat.



Directional Diagram



Wake and Wash



CHAPTER TWO – LEGAL RESPONSIBILITIES

As the person in charge of a craft on the water, you are responsible for the safety of your craft and its navigation as well as the safety of all on board and their conduct.

A skipper should;

- a) Report any accidents, serious injury (requiring hospitalisation) or fatality, or damage to property to the nearest police station, boating club and SAMSA within 24 hours.
- b) Keep clear and do not interfere with craft participating in an organised event.
- c) Brief your crew on emergency and safety procedures.
- d) Ensure all people on board are seated properly.
- e) File a float plan with someone responsible with your ETA (ensure to change this if necessary), ETD, launch point, names and number of people on board and contact numbers, name and registration number of the vessel, and who to contact in case of emergency.
- f) Observe all notices, water traffic signs and signals.
- g) Report any navigational hazards to the necessary authorities.

A skipper should not allow;

- a) A small vessel to be used in a way that might endanger or be of annoyance to other vessels or people on the water, bank or shoreline.
- b) More people on board than the vessel is licensed to carry (reduces reserve buoyancy)
- c) A vessel to be left unattended unless moored or anchored securely.
- d) A vessel to be attached to or interfere with marker and navigational buoys or navigational aids.
- e) A vessel to be anchored in a channel where it will create an obstruction.

Planning your voyage

- a) Obtain a weather forecast before the time.
- b) Prepare your vessel and have it in a seaworthy condition. Check that all equipment is in working order and on board.
- c) Check fuel supply and bungs of the vessel.
- d) Study a diagram or chart of the area of operation noting buoyage system and hazards.
- e) Check the rules and regulations pertaining to the launch site.
- f) Only launch or land your vessel at a designated launch sites, commercial harbours or fishing harbours.
- g) All vessels must operate in the confines of the demarcated area. No vessels may operate in a sanctuary, bathing or area set aside for other water sports or in a prohibited area.
- h) The number of passengers must not exceed the safe load capacity as prescribed by the survey certificate.
- i) Ensure you have sufficient fuel - 25% more than you plan to use.
- j) Be prepared for all emergencies within reason.
- k) Ensure you know where to get help if it is needed. (NSRI, hospital, ambulance contact details)

Launching

- a) Remove tailboard (when applicable).
- b) Loosen all the boat's tie downs except the winch line.
- c) Check to see that the bungs are in and secure.
- d) Place all equipment on board.
- e) Ensure the engine is properly secured to the boat.
- f) Couple-up the fuel lines and test the engine, either with a quick on/off or by using a water source to provide cooling water to the motors.
- g) Reverse the vehicle down the ramp until the craft is ready to float off the trailer. Be careful on mean spring low for exposed rocks.
- h) Be considerate and remove your vehicle and trailer off the ramp or slipway without delay. Park your vehicle and trailer in an allocated parking area.
- i) File a float plan
- j) Conduct a safety and emergency drill so everyone knows where to find and use safety equipment and what to do in case of emergency.

Before launching your boat, there are legal requirements to be met:

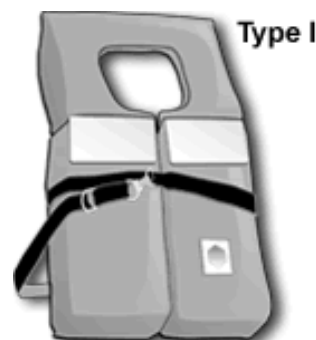
- a) A competent person on board with a valid certificate of competency
- b) A valid survey certificate of fitness
- c) Vessel access permit from the local authorities (ie SANParks, Cape Nature or municipal)
- d) Registration number of both sides of the vessel
- e) The trailer of the boat must be marked with the boat's number, the owner's telephone number, and yellow reflective tape.
- f) If operating at night, the boat must be equipped with navigation lights.

CHAPTER THREE - EQUIPMENT

A vessel going to sea on sheltered waters are required, as any other vessel, to carry certain safety equipment. A list of equipment requirements is found on page 13. For an up-to-date list of safety items, seek assistance from your local safety officer or marine store. All safety equipment should be labelled with the boats approved markings i.e. the vessels registration number, with exception of the fire extinguisher where labelling is not needed as it doesn't float.

Buoyancy aids and life jackets

Buoyancy aids or life jackets are required for each person the craft is licensed for. Life jackets are to be SABS and SAMSA approved, have a whistle, tying tabs or zipper in good condition, reflective tape, and have the minimum weight marked on the jacket. It should be in good working order and not have compressed foam, be faded or have loose stitching. Most adult life jackets are not suitable for kids and specific jackets will be required for them. To check for the fit of a child's jacket, lift the shoulders of the jacket when on the child and ensure the child doesn't slip through.



Although wetsuits give excellent buoyancy, they are not suitable substitutes for buoyancy aids. They do not turn an unconscious person on their back. The jackets that skier's uses are very different again from buoyancy aids as they have impact protection in the chest area, although they are often accepted in lieu of life jackets and buoyancy aids..

Life jackets and buoyancy aids should be kept clean and washed, especially after use in salt water. Storage should be in a cool, well-ventilated area and they should not be exposed to sunlight unnecessarily. The lifejackets must be kept away from acid, petrol and oil, and never stow them under compression as the foam will not return to its original shape and the lifejacket will be condemned. As skipper, it is your responsibility to ensure all on board your vessel know how to done a life jacket correctly.

It is always highly recommended for a life jacket to be worn at all times, but it must be worn in the following conditions:

- a) On instruction from the boat skipper.
- b) When negotiating turbulent waters (i.e. bad weather or when launching/beaching a boat).
- c) Any one driving a jetski
- d) By non-swimmers and all persons under 12 years of age.
- e) At night if instructed by the skipper.

Fire Extinguishers

All motor craft should be equipped with at least one 1.5kg dry chemical powder extinguisher per engine. These fire extinguishers have a discharge time of about 20 seconds. When fighting a fire it is

important to determine where the base of the fire is as the fire needs to be fought directly at its base and with determination.

Fires need three elements in order to live, oxygen, fuel, and a spark or source of heat. Without this, the fire will not ignite or continue to burn. So practically speaking, by removing one of these elements, the fire can be fought successfully.



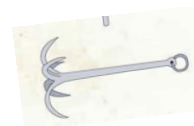
When fighting the fire one must also look at whether there is a continuous source of fuel, i.e. is the fuel can still attached to the engine and feeding the fire, or is it electrical and the power switch can simply be turned off or the batteries disconnected. A little thought into the possibilities will cause a lot of saved time in the heat of the moment. Ensure your fire extinguisher is serviced yearly.

Various Anchors

There are a wide variety of anchors available on the market and designed for various uses. The following are a list of anchors that you may find during your boating experiences.

Grapnel (Reef) Anchor

Most common anchor found on small boats. It has good holding power on rocky reefs but very poor in sand or mud.



Folding Anchor

Found often on small craft like tenders and sail boats, as it folds small and compact. Similar is design to the grapnel anchor, it holds well in rocky reefs but it is poor in sand or mud.

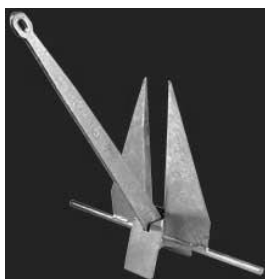


Bruce or CQR Anchors

There are some other anchors used by small craft which are plough type anchors. They are good for both sand or rock but are difficult to stow on a small craft.



Anchoring

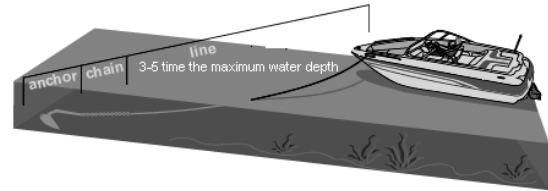


All vessels need an anchor. Even the smallest of sailing dinghies must be equipped with a small, folding anchor along with its chain and rope. Choice of anchor will depend on size and weight of the boat and most specifically the bottom composition.

There is a wide selection of anchors on the market but the most suitable for sand and mud, is the Danforth. It folds flat and will hold securely in most instances. For the average length craft a 7-kg anchor is adequate. The anchor rope should be made of nylon and between 12 and 16 mm in diameter. The length of anchor rope would be at least five times longer than the maximum depth of water you will ever operate on. Fifty meters of rope should be attached to the anchor chain with a shackle and thimble or similar set up.

When making up the anchor, a three-metre length of galvanised chain is shackled onto the anchor. The anchor chain is secured to the crown of the anchor with a shackle. It is then extended up the shank and several strands of copper wire secure it to the anchor's eye. The wire binding is known as the 'weak link'. Should the anchor ever be fouled, a pull in the opposite direction will break the weak link and the anchor can be recovered. The rope must be secured to a strong point on the vessel.

When anchoring a boat, several things must be taken into consideration; specifically the depth of water, wind and current direction, tidal movement and bottom composition. When anchoring, bring the bow into the wind or current, whichever is stronger, and slow the craft down almost to a stop. Ensure you are up-wind of the position you will wish to be. When the boat has stopped, let the anchor go, under control, until it settles on the bottom. Put your engines astern and move slowly aft into the position you have chosen to anchor, letting out the anchor rope as you go. Make the anchor rope fast on the anchor fixing point. At this stage the anchor flukes should have set into the mud or sandy bottom.



The length of anchor rope used should be at least 3 times the depth of water at that point. If there is any dragging, a hand on the rope would feel this vibration. If set, you will feel the rope tighten up. Check with two fixed objects ashore to detect any drift. Be aware that it would be dangerous to tie the anchor rope to the stern of the vessel, as water cannot drain properly from the vessel. When it is time to weigh anchor, start the motors, slowly move forward, taking in the rope. Be careful not to 'over run' the anchor line as the line can get fouled in the propeller. The person taking up the anchor will feel the anchor break out of the bottom. At that point, stop the craft and pull the anchor on board. Make sure all the mud has washed off the anchor before bringing it back on board.

Ropes

Ropes are necessary on all craft, even if it is only for tying the craft up to the jetty. Rope thickness is measured by its diameter in millimetres. Ropes available are either three-strand cable lay, or braided such as ski rope and sheeting for sailing craft.

1. **Nylon** rope is the strongest. It is very durable, wet or dry. It has great elasticity. It tends to be slippery when wet, sinks when in the water and is very useful as anchor rope. There is however, a danger in that if it parts when under tension, the ends may whiplash.
2. **Polyester**, also known as yacht rope, is soft and firm to grip. It has very good resistance to abrasion and it has low stretch.
3. **Polyethylene** is the rope with the waxy feel. It is slippery when wet.



Most of the ropes used today are synthetic and they suffer from ultra-violet deterioration. Polyester has the highest resistance to the aforementioned deterioration. They do not suffer from rot, mildew and fungus. To preserve the life of your rope, keep these things in mind:

- a) Do not overload it - safe working load is 16% of the ropes breaking strain.
- b) Guard against chafe, abrasion and accidental knots, and do not place under tension with a kink.
- c) Keep it free of sand, mud, oil or petrol.

- d) Do not expose it to sunlight unnecessarily.
- e) Whip or fix the ends to stop them from fraying or unravelling.
- f) Coil the rope when not in use and store in a cool, dry, well ventilated area.
- g) Use the right rope for the job.

Knots

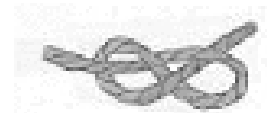
When knotting your ropes bear the following in mind, loss in strength of a rope where it has been spliced is 12% and 50% where it has been knotted! Below are diagrams of an eye splice and an end splice on 3 strand nylon rope. This is something that you will need to practice to do well. Different ropes will need to be spliced in different ways.

Illustrated below are a few knots that will come in handy on board your craft.

Reef knot: used to join two ropes of equal thickness. It is a flat knot and is also used in first aid bandages. This knot holds only when under tension.



Figure of eight: This is used when a stopper knot is required to prevent the end of a rope running through any eye or block. It also prevents the end of a rope from unlaying.



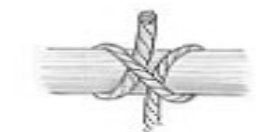
Sheet bend: Used to join two ropes of different thickness. The thicker of the two ropes forms the main bight or loop of the knot. With wet synthetic rope, a double turn would be a good practice.



Bowline: a very tricky knot to learn but very effective It is used to provide a temporary non-slip eye at the end of a rope and could be used as a craft's mooring line over a pole or bollard. If it is made properly it will not slip or jam.



Clove hitch: is a quick and easy not used to secure a rope to a spar or ring.



Category 'R' Equipment requirements

Vessels <9 meters

- One life jacket/buoyancy aid, with a whistle attached, for each person on board
- An anchor with a short length of chain (approx. 3 metres) and 30-50 metres of anchor rope.
- One 1.5 kg dry powder fire extinguisher per engine, serviced yearly.
- If it is a single engine vessel, paddles or oars.
- The boat must have 30% buoyancy, whether it is foam or bottles.
- Capsize rope, one and a half times the length of the boat and fitted with at least one cross tie.
- Inflatable and semi-rigid boats must have a pump and repair kit.

- Suitable bailing device, if the deck is not a wet deck.
- Registration number on either side of the vessel.
- Safety equipment to be marked with the vessels approved markings.
- Trailer must also have vessel's name and number plus owner's name and contact number.
- Battery and fuel tanks to be in separate compartments and again separate from an inboard engine.
- Fuel tank to be of suitable material and SAMSA approved.
- Built in fuel tank must be equipped with a cut off switch.
- Adequate fuel for the voyage plus 25%.
- Bow and stern eye.
- Emergency steering system.
- For night operation a complete set of operational navigation lights and a flash light.
- A tool kit
 - a) Selection of spanners from 6mm-19mm
 - b) Spark plug spanner
 - c) Selection of screwdrivers
 - d) Pliers
 - e) Adjustable spanner
 - f) Aerosol water repellent and a tube of clear grease
 - g) Duck tape
 - h) Q20
- Minimum of 2l of water or 1l for each person on board.
- A spares kit (for 2 stroke/carburettor engines)
 - a) Spark plugs
 - b) Emergency starter cord
 - c) Fuses
- A first aid kit

Latex gloves	mouth barrier
50mm roll bandage	medium field dressing
Triangular bandages	non-aspirin pain tablets
Eye patch or shield	waterproof plaster
Safety pins	stainless steel scissors
Assorted plasters	space blanket.
Pack sterile gauze	tube of antihistamine cream
100mm roll bandage	small bottle of Detol
Tweezers	first aid book



CHAPTER FOUR - MOTORS

There is a wide range of two and four stroke engines on the market that are designed to run on unleaded petrol to oil mixture. Most small two stroke engines are on a 100:1 mix ratio and the larger engines on a ratio of 50:1. Modern motors are fitted with a header oil tank above the motor and are known as auto lubes. The fuel is not pre-mixed in this case. The engine is supplied with ordinary fuel and draws oil as required from the header tank. Ordinary multi-grade oil is not suitable, but rather two-stroke oil should be used. The four-stroke motors that are available are much lighter on fuel, quieter, and more eco-friendly. Regulations that will soon come into effect will no longer allow the use of two-stroke motors.

Outboard engines fall into two main categories; 2 stroke and 4 stroke outboards. Both types have their advantages and disadvantages and the type you pick will depend on its use.

2 Stroke Outboards

2 stroke engines are lighter and faster so when speed and acceleration are required, this would be the engine of choice. 2 strokes are also generally cheaper and keep their value better when it comes to resale. As 2 stroke engines have been around for almost 80 years, parts are readily available, making repairs easy. Also, the design on these engines is less complex than a 4 stroke; meaning problems are less likely to arise. There are some disadvantages to the 2 stroke engine. 2 stroke engines create more pollution than 4 stroke engines so they are not so kind on the environment. Their engines are lubricated by the oil that is mixed into the gasoline, meaning the exhaust is smoky and contains unburned oil, which in turn pollutes the water. With new regulations, outboard manufacturers are looking to find new ways of producing the same power with less pollution. Some 2 stroke outboard engine manufacturers include Mercury, Yamaha and Evinrude.

4 Stroke Outboards

4 stroke engines are quieter, smoother and more economical. They are also heavier with slower acceleration. With less pollution and smoke they are also kinder to the environment. If you're after a quieter, smoother ride, then the 4 stroke outboard is the better choice. 4 stroke outboards are more complicated with more parts so they often require repairs more often. When a repair is required it is usually more expensive and parts can be limited. 4 stroke outboards are generally heavier than 2 stroke outboards, so if you own a smaller boat it may not be able to hold the weight of a 4 stroke engine. Because 4 stroke engines are newer, they are continually being improved to make purchase and repair easier. Some 4 stroke outboard engine manufacturers include Yamaha, Suzuki, Mercury, Honda and Johnson. If you're looking for a new outboard, it's worthwhile considering one of the newer, environmentally friendly models. As well as producing lower emissions, there are a number of other advantages such as better fuel economy, quieter running and reduced operating costs.

Engine Basics

When starting the motor, ensure that the motor's kill switch tab is in place. This is fitted into the control box of the throttles. Ensure that the tanks are full and the air vents open. Squeeze the primer bulb until you feel that the carburettor is fully primed. Make sure that the throttle is in

neutral and then start the engine. If the engine is cold, you might be required to apply the choke. Ensure that you do not run the starter motor for longer than five seconds at a time. Once you have warmed the engine, you will be ready to set off on your trip.

The top running speed on an outboard engine is about 5500 rpm's. Once your craft is on a plane, you should tap off a little. This will encourage economical running and prevent unnecessary wear on the engine. When stopping you can use the kill-switch on the motor or switch the key to the 'off' position.

Fuel and Refuelling

It is critical to keep the fuel system free from dirt, water and other foreign particles. Always check the fuel lines to see that they are not kinked, crushed or depressed in any way.

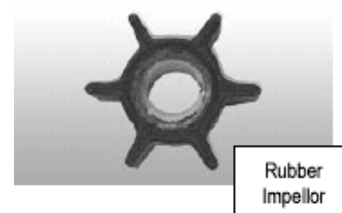
Always ensure that you have enough fuel for your excursion plus 25%. Remember that towing a skier will consume fuel faster than a leisurely drive around the lagoon. When refuelling always remove the fuel tanks from the boat in case of spillage. Wipe the sides of the containers and be careful not to overfill your containers. Keep the fuel hatches clean and well ventilated. Excess fumes and fuel spilling on the boat can cause unnecessary hazards like fire. Fill the fuel tanks as soon as possible to prevent water condensation forming inside the tanks.



With built in fuel tanks three things need to be mentioned. Firstly that it is very difficult to refill without spilling, so great care must be taken if refuelling is done on the water. Secondly, there is a greater possibility of water collecting in the bottom of the fuel tank due to condensation so it is strongly suggested to have an in line water separating filter installed. Thirdly, if there is a fire on board, there is not an option of jettisoning your fuel to prevent an explosion. So to prevent the fire following the fuel line to the tank, a fuel cut off valve should be installed. It is also for this reason that the batteries are placed separate from the fuel store.

Cooling System and the Impeller

Ensure that water is pumping through the system. You would do this by checking on the 'tell-tale' water squirting out the small hole on the side/back of the engine. This must be checked at various stages during the trip. Keep in mind that the tell-tale is not the only indication of water going through the cooling system, although it is the only above water indication. Water also works its way through the exhaust system. Any kind of blockage caused by sand or wasp/ant's nests will interrupt the flow of water through the tell-tale.



It is important not to run the engine for any length of time without water, as it will damage the impeller. The water acts as a lubricant and cooling system to prevent the vulcanised rubber impeller from overheating and disintegrating. Any signs of weakness in the pressure of water that is expelled at the tell-tale will indicate the need for a replacement.

Batteries

The battery must be housed in a separate compartment from the fuel tank and an inboard engine.

Propellers

Blades should be checked regularly for wear, damage, cracking or severe pitting. This will affect the fuel consumption, causing top speed sluggish thrust of the craft. Propellers should also be removed regularly and greased to eliminate the corroding effect between the propeller and the stainless steel shaft.

Sparkplugs

These need checking periodically as a two-stroke motor, using a petrol/oil mixture, fouls up with an oil deposit. A spare set of plugs should always be carried, as they may be required at any time.

Gear Oil

Gear oil is normally dark in colour. If it is yellow or whitish in colour, water has mixed with the oil and the seals will need replacing.

Trim and Tilt

Some motors have a tilting bracket and a tilt pin that adjusts the motor further away or closer to the transom, lifting or lowering the bow of the boat. Some motors are fitted with a hydraulic trim and tilt, which can be controlled from the throttle control. The correct trim must be established in order for the craft to run correctly on the plane. This can be done using weight distribution or by use of the hydraulic system. Ideally the bow should be raised slightly out of the water.

Kill switch



This tab is attached to a stretch cord, must be attached to the skipper's arm or leg if the craft is an inflatable or jet ski, and especially when operating with a tiller arm. These craft have a tendency, when reaching high speed, of throwing the skipper overboard in rough seas. To eliminate the craft proceeding on its own in circles, the withdrawal of the tab will stop the motor.

Cavitation

Cavitation is the aeration around the boat's propeller in white water. This occurs in surf and while accelerating or turning too quickly and trimming the engine too high. To rectify the problem, throttle down or trim the engine down, allow the air to dissipate and then increase the throttle controls again.

After Use

Place the engine in a lowered position and ensure it is in neutral. Connect up a water source and start the engine. Disconnect the fuel line and operate at low speed in neutral until the motor stops spontaneously. This consumes all fuel in the system. This is quite important on two stroke engines

where there is a mix of fuel and oil in the carburettors. At this time, wash away all salt, sand or mud from the exterior. Store the engine with the leg down, so that all the water can drain from the motor. If the boat is going to be trailered, re-prime the carburettor to stop internal damage. Once home, run the motor to empty the carburettor again if the boat is to stand for more than a few weeks. If the boat is not to be used for a period of time, the battery terminals should be disconnected.

Trouble shooting

Careful maintenance will prevent most motor failures. This cannot be stressed enough. In the event of motor failure, check that there is fuel, spark and compression. If the engine is not starting while at sea, check that you are securely anchored and ensure your crew is protected from the elements. Then see to the following items:

- a) Is the kill switch tab in place?
- b) Is the engine in neutral?
- c) Is there fuel and is it getting to the engine.
- d) Are the batteries properly connected and getting good contact?

If after checking these items the engine still doesn't start, contact someone for assistance. At this stage you don't have a dangerous situation, but if weather conditions deteriorate or a crewmember becomes hypothermic, this can quickly become a distress situation.

Maintenance

Motor trouble can in most cases be prevented by careful maintenance. Many troubles result from careless handling and improper maintenance. Should trouble occur, consult a professional outboard mechanic.

It is a requirement that regular service, maintenance and repairs be carried out on the propulsion and steering equipment in accordance with the manufacturer's instructions and specification. A competent person should do this work at the intervals recommended by the manufacturers of the equipment.

Wash your engine after use and keep your engine clean. Oil and grease plugs and points as necessary. The plugs and leads should be checked every 50 hours and the gearbox oil should be replaced every 100 hours. More importantly, follow the required service procedure recommended by the manufacturer.

CHAPTER FIVE - RULES OF THE ROAD

When driving a car we have a Road Ordinance covering the Rules of the Road for driving, at sea there is an international set of rules for driving a vessel. These are called the International Regulations for Preventing Collisions at Sea, 1972 (also called the navigation rules). South Africa, being a maritime nation, subscribes to these rules. The maximum fine for not obeying the Rules of the Road is a R40 000.00 fine, a two-year jail sentence or both. This chapter does not cover the rules in full, but rather covers only certain sections that are felt to be applicable to Inland Waters boating.

The rules require that all vessels must at all times maintain a proper lookout by sight, sound and radar if equipped. That is, a person steering on a small vessel must keep a lookout ahead and astern of the craft at all times. If the person steering the boat cannot keep a proper lookout, then he/she must appoint somebody to keep such a lookout and report all hazards immediately to him/her. The rules go on to specify, all vessels must proceed at a safe speed so that proper and effective action can be taken to avoid collision. In determining a safe speed, the following must be taken into account: visibility, ability of the craft to manoeuvre or stop, the number of other vessels using the area, the weather and water conditions, and the area one is operating in and the depth of the water in relation to the draft of the craft. If necessary, the vessel should be stopped at a distance appropriate to the prevailing circumstances and conditions.

As the skipper of a vessel, it is your responsibility to avoid risk of collision. You must use every available means to ascertain whether a risk of collision exists, and if so, must take action to avoid collision. There is no need for close quarter situations. Remember; never take action that places you and your crew at risk.

Power driven vessels in sight of one another have to obey certain manoeuvring rules. One vessel is the stand-on vessel and the other the give-way vessel. As their names imply, one must give way and the other must keep her course and speed. Before a give-way vessel takes action to avoid a close quarter's situation, she has to establish if such a situation exists. This can be by approximating the angle between your fore and aft line and the stand-on vessel. If this angle does not change or if it changes very little as the two vessels close, then a dangerous situation is developing. The action of the give-way vessel must be positive and taken early. It should not be left to the last minute.

The stand-on vessel must keep her course and speed until the give-way vessel is well past and clear. However, if the give-way vessel fails to take action and the situation becomes threatening, the stand-on vessel can alter course away from the threat and/or slow down and/or stop. Generally, the accepted practice would be to alter course to starboard.

Law Enforcement

Local law enforcement is known as the water wing of the police department. They will be driving a blue vessel that may have a blue flashing light.

Definitions of the Various Types of Vessels

A power driven vessel: any vessel propelled by machinery.

A sailing vessel: any vessel under sail provided that propelling machinery is not being used.

A vessel engaged in fishing: any vessel fishing with nets, lines, trawls or other fishing apparatus, which restricts manoeuvrability.

A vessel restricted in her ability to manoeuvre: a vessel which, by the nature of her work is restricted in her ability to manoeuvre, such as dredgers, diving vessels, cable layers, survey vessels, mine sweepers, etc.

A vessel not under command: a vessel that, through some exceptional circumstances, is unable to manoeuvre i.e. a fouled propeller or rudder, lost propeller, loss of steering, etc.

Responsibilities between Different Types of Vessels

A power driven vessel must give way to:

A sailing vessel (sail only) must give way to:

A vessel engaged in fishing (not a ski boat with fishing rods) must give way to:

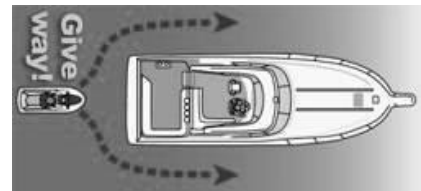
A vessel restricted in her ability to manoeuvre must give way to:

A vessel not under command.

Applying the Rules of the Road

Overtaking situations

The overtaking craft must give the craft being over taken a wide berth. One is deemed to be over taking if one approach from more than 22.5° aft of the beam of the craft is being overtaken. Whilst she is being overtaken, the craft must maintain her course and speed.



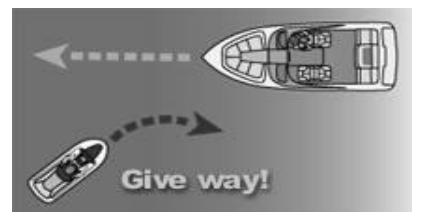
Head-on situations

If two craft are meeting head-on, each craft is to make the necessary alteration in course, in good time - course is altered to starboard and the two craft pass each other port to port.



Crossing situations

The rule says "when two power-driven craft are crossing so as to involve a risk of collision, the craft that has the other craft on its starboard side **MUST** keep out of the way" Just as in a motor car, we give way to the right when entering a traffic circle.



If travelling down a narrow channel, keep to the centre or right hand side of the channel/river. Also keep in mind that a vessel making way has the right of way over a vessel getting underway, as does a vessel leaving a beach, harbour, river mouth, etc. A vessel engaged in fishing or a vessel wishing to anchor may not impede the passage of any other vessel navigating within the channel or fairway.

Sound Signals

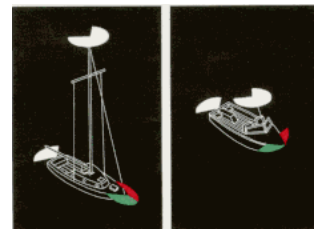
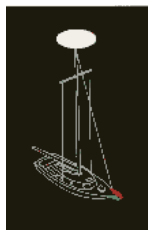
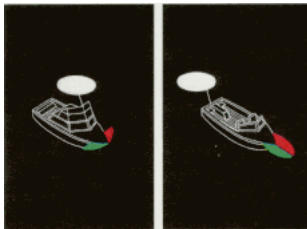
On a small craft operating on sheltered water, you are not required to carry a radio. There will be situations where larger crafts will need to communicate with you to make you aware of their intentions. They are as follows:

- a) One short blast - I am altering my course to starboard.
- b) Two short blasts - I am altering my course to port.
- c) Three short blasts - I am engaging my engine(s) astern.
- d) Five or more short blasts - Make your intentions known (wake up).

Night Light Requirements for Small Vessels

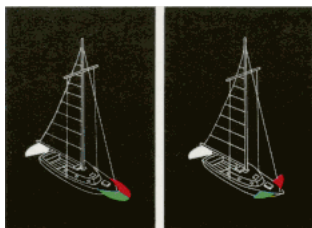
Lights must be displayed from dusk to dawn. The coloured running lights (112.5°) are displayed only when the vessel is moving together with the white 360° or a combination of 135° and 225°.

Power driven vessels

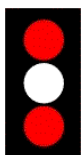


Sailing vessels

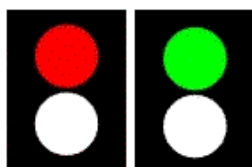
A sailing vessel under sail will display only a 135° stern white light and the coloured lights.



Restricted in Manoeuvrability

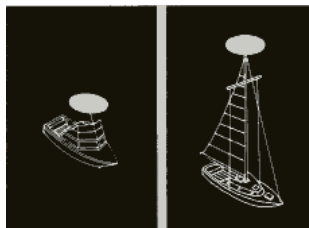


Fishing Vessel

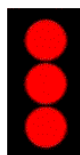


Vessels at anchor

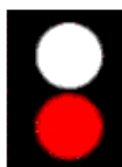
The white all around (360° or combination of 135° and 225°) light should be on when the Vessel is at anchor.



Constrained by Draught



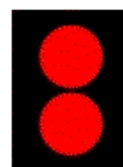
Pilot Vessel



Vessel more than 50m



Not under Command



Day Shapes

During daylight hours, day shapes should be used in the place of lights.

Vessel at anchor



Vessel motorsailing



Fishing Vessel



Not under Command



Constrained by draught



Restricted in Manoeuvrability



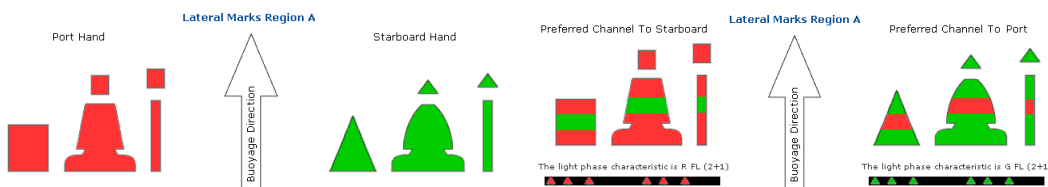
Vessel Aground



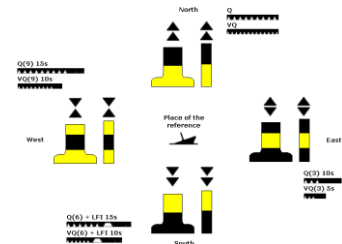
Marker Buoys and the South African Buoyage system

South Africa, along with the rest of Africa, Europe, and Australasia follow the IALA-A buoyage system. North and South America follow the IALA-B system of navigational buoys.

When travelling in a channel, traffic separation scheme or the likes, you may see buoys that look similar to the following. They indicate where it is safe to travel by using a green triangular shaped object for your starboard marker buoy and a square red one for the port marker buoy. So as you are heading towards port you should be keeping the starboard side of your craft towards the starboard marker buoy. Obviously the opposite is true for your departing journey.

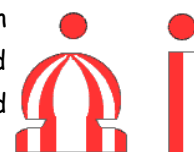


Cardinal Marker Buoys indicate where the deep/safe water is in regards to an object in the water. Cardinal marker buoys usually have columned or bar shape poles. They are always painted into horizontal yellow and black belts with the top marks always being black triangles/cones. The top marks always point to where the black bar is on the marker.



Isolated danger markers are put directly above small obstacles which water is navigable around. They are columned, or barred with red and black belts. Two black spheres are placed vertically as the top mark.

Markers indicating safe water are showing that water is navigable around the sign but they don't mean danger. They appear completely different from the isolated danger marks as they have a spherical shape, are columned or barred with red and white and they have a single red sphere for the top mark.



CHAPTER SIX - GENERAL SEAMANSHIP

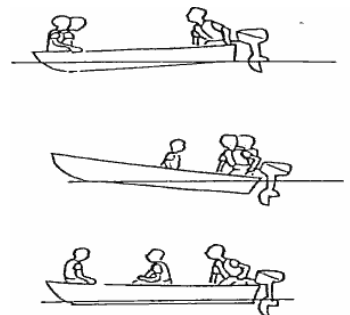
Boat Handling

A high degree of seamanship can only be obtained through correct training and experience. The competent skipper must be able to follow the correct course of action when confronted with adverse conditions. This decision, often required within seconds, should be correct and binding on the crew, who must accordingly respect the skipper's instructions. Not only must the skipper be competent and well trained, but also his crew must be reliable. It is up to the skipper to ensure his crew are aware of what to do in case of emergency.

The skipper must always be in a position where he can exercise full control of his/her vessel at all times. The skipper must also brief his/her crew on procedures where assistance is needed i.e. when mooring or coming alongside a dock, jetty or another craft.

When climbing onto a small craft, always remember your weight distribution, as too many people on one side of the craft will cause it to be unstable. Rather step into the middle of the craft and balance accordingly and more people climb on. Also ensure that you stow your gear with the heaviest items closer to the bottom of the craft and lighter ones higher. Standing while the craft is moving is also not recommended as this will shift the balance on a small craft and increase the chance of falling overboard. All passengers should remain seated at all times, especially when the boat is moving. All passengers must also keep all limbs inside the craft and they should not be allowed to sit on the bows, the gunwales or transom-loading platform.

When the boat is moving always keep the boat well balanced from side to side and trimmed fore and aft. Trim can be adjusted using the trim on the engine(s) or by moving the crew. All craft are different and the trim might have to be adjusted several times before one is happy with the boat's trim. The correct trim of a boat will give the most economical operation/fuel consumption. The craft will get onto the plane quicker and more comfortably. Once a craft's speed has increased and planing has been achieved, one can cut back at least 25% on the throttle and yet not lose any speed.



Have a good knowledge of how your boat handles - how quickly you can bring it to a stop and how tight of a turn you can effect at slow speed, when fully loaded and with various amounts of trim, speed and boat clearance. Practice bringing your craft along a jetty from both an upwind/current and downwind/current direction to gain a feel for her response in various conditions. Appreciate the sideways movement of the craft when giving the motor a kick ahead or astern. Understand that when coming alongside a dock or jetty, to the port side, how a small kick astern will easily bring your stern alongside.

Never turn sharply at high speed. Not only is this dangerous but the torque could damage the motor's drive shaft spines, but if the motor is not securely attached it could come free of the transom or your crew could be tossed overboard.

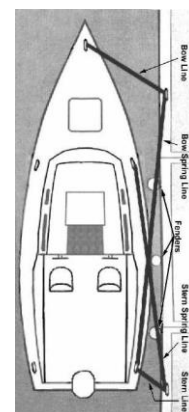
Launching from Jetty/Dock

When leaving a dock or jetty, permission may be needed in order to leave the marina or harbour. This is to ensure that there are no vessels that have already gained permission to enter, as some harbours you will not be able to see through the harbour wall. Once permission has been granted, instruct your crew to release the lines as best suited for the wind and current conditions. Once the lines are free the boat can be manoeuvred from the dock. Pull up all fenders and stow all lines for the duration of the journey. Remember that small movements are best when manoeuvring in confined quarters to ensure there are no sudden burst of speeds and fast approaches to other crafts in the marina.

Return Dock or Jetty

When returning to the docks, firstly gain permission to enter the marina or harbour. Ensure that all your fenders and docking lines are ready for the approach to the dock. Brief your crew on how you wish the lines to be placed and what they must be watching for including the procedures for evasive actions. Again, small movements with the helm are the key to avoid close quarter collisions in the marina.

When docking your boat on a jetty remember to approach into the wind or current whenever possible. Always approach the dock or jetty at a **slow speed**, alternating between forward, neutral and reverse so you can maintain control of the craft and prevent 'crash landings'. Keep in mind that the tidal current will affect the handling of your craft especially at slow speeds. At fast speeds the current has little effect on the craft. Never use hands, arm or legs to "fend 'er off". Tie off both the bow and the stern of the vessel. Always tie on the end of the craft that is up wind/current. Once you've cast off the dock bring your fenders over the gunwales. When securing to a pole or on the side of a bank, remember to give enough slack for tidal change.



Keep in mind that when dealing with wind and currents (especially from behind), manoeuvrability and control over your craft is only achieved by having the propeller moving, the faster it moves the more control you will have, but more attention is needed with regards to stopping and turning. Be confident in manoeuvring your boat astern. Turning the craft quickly in reverse is called a 'short around' and is used when you want to make a quick turn. With the wind on the bow, drive in reverse and turn the helm to either side. The wind will catch the bow and swing it around to a downstream position.

Crafts with one engine will have a different manoeuvrability and handling than a craft with two engines. One engine will give a larger turning radius than two as you will need to turn the bows around. Two engines will allow you to use the engines in opposition, one in forward and one in reverse, to turn the boat on its centre point. A vessel with an engine with a right hand propeller will turn easier to starboard and you will find it easier to use the craft to its strengths rather than fighting its weaknesses.

Some of the hazards one might find in a river, lagoon or estuary include but are not limited to swimmers, divers, submerged rocks, sandbanks and other crafts. While moving around on the water mind the no-wake zones and remember that your wake will deteriorate the shoreline or affect others in small crafts like canoes.

CHAPTER SEVEN - BOATING ACTIVITIES

Water-skiing

Water-skiing can only take place on waters designated to do so, between dawn and dusk must be under the control of a qualified skipper (meaning that the skipper is not the skier).



Internationally, water-skiing takes place in an anti-clockwise direction around a demarcated area. While engaged in water-skiing, the craft must be driven by a competent person of 16 years or older. The boat must always carry an observer of 12 years of age or older. Their duty is to observe the skier at all times and inform the skipper immediately if the skier falls. The skipper must watch out for other craft or people in the water. Always observe the rules, areas and the time when skiing is permitted. The skier must be wearing a suitable floatation device, not just a wetsuit, must know the accepted hand signals and must not intentionally release the tow rope in a congested area. The tow rope should be 20 meters in length and you should not ski within 100 meters of another skier. Also do not ski etc. within 30 metres of shore, a dock or swim area.

Each craft must be equipped with a red flag (500mm x 500mm minimum), which is to be held up in the air when the skier falls into the water and should remain flying until the skier has been recovered or is skiing again. When the observer sees that the skier has fallen into the water he/she must raise the red flag immediately and inform the skipper that the skier is down. The skipper must then slow down, turn in an anti-clockwise direction and travel back to the skier. Circle the skier slowly so that he/she may retrieve the rope handle and idle until the skier indicates that he is ready to be pulled up again. Should the skier wish to climb on board, the motors must be cut before he/she attempts to get on board and the rope is retrieved.

Jet skis or Personal Water Craft (PWC)

A Jet Ski is normally a one to three man fun craft, capable of high speeds. One shall observe all relevant information set down for general power boating. The driver **should** be obeying all relevant information and rules set down for general power boating. They are also quite noisy and users should be considerate of other water users as well as their disturbance to wildlife. It is required for driver and passenger to wear lifejackets at all times and to wear the kill switch. Only person 16 years and older and in possession of a skipper's licence shall operate a Jet Ski.



Jet skis may operate only in demarcated areas specifically set aside for them and not proceed more than 1 mile off shore if registered for this and has the appropriate safety equipment. Jet skis must also be registered as any other craft. Jet skis over three meters have additional allotments but one must refer to Marine Notice 18 of 2015 for more information.

Fishing

When fishing, be aware that standing up to cast or to reel in a fish could cause you to fall overboard. Small craft are unstable and a bad wake will always catch you just at the wrong moment. Observe all conservation and fishing regulations. Be considerate and don't anchor or drift into an open area or channel being used for other boating activities. Be extremely cautious when deciding to anchor from the bow and the stern, as the craft cannot turn as weather changes and strong winds could cause waves to enter the craft from the stern and possibly capsize.

Yachts and Dinghies/Canoes/Kayaks/Surf skis

Observe areas set aside for sailing and keep a good eye on children engaged in races. These vessels can move very quickly and turn on a dime. All children on board are to wear life preservers. Children sailing must be under the control of a competent adult (and adult with the required licences). They should observe areas set aside for sailing and keep a good eye on the weather. A good lookout is necessary. Remember to steer clear of areas where there are organised races and that a vessel under sail has right of way over a power vessel. Be aware of your craft's wake to ensure that you don't cause swamping or capsize. They are also low on the water they are sometimes difficult to see between the waves, so a sharp watch is necessary.



Diving Activities

If divers are operating from a craft, the craft is required to fly the international signal flag "A" (Alpha). This signal requires all craft to keep well clear (at least 100m) and proceed past with caution. The code flag "A" of the International code of Signals means "I have a diver down, keep well clear and at slow speed". The red flag with the diagonal white stripe should be flown on a buoy when divers are in the water without and attending boat. If you are approaching a boat or buoy displaying either of these flags, you must slow down, keep well clear and keep a sharp lookout for divers until you are out of the area.



CHAPTER EIGHT - EMERGENCIES

The law of the sea and the law of the land require you to go to the assistance of a vessel or person in distress. Failure to comply with this is an offence that carries a severe penalty. You must exercise caution when deciding to lend assistance, and not endanger your own vessel or crew. Remember that your first responsibility is to save life, then property.

When dealing with emergencies there are four basic actions to take and anything further will be dependent on the specific situation one is dealing with.

- 1) Ensure that all people are accounted for (head count).
- 2) Check for injuries and treat.
- 3) Collect all essential gear (ie life jackets and ensure that they are put on in).
- 4) Make a calm estimate of your situation and how to proceed.

Overloading and free surface effect

Overloading will cause your craft to become unmanageable and difficult to control. The free board is decreased and the vessel could be easily swamped. If the centre of gravity is raised, increasing the possibility of capsizing. The same holds true for excess water on the deck. Free moving water on the deck of a boat reduces stability. Loss of stability leads to capsizing. This is why there needs to be a quick way of removing excess water off of the deck i.e. bilge pumps or a bucket and a wet deck designed for wet launches and why the deck needs to be water tight. If a large amount of water comes onto the deck (i.e. a wave breaks over the bows), you will need to remove this water the safest and quickest way possible. Remember to keep the crew seated as their movements on the boat will add to a potentially dangerous situation.

Collision or capsizing

In the unlikely event of collision or capsizing, stay calm and take charge. Account for all crew and stay with the boat. Ensure everyone is out from under the craft. Recover any floating equipment and rig the capsizing ropes if not already rigged. Try to get everyone on the vessel or out of the water as much as possible. Treat any injured crew. Think twice about attempting to swim for shore; strong currents could make this a dangerous decision. Keep everyone calm and call for help or signal your need for assistance. Remember that the boat may be more stable in a capsized position than a righted boat that is swamped, so righting it may be futile. The buoyancy (30% for sheltered waters, 60% for open sea vessels) that a craft is required to have should keep it afloat for 48 hours. For this reason, boats are constructed with collision bulkheads and watertight bulkheads. For vessels that do not have sufficient buoyancy, all crew should be wearing their life jackets at all times.



Running Aground

Running aground is a common problem in many rivers, lagoons and estuaries as the sand banks will move with river flow or be unexpectedly shallow on a spring low tide. A setting sun or dirty water will also

make it difficult to see the shallow areas. In the situation of running aground, firstly stop the boat, stop the engine and lift the engine out of the water. Assess the situation or the degree of damage to the craft and determine the best course of action from there. Most often it is only necessary to push yourself off, find a deeper channel and continue on the journey.

Fire on board

Fire is one of the most serious accidents one could encounter while boating. Prevention in this case is extremely important and cleanliness of your fuel compartment is imperative. In the event of fire on board, you would turn the fire downwind, and use the fire extinguisher. Aim the extinguisher at the base of the fire, pull the safety pin, and discharge the extinguisher sweeping over the base of the fire. You may find that using short bursts may be helpful to give you a chance to see what is happening with the fire. Your next priority is to keep everyone calm, treating any injuries, and summon help if necessary. Ensure your fire extinguisher is serviced yearly and that you know how to use it.

Man overboard

If you have a crewmember that has fallen over board, the best procedure would be as follows. The crew on board who sees another go overboard shouts 'man overboard' and points to the person in the water and keeps his eyes on the person at all times. A life-ring/preserver is thrown to the person, if available. The craft is slowed and brought about to pick the person up. It is best to approach from a downwind position. Go very slowly on your final approach, cut engines (or put engines in neutral) when alongside and lift or assist the person back on board. Treat for injuries as necessary.

Towing

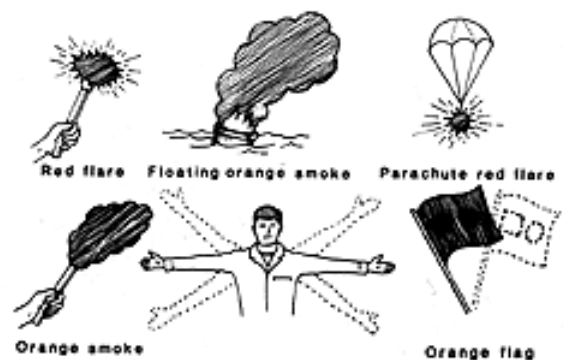
Generally speaking it is not recommended to tow another vessel. Most of the apparatus on your boat is not designed to take the strain of another boat.

Recognised Distress Signals

The following are some of the signals that are internationally recognised as indicating distress. On a small craft on sheltered waters one of your best way of gaining assistance is a cell phone encased in a waterproof cell phone bag. Of the known distress signals, only a few of them can be used at night.

- a) Parachute red flare (night)
- b) Hand held red flare (night)
- c) Orange smoke
- d) SOS signal by any method (night)
- e) Waving of arms

As anything can happen at any time, it is in the best interest of all aboard your craft to know how to work emergency equipment and to be briefed on what to do in case of emergency. Emergency contact information should be readily available for everyone on-board.



ABOVE ALL ELSE, YOUR CREW ARE YOUR MOST IMPORTANT ASSET ON YOUR CRAFT. ENSURE THAT THEY ARE WELL TAKEN CARE OF!

CHAPTER NINE - WEATHER, ENVIRONMENT/POLLUTION

Weather

We generally refer to weather as those conditions over a certain area and over a relatively short period of time. When examining weather and weather patterns of a region we look mainly at: Air temperature, Atmospheric pressure, Wind, Rainfall, and Humidity

Wind

Your greatest enemy on the water is the wind. The wind has an enormous influence on the sea: within a few minutes it can turn from a placid dam into a violent monster. Waves and breakers occur mostly as a result of wind, which can whip up waves that move at speeds in excess of 55 km/hour. When these waves move from deep to shallower water near the shore, they can reach huge heights with destructive power.

Wind blows because of differences in Air Pressure. It will always blow from an area of High Pressure to Low Pressure and from Cold to Warm areas. Thus as already mentioned, the greater the pressure differences (and/or temperature differences in the air) the stronger the wind will blow. Wind speed or strength is measured in Knots. 1 Knot = 1.8 kilometres per hour. The direction of the wind is always named from where it comes. E.g.: a South Easter blows from the South East towards the North West

Most boating activity takes place in summer and as the majority of the inland areas have summer rainfall, the build-up of clouds on the horizon is a sure sign of a weather change. Be aware of a further build-up and its movements towards the sheltered water area. In general along the south coast, strong winds, sometimes well over gale force; come mainly from the Southwest in summer and Northwest in the winter. Whenever you go boating, find out from the locals how and when the weather patterns change in that area and what the early signs are so you can be ready for any incoming bad weather. If caught in foul weather away from base, make sure the crew put on lifejackets and warm clothing to prevent hypothermia.

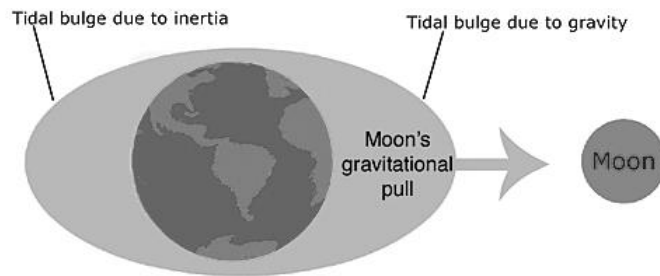
Weather forecasting

If you are on a vessel it is essential to have some basic weather knowledge and the ability to forecast local weather conditions.

Weather forecasting can be difficult, and you must remember that the weather forecast you get from the Weather Bureau or over the radio is the overall picture for the country and perhaps a region, but you need to be able to forecast the weather in your area. In order to do this, you need the overall picture to "see what is coming", but there are also many local indicators that you need to read to predict what will happen in your area. Best is to ask locals regarding weather patterns in the area. There are many websites and phone apps one can use for determining the coming weather conditions. Depending on what time of year that you are boating, your conditions can change from pleasant to dangerous in a matter of minutes. This is when good weather predicting can be the difference between a good or poor outcome.

Tides

Tides result from the redistribution of the world's surface water, caused by the gravitational pull of the moon and the sun. As the earth rotates around its axis, the tidal water bulge sweeps around the earth so that each point encounters a high tide approximately every 12 hours. When the moon is directly between the sun and the earth or on the far side of the earth from the sun in a straight line, their combined gravitational pull is strongest and the highest high water and the lowest low water occur. This is known as spring tide. When the moon is pulling in a different direction from the sun the least range between high and low waters occur, known as neap tide. We will have spring and neap tides twice a month each. Tidal water movement towards the shore is known as the incoming or flood tide. The tidal water movement away from the shore is known as the outgoing or ebb tide. Slack tide is that short period at each reversal of tide when no tidal currents exist. One must take into consideration the tidal effects when docking or mooring a boat. Remember that you can get strong currents where there is a tidal change with a narrow opening (river mouth), sand bars, wave action, or manmade structures like bridges.



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Environment/Pollution

In the interest in a clean environment all small craft skippers are encouraged to retain all garbage on board and place it in a dustbin on their return to shore. **Renew, Reuse, and Recycle.** As far as the law is concerned no plastic of any type may be dumped overboard, irrespective of the distance offshore. Up to 3 miles off shore, no garbage whatsoever may go over the side. That includes paper, rags, glass, food, crockery, beer cans or empty sherry bottles. Between 3-12 miles, the above garbage, excluding plastic, may be dumped overboard only if it has been ground to pieces smaller than 25mm in size. Beyond 12 miles you may dump garbage, except for plastic and dunnage. Dunnage is wood that has been used for, and during the stowage of cargo on ships. Beyond 25 miles offshore you may dump any garbage excluding plastic over the side. The maximum penalty applicable is R20 000.00.

Noise Pollution

One of the reasons for boating is to get away from it all. People are entitled to enjoy themselves and if one wishes to listen to music and the radio all that is asked is consideration for others. Adding to noise pollution is the ever-increasing fleet of jet skis. Their high revving motors create a lot of noise. There are areas set aside for this type of activity and for the larger power craft that also use high revving engines with limited exhaust baffles. Consideration must be the name of the game all around and there is more than enough space for us all to enjoy our wonderful environment.

The Sun

Cool air and cold water can mask the damaging effect of the sun. At sea, due to the reflection of the sun from the water, the sun burns from all angles, and not even a hat is sufficient protection. This "double radiation" from all angles results in the skin and eyes getting greater exposure.

CHAPTER TEN - FIRST AID

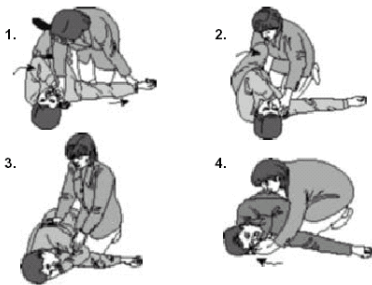
In the event an accident should occur on your vessel, it is your responsibility as the skipper to render the necessary and correct first aid treatment, using available equipment. It is in your best interest to participate in a basic first aid course to learn how to perform these techniques properly.

Above all else, your safety and protection is of utmost importance and it is important for the correct barriers to be used prior to treatment of any casualties. Also keep in mind you have limited resources on your vessel. Think about what you have on board and how it can be used for various situations.

When working with injured crew, your priorities are to:

- a) Scene safety first for both you and the remainder of the crew
- b) Ensure the casualty's condition does not get worse.
- c) Treat for shock.
- d) Ensure the injured is evacuated as soon as possible.

Unconscious Patients



When working with an unconscious patient it is of utmost importance to maintain an open airway. When unconscious, a person's tongue can drop back and close off their airway. By tilting the head back and lifting the chin you can open the airway. If there are no other injuries the person can be placed in the recovery position on his side. This continues to maintain an open airway if you are now required to drive the boat.

Signs, Symptoms and Treatment for Shock

Most signs and symptoms of injuries involve the signs and symptoms of shock. When working with patients, you will always be treating for shock.

Signs and symptoms

Loss of skin colour
Sweating, Cold clammy skin
Disorientation or restlessness
Rapid and weak pulse
Dizziness and fainting
Unconsciousness and death.

Treatment

Rest or lie them down in a quiet area
Reassure the patient
Maintain normal body temperature
Loosen restrictive clothing

Serious Bleeding

When a crewmember cuts themselves seriously, quick response is necessary. Firstly, protect yourself from coming in contact with blood. Then clean the gash as best as possible, wiping the dirt away from the wound with clean gauze. Make up a compression bandage (which applies pressure to the wound), close up and bandage the wound firmly without cutting off circulation. Treat for shock and elevate the affected limb if it won't aggravate the injuries further. Head for base as quickly as possible. If the

wound does not stop bleeding after the compression bandage is applied, apply additional bandaging and transmit an urgency message and have the base stand by with medical assistance. For smaller cuts and wounds, clean and medicate the wound, apply direct pressure using a clean gauze and bandage.

Fractures

All fractures must be handled very carefully. Unskilled handling or mishandling could result in further injury. **Do not move a person with a suspected neck or back injury until immobilized using the proper equipment.** More often than not the floor, deck of the boat is the best stability in the interim until the necessary equipment is available. Immobilise a basic fracture with a firm splint or in the case of a leg, secure to the other leg with good padding in between. Urgent medical attention is required for all fractures and treatment for shock is necessary.

Hypothermia

Hypothermia is the loss of body core temperature due to prolonged exposure to cold. If you find yourself in the water, keep still, do not splash about, and conserve energy. Keep clothing and boots on if you have your lifejacket on. Cover your head and neck if possible, as you can lose up to 70% of your body heat through that area. Do everything possible to get out of the water as soon as you can. Water draws heat from the body 25 times faster than in air. If the body core temperature falls below 28°C, the life threatening condition called "ventricular fibrillation" will occur, causing death.



Signs and symptoms include uncontrollable shivering and pale tissue colour. As temperature continues to drop, shivering stops, muscle co-ordination will decrease and speech becomes slurred. Pulse and breathing rate becomes slower and the patient could lose consciousness.



Treating a hypothermic crewmember involves firstly, preventing him from getting colder. Remove as much wet clothing as possible and warm the trunk of the body slowly. This is usually best achieved with warm packing or direct body heat. Do not rub body or limbs, this will cause cell damage. Wrap in a blanket and cover with a space blanket. Warm the air in the room if possible. Once conscious, provide the patient with small amounts of warm, sweet, non-alcoholic beverages with caution. Seek medical attention.

Jelly Stings

Jelly and bluebottle stings can range from irritating to painful and potentially life threatening. These are protein stings and are similar in nature to a bee sting. If you are sensitive to bee sting, you are likely to react adversely to jelly stings also. Treating the injury again involves firstly, protect yourself from getting stung. Using a towel or cloth try to remove the tentacles and initially treat with vinegar to neutralise the sting. Once at base, submerge the affected area in as hot of water tolerable to kill the protein. If your crew are reacting adversely, immediate medical attention is necessary, as this could become a life-threatening situation.

Fishing Hook

In general, it is recommended not to remove an impaled object. In the case of a superficial wound caused by a fishhook, it is strongly recommended to medicate the wound, dress it as any other small wound and allow a medical professional remove the hook properly.

Burns

There is always the possibility of getting burned when working with boats and engines. Minor burns can be treated by immersing in cool water (cool box or in the water), and treating as a small cut. Burns covering large surface areas and having deep tissue damage require medical attention. Wrap loosely to prevent infection and do not break the blisters. Return to base as soon as possible. Do not apply any compounds that will trap heat i.e. Vaseline or butter. This will increase the cooking process.

Sun/Heat Protection

It is important, especially if one is fair-skinned, to use a high protection factor sun block to provide sufficient protection from the sun's harmful rays. The effect of the sun's rays are twice as intense on the water as you have the sun shining from above and reflecting off the waters' surface. Wear and reapply sunblock and wear a wide-brimmed hat to prevent painful burns.

Heat exhaustion and heat stroke can be very dangerous. Heat exhaustion is caused by long exposure to hot or humid conditions. The patient tends to be fatigued, will be sweating and will show signs of shock. Simply providing sufficient rehydration and moving the patient to a cool location will be the best treatment for this condition. When the condition worsens it becomes heat stroke and this is a medical emergency. At this point the patient has stopped sweating and the skin is very hot to the touch. The body has basically started to shut down as it cannot cope with the extreme conditions. Immediate cooling of the patient is necessary to assist the body to cool itself, treat for shock and monitor ABC's and level of consciousness.

First Aid Kit

A well-stocked first aid kit is essential on every craft. It should be a watertight container clearly marked with the words "first aid". A list of items to be contained in a first aid kit is listed on page 12. The items listed are recommended, but you will see that you will adjust the contents to your family's needs. Remember to replace used item as soon as possible. The compliments of your first aid kit will be dependent on the number of people on your boat and the activities you will be involved in.