

Pelagica Operating Procedures

Quick Reference Guide

Table of Contents

Standard Equipment.....	2
Example Pre-trip Briefing for Pelagica.....	3
Towing	4
Launching the Boat	6
Engine Operation	8
Electrical Systems	9
Retrieving the Boat onto the Trailer	10
Washing and Flushing.....	11
Refuelling and Fuel Systems	12
Loading and Trim	13
Night Work / Poor Visibility.....	13
Discharge / Waste / Spills	14
Anchoring	15
Bar Crossings	17

Standard Equipment

The following equipment is carried on board Pelagica

Grab Bag

Item
EPIRB
Flares Kit (3 parachute, 2 red, 2 Orange)
V-Sheet
Torch
Sound Signal

Plastic Tubs (under rear seat)

Item
Fire Extinguisher CO2
Bucket
Lifejackets x 8
Tool Kits
Fuel Funnel
4-Stroke engine oil
Foot Pump for inflating collar
Knife
Sea Anchor
Spare Ropes

Other Equipment

Item	Location
First aid kit	Locker below steering wheel
Lifejackets x 4-6	Under canopy
Mooring lines x 2	Locker below steering wheel
Paddles x 2	Clipped to the inside of the collar
Boat hook	Along the floor next to the collar
Fenders x 2	Anchor well

Example Pre-trip Briefing for Pelagica

Today we are travelling to ...
Once there we will ...
Our expected time of arrival is ...
We will be returning to ... at ...

(Here outline any special activities or tasks)

Lifejackets are located in the netting under the canopy or in the plastic tubs under the rear seat. You may wear a lifejacket if you wish; however, everyone must put on a lifejacket if the Master tells you to.

In the event of an emergency please follow the Master's instructions. The Grab Bag contains the V-sheet, flares, air horn and torch. The fire extinguisher is in the plastic tub.

If the Master is incapacitated you may need to assist.

In the event of an emergency tune the radio to channel 16, listen to ensure the channel is clear, press and hold the push to talk button, speak clearly into the microphone, release the button and listen for a reply.

If you cannot raise assistance using the radio or a phone and you require emergency assistance deploy the EPIRB.

To deploy the anchor, carefully lower it over the bow until it touches the bottom, then pay out as much line as possible and tie it off to the Sampson post. Be careful not to tangle the rope.

Pelagica has two outboard engines with forward controls. Push the throttles forward to go forward and backward to reverse. To disengage the propellers and stop the boat move the throttles to the middle position until you feel them lock. Any throttle movements should be slow and smooth. Steering is with a wheel like a car.

Other procedures are detailed in the quick reference guides.

Please follow the Master's instructions for loading as the positioning of equipment and personnel can affect the stability of the vessel. Please maintain a good grip of the boat while we are moving and avoid moving around unnecessarily.

Thank you.

Towing

HITCHING the trailer to the towing vehicle

- Before backing the towing vehicle into place, remove any wheel locks present on the trailer, check condition of trailer & tyres, & check for obstructions on both sides of the boat.
- Remove the U- trailer lock from the hitch and check height of trailer hitch with reference to the height of the tow ball on the vehicle.
- Back the vehicle into place, release the hitch catch and lift the hitch handle, lower the trailer hitch onto the tow ball by lowering the jockey wheel, and ensure the hitch catch lock is back in place.
- TROUBLESHOOT: If the handle doesn't slip all the way over the tow ball then the anti rattle bolt may be too tight.
- Replace the U-lock around the hitch and towbar coupling.
- Fold the hand break lever back and secure (if you haven't done so already).
- Check that reversing lock is disengaged (open position)
- Connect trailer safety chain, chain should not drag
- Connect trailer lights (never pull on the cable – only the plug)
- Check trailer lights – brakes, indicators, reverse
- Is the boat secured correctly to the trailer? Check the following:
 - That the eye in the bow of the boat is secured to the winch cable and that the winch is locked off (can't run free).
 - That the bow eye of the boat is secured to the winch post (this secures the boat in the case where the winch has detached from the post)–
 - Are the tie downs that hold the stern of the boat (Sampson posts) to the trailer are firm, but not tight, and with no rope tails dragging.
- Ensure that the engines are supported and cannot drop down while being towed. Never rely on the hydraulics.
- It is recommended to cover one of the propellers with a fluorescent bag or bucket while towing.

Notes on Towing

- Your braking distance with a trailer will be around double your braking distance without a trailer. So reduce your speed accordingly.
- Do not load up the gear in the boat while towing.
- P1 drivers are not allowed to tow the boat (illegal)
- Canopy clearance is assumed to be 3.3 m (actually about 3.1 m to the anchor light). Slow down when passing under overhead obstructions.

Launching the Boat

Preparation

- Firstly, inspect the boat ramp and assess the sea conditions and other hazards.
- Discuss the launching procedure with the crew.
- Turn the batteries on (leaving the cross-over closed) and make a note in the Boating log of the fuel level, engine hours and battery voltage, and do the equipment checks (better to have done this back at the boat shed).
- Turn on the VHF radio, raise the antennae, and set up the GPS
- Remove the stern tie-downs, and engine supports, stow in the towing vehicle.
- Ensure the BUNGS are IN & the VENTURI BAILERS are up and secure.
The bungs are kept in the box with the winch handle and should be returned to this box.
- Remove the stern tie downs and ENGINE SUPPORT POSTS, and engage the engine TILT LOCK LEVERS
- Secure the anchor and chain to the anchor line, and check the anchor line is ready to be used.
- Leave the bow safety chain connected in case the winch cable breaks while reversing
- Engage the reversing lock so that the trailer brakes can't engage whilst reversing (if the reversing lock is left open then the brakes will be damaged if they engage, and the boat will be difficult to reverse).
- If you plan on tying up to a jetty or wharf prepare the mooring lines and fenders before you launch.

Launching

- First, discuss the launching plan with the crew
- Best practice is that no one rides in the boat while it is being reversed down the boat ramp.
- Depending on the slope of the boat ramp, you may or may not need to sink the hubcaps on the wheels of the trailer as the rollers allow the boat to slip off. First try the launching process without sinking the hubs.
- When in deep enough lower the engines (remember to disengage the engine tilt locks). Start the engines (see next section: Engine operation), look for the tell tale, and if running well, engage the engines forward slightly to hold the boat steady on the trailer to aid in release of the trailer safety chain.
- Crew: in almost all circumstances the safety chain and winch cable should be left on until the skipper has the motors in the water and running. When the skipper says ok, release the safety chain then either disconnect the winch rope and gently push the boat into the water OR leave the winch connected and lower the boat by slowly un-winchng. The second option might be necessary if there are obstacles in the path of the boat, but note that injuries can be caused to crew or equipment if the winch runs uncontrolled.
- In very shallow water (eg at the Smiths Lake field station) the boat can be walked off the trailer with the help of a lead rope (in this situation the engines are left up (and off) until there is sufficient clearance (draught is approximately 0.5 m).

Engine Operation

Engine Start-up

- Turn on the battery switches.
- Place kill switch and ignition keys into position
- Lower engines into the water to a depth sufficient to submerge the water intakes.
- Ensure engine control levers are in neutral
- Turn keys to 'on' position
- Start one engine at a time by turning the key to the ignition position
- Allow the engines to warm up for two minutes before proceeding on voyage. This is a good time to vessel operation and function and to provide an on-board briefing to special personnel.

- Do not crank the engine for long periods of time. If the engine does not start allow it to cool down and investigate why it is not starting.

Engine Shut Down

- Allow engines to idle for two minutes to cool down
- Switch off engines
- If retrieving or leaving the boat on the water for long periods (e.g. overnight) lift the engines out of the water and lower on to tilt locking lever.

Electrical Systems

- Pelagica is fitted with a 12 volt dual battery system.
- This type of electrical system allows each engine to have its own battery and provide redundancy.
- There are 3 master switches on the dash board. The top two are the battery switches and the bottom is the cross-over. The cross-over allows power to flow from one battery to the other. In most situations it should be kept closed to prevent the accidental draining of both batteries. If one battery fails, the cross over can be opened to start the engine using the power from the other battery.
- When the boat is not in use the batteries should be left turned off. If the boat is to be left on the water overnight the Port battery should be left on so that the automatic bilge pump can function.
- In addition to the master switches there are a series of press switches to the left of the steering wheel and on the panel below. These control all the instruments and lights.
- There are three 12 volt plugs available for use on board Pelagica. They are located under the GPS / Sounder.
- The Radio and the GPS / Sounder operate on the same circuit and switch. The GPS / Sounder is not stored on the boat. It needs to be fitted before use. The plugs are colour coded to match the leads. Mount the unit securely on the bracket.

Retrieving the Boat onto the Trailer

- Note: Pelagica should be nosed up to the back of the trailer and then winched on. Driving a boat on to the trailer increases the risk of damage to the hull, the props, and the trailer as well as digging up the sediments around the boat ramp.
- First discuss the retrieving process with the crew as this varies with boat ramps, tides, and sea conditions.
- Make sure trailer reversing lock is engaged, and any wheel clamps have been removed.
- Reverse trailer onto boat ramp.
- Nose the boat up to the trailer and hook on the winch cable.
- Switch off and raise the engines – the skipper should get off and assist if necessary and safe to do so, or move their weight to the back of the boat.
- When winching, double check that the cable is locked off (i.e. can't run free).
- When winching, make sure the boat is centred on the trailer.
- Attach the safety chains to the bow, remove the reversing lock, & put the trailer winch handle back in the car.
- Drive trailer to boat ramp preparation area to complete the preparations for towing the boat.
- ***After retrieving***
 - Open all bungs and the venturis to drain any water in the boat
 - Fit engine supports
 - Lower outboards temporarily to drain saltwater
 - Switch off battery master switches
 - Remove GPS / Sounder
 - Remove any other equipment that may become loose during travel
 - Check trailer lights
 - Fit stern tie-downs

Washing and Flushing

- Never run an outboard motor without a water supply, you will destroy the water pump in seconds and overheat the motor which will cause serious damage. Know where the telltale is: this is a small stream of water from your engine that's sole purpose is to tell you that the cooling system is working. Outboards damage very easily when overheated.
- Lower the engines, and attach “flush muff” to the water intake of one engine.
- Turn on the tap full, then turn over that engine and look for the telltale
- If the telltale doesn't push out water after about three seconds STOP THE ENGINE and reset the flush muffs
- If the telltale is putting out water then run the engines for 30 second or so.
- Flush your outboard with fresh water using flush muffs every time you take the boat out of the water. Never rev an engine out of water (i.e. during the flushing process). They can rev up to twice their recommended maximum revs when they have no load and they will destroy themselves in the process.
- Washing down the boat, trailer, and towing vehicle
- Best done at the boat ramp before saltwater dries into crystals. Use a sponge to help remove dried salt.
- Pay special attention to wheels, breaks, engines, & the extension hook pole.
- The Perspex windscreen is easily scratched, clean cloth and clean water only

Refuelling and Fuel Systems

- Pelagica uses Unleaded Fuel. The preference is for Premium Unleaded, but if this is not available regular unleaded may be used.
- DO NOT USE ETHANOL OR E10 FUELS
- As part of your pre-trip planning you will have estimated the distance you will travel and from this calculated your fuel requirement. It is recommended that you use the “1/3 rule”: 1/3 out, 1/3 back, 1/3 spare.
- Fuel consumption for Pelagica: approx. 1 litre per 1 nautical mile (or 1.85 km) (but keep your own records so that you can calculate consumption rates for the type of boating you do).
- Avoid towing the boat for long distances with a full tank of fuel (fill up when you get close to your destination, not at the start of the journey).
- Note: Some waterside re-fuelling stations close early or during the week, or require you to have pin number on your credit card – check that you can get fuel when you will need it.
- The fuel filler for Pelagica is located between the engines and the rear seat.
- Ensure there are no sources of potential ignition when refuelling: people smoking, using mobile phones, and sparks from static electricity (discharge by touching something metal with your hand before beginning the refuelling process).

Loading and Trim

- Evenly distribute the load (CAUTION: a bad distribution of the load can destabilize the boat and may result in loss of control)
- Depending on the navigation conditions and the waves direction, you must adjust the distribution of the load and the trim.
- In a head on sea – load the bow i.e. Negative TRIM – this stops the boat flipping on a wave
- In a following sea – load the stern i.e. Positive TRIM – this keeps the boat stable
- Aim to have the boat sitting as level in the water as possible

As a rule the motor must be positioned so that the axis of the propeller is parallel with the water surface, however an adjustment of the tilt is often recommended.

To avoid BOW STEERING, where the hull catches the water and may make unexpected changes of direction the trim must be adjusted to suit the conditions and the load. A nose down position will encourage bow steering and should be avoided.

Night Work / Poor Visibility

Be seen – switch the navigational lights on

Slow down – operate at slower speeds than normal as hazards are harder to see
Keep watch – get other people on board to assist in keeping watch. Avoid using bright lights as they will diminish your night vision

Reminder: lifejackets MUST be worn for night time operations (in addition to times of ,poor visibility, when operating the boat alone, and for bar crossings).

If anchored show an all-round white light

Discharge / Waste / Spills

Garbage

- All garbage to be collected and placed in an appropriate place onboard the vessel
- Dispose of general waste in the bins provided at the boat ramp (or return to Macquarie University).
- Dispose of recyclable items in the appropriate bins provided at the boat ramp (or return to Macquarie University)
- Gloves to be used for any debris collection from the water (Supplied in First Aid Kits)

NO RUBBISH IS TO BE DUMPED INTO THE WATER

The master is responsible for any illegal dumping of rubbish from the vessel

Waste

- No pollutants or oils in the vessel are to be pumped overboard
- Collect and/or mop up oil or fuel
- Waste to be stored in sealed containers
- Any spillage of oil into the bilge to be treated using the environmental spill kit
- Collected waste to be deposited in the chemical waste store at Macquarie University

Spills

- Respond to pollutant spillage immediately and isolate overflow
- Contain spillage to prevent pollutant entering water or spreading, if already in water
- Record location
- Inform staff/students of action to be taken
- Use pollution kit to contain or treat spillage
- Contact emergency services and liaise with and provide assistance to emergency response vessel
- Contact Marine Fieldwork Manager

Anchoring

Deploying the Anchor

- Assess anchoring location for shelter from the wind/ no anchor zone/ submarine cable / sea grass / channel / substrate holding suitability / other anchored vessels (assess their swing and anchor appropriately)
- Ensure water depth is adequate depending on wind strength and expected tidal movements
- Decide on appropriate scope for conditions
- Explain anchoring procedure to personnel onboard – what are they expected to do?
- Personnel to ready anchor for deployment
- Master to position vessel into wind and come to a stop at selected anchoring position
- Personnel to deploy anchor and when anchor bottoms, master to go astern while paying out anchor rope
- Master stops vessel in water, personnel to tie off rope at bow once rope is at agreed length
- Master motors slowly in reverse to set anchor until the vessel hangs on the anchor
- Master slowly reduces throttle to come up onto the anchor line. Be careful not to spring ahead over the anchor rope
- Master must inspect the anchor tie off point
- Master & personnel to monitor anchor hold while at position

Anchor Recovery

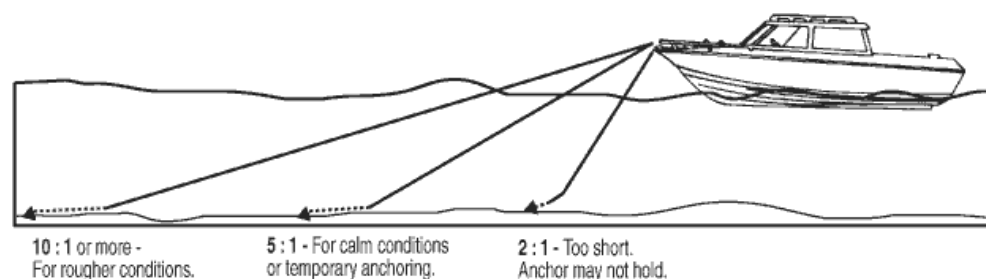
- Personnel to untie and ready for recovering anchor onboard
- Master to motor slowly ahead while crew recovering line until vessel vertically positioned over anchor
- While maintaining position, personnel to recover anchor and stow/ secure
- If the anchor is hard to break out re-secure the rope and slowly motor in the opposite direction to which the anchor was set
- Anchor ropes to be stowed immediately so they can be deployed again and do not create a hazard

Recommended Anchor Scope

Scope is important when anchoring. A longer scope allows the boat to pull horizontally on the anchor, while a shorter scope will pop it out of the seabed. In general, a minimum scope in still conditions is a rope and chain three times the depth of the water in length (e.g., 15 m of rope and chain in 5 m of water). However, if the anchoring location allows, a longer scope is generally better. Below is a table of recommended scopes.

Sea Conditions	Anchor Cable	Scope
Favourable	Rope and chain	5:1
Average	Rope and chain	8:1
Rough	Rope and chain	10:1

Scope = Length of cable paid out / depth



Bar Crossings

Bar crossings can be dangerous as the tide, wind and water depth act together to cause the water to become rough.

The Faculty of Science requires that any bar crossings are identified in the risk assessment for the trip. Masters must display knowledge and competency of crossing the particular bar identified in the risk assessment and be specifically approved by the Marine Fieldwork Manager to drive a Faculty vessel across that bar.

To gain information about a bar vessel users should contact:

- Local maritime or fisheries officers
- Local fisherman or other maritime industry members (e.g. dive operators)
- Surf Life Saving clubs
- Marine Rescue Organisations
- Other local clubs (e.g. sailing or diving)

Masters are required to have experience of a particular bar before being permitted to cross it in a Faculty vessel.

Preparations and Precautions

- All personnel on board must wear a lifejacket
- Vessel trim should be correctly adjusted
- Secure all equipment and anything that could come loose
- Test all controls to ensure the vessel is fully operational
- Stand off and observe the bar before crossing
- Log the crossing with the local Marine Rescue organisation
- Cancel trip if bar conditions are too dangerous
- Have a back-up plan if the conditions are too dangerous to return – is there an alternate safe haven?