Standard Operating Procedures
Sea Wasp #24167
Note:

This document is designed to be a reference guide to the standard operating procedures for Sea Wasp as recommended by the Faculty of Science at Macquarie University.

This document is not a comprehensive instruction book for operating a vessel and is not a replacement for adequate training and certification.

Only people who have completed an approved induction and training program and are approved by the Macquarie University Marine Fieldwork Manager are permitted to operate Sea Wasp.

<table>
<thead>
<tr>
<th>Version</th>
<th>Purpose of Document</th>
<th>Draft / Review</th>
<th>Review Date</th>
</tr>
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<tr>
<td>1.0</td>
<td>Draft</td>
<td>Andrew Irvine</td>
<td>20/12/12</td>
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<td>Andrew Irvine</td>
<td>6/11/13</td>
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<td>9/12/2014</td>
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Section 1: Important Information

Master’s Responsibilities

The Master of the vessel is responsible for:

- Holding a valid General Boat Licence or a higher qualification.
- Ensuring that they have been fully inducted, trained and approved by the Marine Fieldwork Manager.
- Ensuring that they are competent to perform the required tasks and that they are not under the influence of any alcohol or drugs, including medications that may impair their ability to operate the vessel.
- Being familiar with these SOPs and associated documents including the operational and emergency procedures of the vessel.
- Ensuring that the vessel operations have been approved by the Marine Fieldwork Manager.
- The decision to commence vessel operations based on the weather, the condition of the vessel, the abilities of those aboard and the tasks to be performed.
- The decision to cease vessel operations if conditions become unsafe or likely to become unsafe.
- Considering the views of those aboard when assessing the safety of operations, including the decision to cease or cancel operations.
- Ensuring that all appropriate safety equipment is aboard and operational before setting off.
- The safety of themselves and the others aboard the vessel.
- Performing a pre-trip briefing for all personnel aboard.
- Issuing clear and concise instructions to those aboard when necessary.
- Allocating tasks to those aboard and ensuring that they have sufficient instruction or experience to perform those tasks.
- Controlling and coordinating emergency responses and delegating tasks.
- Complying with all relevant rules and directions in relation to the operation of the vessel, including but not limited to:
Standard Operating Procedures – Sea Wasp #24167

- COLREGS
- MARPOL 1973/78
- Water Traffic Regulations 2000
- The directions of a Relevant Officer
  - The maintenance of the vessel whilst it is in their use.
  - Performing daily maintenance checks.
  - Reporting any maintenance issues to the Marine Fieldwork Manager as soon as practicable.
  - The correct reporting of any incidents to Macquarie University and NSW Maritime.
  - Reviewing the operational and emergency procedures of the vessel and reporting any necessary changes to the Marine Fieldwork Manager.
  - Assisting the Marine Fieldwork Manager with the internal audit of this document when changes to MQ vessels or relevant Maritime legislation require it.

Note: All Masters of the vessel must understand and agree to these responsibilities before operating Sea Wasp.

A Master has the responsibility to refuse to operate the vessel if they at any time feel that they are not fit or competent to do so, or that the vessel or conditions are not suitable for the intended operations.

The Master may deviate from the stated or normal procedures outlined by the Faculty if there is a risk to human life, the vessel or the environment, provided that the deviation does not increase the risk.

Similarly, the Marine Safety (Domestic Commercial Vessels) National Law Act 2012, states that The Master, Special Personnel, and other persons are exempt from complying with the Regulation in relation to:

a) action taken for the purpose of securing the safety of any person or avoiding significant risk to the environment, or

b) action taken in compliance with a direction given by a relevant officer.
About the Research Vessel (RV) Sea Wasp

Plate 1. Sea Wasp on the trailer

Table 1. RV Sea Wasp Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Sea Wasp</td>
</tr>
<tr>
<td>Vessel Type</td>
<td>Amara Kimberly</td>
</tr>
<tr>
<td>Registration Number</td>
<td>24167 (NSW)</td>
</tr>
<tr>
<td>Registration Type</td>
<td>2C</td>
</tr>
<tr>
<td>Trailer Registration</td>
<td>V67153 (NSW)</td>
</tr>
<tr>
<td>Measured Length</td>
<td>5.2 m</td>
</tr>
<tr>
<td>Beam – overall</td>
<td>2.3 m</td>
</tr>
<tr>
<td>Draught</td>
<td>0.3m</td>
</tr>
<tr>
<td>Displacement</td>
<td>1.3 Tonnes</td>
</tr>
<tr>
<td>Hull Alloy Thickness</td>
<td>5mm bottom; 4 mm sides</td>
</tr>
<tr>
<td>Primary Engine</td>
<td>1 x Honda 75hp (55.9 kW)</td>
</tr>
<tr>
<td>Auxiliary Engine</td>
<td>1 x Honda 5hp (3.7 kW)</td>
</tr>
<tr>
<td>Fuel Capacity</td>
<td>100 L</td>
</tr>
<tr>
<td>Maximum loading</td>
<td>5 people or equivalent mass as a work vessel; 4 people + diving equipment as a dive vessel</td>
</tr>
<tr>
<td>Operational Limits</td>
<td>Within a radius of five (5) nautical miles from the seaward limit of sheltered water or</td>
</tr>
<tr>
<td>Conditions of Operation</td>
<td>a safe haven</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>The vessel must be operated in full compliance with this SMS. The auxiliary outboard engine is to be attached to the transom at all times when vessel is in operation such that it can be brought into use immediately upon need. The vessel must not be left unattended during diving operations. In the event of marine engine failure the auxiliary engine is not to be steered from the marlin board.</td>
<td></td>
</tr>
</tbody>
</table>
Crewing, Personnel Numbers, Loading and Stability

Crewing:

Only people who have received an induction and training and have been approved by the Marine Fieldwork Manager may act as the Master of Sea Wasp.

All vessel operations must be approved by the Marine Fieldwork Manager before work is commenced.

The Faculty of Science recommends that a minimum of two people (the Master + one other) be aboard the vessel at all times whilst underway. However, the vessel may be operated by a single person in situations that have been approved by the Marine Fieldwork Manager.

Personnel Numbers:

For operation in open waters a Maximum of 5 personnel is possible (the Master + 4 others); where the vessel is operated as a dive boat this Maximum number of personnel is reduced to 4 (the Master + 3 others).

These Maximums should be reduced by the Master as appropriate depending on the expected conditions, work to be carried out and the equipment to be carried. The Master is responsible for the loading of the vessel.

Plate 2. Sea Wasp survey plate
Loading and stability:

The Personnel Numbers an estimated weight of approximately 75 kg per person plus 25 kg for each individuals associated equipment (i.e. 100kg per individual). The Maximum number of personnel must be reduced when additional equipment is carried on board.

The Maximum Loading as recommended by the manufacturer is 500 kg of equipment and personnel (5 persons max) when operating in smooth/partially smooth waters. The Maximum Loading as recommended by NSW Maritime is 500 kg of equipment and personnel (5 persons max) when operating in open waters. When operating as a work boat maximum 4 persons plus the master. When operating as a commercial dive boat maximum of 3 persons plus the master.

The Master is responsible for maintaining the stability and supervising the loading of the vessel at all times, and should direct personnel to the best location for them to travel to maintain stability.

All personnel aboard should follow the instructions of the Master in relation to the loading of equipment and personnel.

The Master should distribute the weight of personnel and equipment in such a way so as to maintain a level position in the water.

Too much weight at the stern can introduce the risk of being pooped (having water come over the transom) or being flipped by the bow being lifted into the air by a wave. Too much weight in the bow can lead to bow steering (where the bow catches the water as turns the boat around), burring the bow and/or broaching (where the bow dives into the water and catches, causing the boat to turn violently and potentially roll). Too much weight to either side can affect the handling of the vessel and increase the risk of the vessel rolling.

In rough weather it may be necessary to tie down or secure equipment to prevent it from shifting and affecting the stability of the vessel.
Plate 3. Incorrect loading can cause a vessel to become unstable and roll.

Weather and Plying Limits

Sea Wasp is permitted up to 5 nautical miles radius from the seaward limit if sheltered water or safe haven.

Operation in open waters is only permitted in weather conditions of Beaufort 4 or less, i.e. moderate breeze up to 16 kn or 28 km/h and less than 2 metres of swell.

When operating on smooth or partially smooth waters the Master should make a judgement if the weather is safe based on forecasts and local conditions.

Masters are responsible for knowing the weather forecast and monitoring the weather during operations. If the weather begins to deteriorate the Master should cease operations and make for a safe haven.

The Master should be aware of alternate safe havens if for some reason the primary one is unreachable.

The vessel shall not proceed to sea or enter the ports listed below if the maximum wind speed is in excess of 16 knots or the swell height is greater than 2 metres:

- Bass Point
- Batemans Bay
- Bellringer River
- Boat Harbour Bay
- Brisbane Water
- Brunswick River
- Camden Haven River
- Clarence River
- Crookhaven Heads
- Curragong
- Evans River
- Forster
- Lake Conjola
- Macleay River
- Manning River
- Merimbula
- Minnie Waters
- Moruya River
Nambucca River        Sussex Inlet        Tweed River
Pambula River         Swansea            Wagonga River
Port Macquarie        Tathra             Wonboyn River
Richmond River        Tomaga River       Wooli River
Sandon River          Trial Bay          
Shell Harbour          Tuross Inlet       

When this vessel is transiting the entrance of one of the ports listed above, the master is to hold the appropriate bar endorsement for that bar crossing, and, all passengers shall: As we operate a commercial vessel under a recreational boat licence without carrying any passengers we are exempt from obtaining a bar endorsement.

1. Be in an open area in the aft part of the vessel
2. Wear approved lifejackets

Trips from the ports listed above are to be made in daylight hours only.

Weather Forecasts:

The Bureau of Meteorology
www.bom.gov.au

Seabreeze
www.seabreeze.com.au

Buoy Weather
www.buoyweather.com

Weather forecasts are also given on VHF Marine Radio by NSW Marine Rescue. They are announced on Ch 16 and listeners are directed to the appropriate working channel to hear the forecast.

Weather forecasts can also be requested from NSW Marine Rescue. Contact Marine rescue on Ch 16 using the standard procedure and request a forecast when on a working channel.
<table>
<thead>
<tr>
<th>Beaufort Number</th>
<th>Description</th>
<th>Wind Speed (Knots)</th>
<th>Wave Height (metres)</th>
<th>Sea Conditions</th>
<th>Land Conditions</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Calm</td>
<td>&lt;1</td>
<td>0</td>
<td>Flat.</td>
<td>Calm. Smoke rises vertically.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Light air</td>
<td>1-3</td>
<td>0.0-0.2</td>
<td>Ripples without crests.</td>
<td>Smoke drift indicates wind direction, still wind vanes.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Light breeze</td>
<td>4-6</td>
<td>0.2-0.5</td>
<td>Small wavelets. Crests of glassy appearance, not breaking</td>
<td>Wind felt on exposed skin. Leaves rustle, vanes begin to move.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Gentle breeze</td>
<td>7-10</td>
<td>0.5-1.0</td>
<td>Large wavelets. Crests begin to break; scattered whitecaps</td>
<td>Leaves and small twigs constantly moving, light flags extended.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Moderate breeze</td>
<td>11-16</td>
<td>1-2</td>
<td>Small waves with breaking crests. Fairly frequent whitecaps</td>
<td>Dust and loose paper raised. Small branches begin to move.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Speed</td>
<td>Beaufort</td>
<td>Phenomenon</td>
<td>Phenomenon</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------------</td>
<td>--------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Strong breeze</td>
<td>22-27</td>
<td>3-4</td>
<td>Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.</td>
<td>Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Near gale</td>
<td>28-33</td>
<td>4-5.5</td>
<td>Sea heaps up. Some foam from breaking waves is blown into streaks along wind direction. Moderate amounts of airborne spray.</td>
<td>Whole trees in motion. Effort needed to walk against the wind.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gale</td>
<td>34-40</td>
<td>5.5-7.5</td>
<td>Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.</td>
<td>Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Strong gale</td>
<td>41-47</td>
<td>7.5-10</td>
<td>High waves whose crests sometimes roll over. Dense foam is blown along wind direction. Large amounts of airborne spray may begin to reduce visibility.</td>
<td>Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storm</td>
<td></td>
<td></td>
<td>Very high waves with overhanging crests. Large patches of foam from wave crests give the sea a white appearance. Considerable tumbling of waves with heavy impact. Large amounts of airborne spray reduce visibility.</td>
<td>Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Violent storm</td>
<td>56-63</td>
<td>12.5-16</td>
<td>Exceptionally high waves. Very large patches of foam, driven before the wind, cover much of the sea surface. Very large amounts of airborne spray severely reduce visibility.</td>
<td>Widespread damage to vegetation. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hurricane</td>
<td>64+</td>
<td>16+</td>
<td>Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray, greatly reducing visibility.</td>
<td>Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about.</td>
<td></td>
</tr>
</tbody>
</table>
Trip Preparation

- Obtain charts (paper or electronic) of the area and plan the work: navigational hazards, travel time, fuel consumption, launching point and alternatives, planned emergency procedures. Note 5 nautical miles along shore know the location of a Safe Harbour.

- Check Weather in relation to survey limits less than 16 knots and less 2 metres of swell, Beaufort 4.

- Identify any additional safety equipment (dive flag, diver life line, oxygen kit, additional O2 cylinders) or non-standard equipment that you might need (stern anchor, extra anchor line). Note: a “C”–size cylinder will be consumed by a single diver in approximately 30 minutes.

- Book the boat, and a suitable towing vehicle (4WD).

- Submit your completed Risk Assessment and Fieldwork Notification to the Marine Fieldwork Manager.

- Keep a copy of the Risk Assessment (with Emergency Contact numbers) with you in the boat.

- Arrange a call back procedure specify a time and give a copy of the risk assessment to your call back person so they have the information they will need if you fail to return.

- Do you have enough anchor line? In favourable conditions the anchor and chain length (scope) should be 5 times the depth of water. In average conditions scope = 8:1; rough conditions scope = 10:1. Do you need a second anchor? Are you operating at night? If so lifejackets will need to have lights checked/added. These are located in the white barrel contact the Marine Fieldwork Manager.
Standard Equipment

Table 3a, b & c. Equipment typically carried aboard RV Sea Wasp

**a. Mounted inside vessel**

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPIRB (BEEE462F900028D)</td>
</tr>
<tr>
<td>Boat hook</td>
</tr>
<tr>
<td>Fire Extinguisher (4kg Dry Powder)</td>
</tr>
<tr>
<td>Life ring</td>
</tr>
</tbody>
</table>

**b. Bow/deck storage area**

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucket</td>
</tr>
<tr>
<td>Lifejackets x 6 (if required)</td>
</tr>
<tr>
<td>Flares Kit (3 parachute rockets, 2 red handflares, 1 Orange smoke)</td>
</tr>
<tr>
<td>Sea Anchor</td>
</tr>
<tr>
<td>Spare Ropes</td>
</tr>
<tr>
<td>Fenders x 2</td>
</tr>
<tr>
<td>V-Sheet</td>
</tr>
<tr>
<td>Auxiliary engine handle extension</td>
</tr>
</tbody>
</table>

**c. Inside console**

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>First aid kit (G size)</td>
</tr>
<tr>
<td>Torch</td>
</tr>
<tr>
<td>Mooring lines x 2</td>
</tr>
<tr>
<td>Boat box including basic tools, and manuals</td>
</tr>
<tr>
<td>Sound Signal</td>
</tr>
<tr>
<td>Binoculars</td>
</tr>
<tr>
<td>Boat log</td>
</tr>
</tbody>
</table>
Charts

Sea Wasp carries a GPS / Depth Sounder that provides an approximate electronic chart of most navigable waters along the NSW coast. This unit should not be relied upon as the sole method of navigation. Electronic equipment can fail in an emergency.

Plate 4. The GPS / Sounder aboard Sea Wasp

PAPER copies of nautical charts or a back up GPS with Marine Charts for the area of operation MUST be carried aboard the vessel at all times when it is in use. It is the responsibility of the Master to ensure that appropriate charts are aboard the vessel.

Masters are required to be familiar with nautical charts, their symbols and use.

Plate 5. Example of Marine Chart for Whitsunday Island Group
Lifejackets

The Faculty of Science provides both Type 1 Personal Flotation Devices (PFDs), and SOLAS approved coastal lifejackets, for use aboard Sea Wasp in all approved areas of operations. A Minimum of one for every person aboard should be carried.

Plate 6 Manual Inflatable PFD Type 1 (N.B. Must be serviced by an accredited technician every 12 months in order to be considered suitable for primary application in 2C surveyed vessel operations)

Plate 7. Standard PFD Type 1 – not fitted with a light and therefore unsuitable for operations at night or in open waters
Plate 8 Coastal SOLAS approved lifejacket is reversible for quick donning and has panels of SOLAS grade reflective material with an attached SOLAS whistle and light that clips onto webbing.
Lifejackets are located in the under deck space of Sea Wasp’s forward bow. The Faculty of Science does not require that lifejackets be worn at all times. However personnel aboard the vessel are encouraged to wear a lifejacket if they wish.

*The wearing of lifejackets is compulsory in the following circumstances:*

- When boating in open waters
- At night and during poor visibility
- When the vessel breaks down or loses manoeuvrability
- When crossing a bar
- At all times by a person wearing waders or any other equipment that would impair the ability to swim
- By anyone who cannot swim
- By anyone who is operating the vessel alone
- By any person who is 17 years or less and is not a university student
- At any time of heightened risk (i.e. anytime when the risk of falling overboard or the difficulty of recovering a person is greater than normal vessel operations, e.g. poor weather) or when heading offshore.

All persons should be instructed where the lifejackets are located and how to operate them as part of the pre-trip briefing.

Remember: The manual inflatable jackets need to be activated to provide flotation. Put on the PFD like a jacket and fasten the buckle. Adjust the straps to be snug. Pull down on the toggle to inflate. There is a mouthpiece that can be used to add extra air if the jacket does not fully inflate.
Minimum Personal Clothing and Supplies

- Boating activities often involve exposure to the elements and limit the chance to quickly leave an environment. All people aboard MQ vessels should take precautions to ensure that they have adequate protection from the elements.

- Protection to consider includes from the sun (sunburn), heat and cold including wind chill factors, rain, spray, and in water activities such as diving.

- Even on what would be a nice day on the land it can be cold in an open boat on the water.

- Things to consider taking with you are:
  - Warm clothing (remember layers are best)
  - Waterproof clothing (even if rain isn’t forecast, you can get wet from spray)
  - Sun hat
  - Sun screen
  - Sunglasses
  - Beanie and gloves
  - Appropriate footwear for entering and exiting the boat or for protection from equipment carried on the boat.

- It is also necessary to take an appropriate supply of food and water aboard.
  - Minimum 2 litres of water per person when operating offshore
  - Suitable snacks or food for the day’s activities
  - High energy food is useful
  - If feeling seasick it is often beneficial to eat dry biscuits or a similar plain food
  - Warm food or drinks in cold weather and for diving activities
Communication and Emergency Signals

Who to contact

In the event of an emergency while on the water your first point of contact should be the nearest Marine Rescue Organisation. They have the skills to coordinate on the water emergency responses. It is best to attempt to contact the emergency services using a marine radio (Channel 16) because your call can be heard by anybody monitoring that radio channel. It may be that there is another vessel nearby that can come to your aid, or that you are too far away from a shore receiver for your signal to be received and you need another vessel to ‘relay’ the message for you. If you are working on inland waters, or cannot raise Marine Rescue on the radio you can use a mobile phone if you have signal to call Triple 0. After you have dealt with the emergency you should contact the Marine Fieldwork Manager to inform them of the situation so that they can coordinate any necessary assistance.

Logging on with Marine Rescue NSW

The Faculty of Science requires that any voyage that involves Sea Wasp proceeding into open waters (i.e. outside a protected harbour or waterway) is logged with the local Marine Rescue organisation. This can be done by calling Marine Rescue on VHF channel 16. You will be asked to provide details about the vessel, the number of people aboard, your destination, your expected time of return, and a shore contact person.

It is critical that you remember to LOG OFF with Marine Rescue when you return from your voyage. If you do not log off by the agreed time they will commence search procedures. If you wish to extend your voyage contact Marine Rescue and inform them of your new time of return.

Skeds and call-back procedures

In addition to logging with Marine Rescue, vessel users are required to organise a scheduled call (Sked) with a person who will remain on land. This person is to be provided with a copy of the itinerary and details of the vessel. A time is to be agreed for you to make contact with this person to inform them that all persons are safe. If the person does not hear from you at the agreed time they are to begin search procedures through an agreed method.
method should be discussed with the Marine Fieldwork Manager as part of your risk assessment. For boating activities a Sked of 16.00hrs should be used.

Radio Communications

Radio should be the first communication method. This communicates directly with Marine Rescue and other vessels that may be nearby. Sea Wasp carries a fixed Marine VHF radio. Marine VHF radios operate over distances of up to 50 km depending on the radio type, environment and weather. The Faculty of Science recommends that all Masters of Sea Wasp receive training in marine radio use and hold a certificate of competency.

Plate 9 The VHF Marine Radio aboard Sea Wasp

Plate 10. Remove aerial when storing Sea Wasp
Plate 11 Remember to take aerial with you.

**Channel 16 and Radio Silence Periods**

It is good practice to monitor channel 16 on VHF radios. This channel is the International Radiotelephony distress, urgency, safety and calling channel. It is used to communicate with Marine Rescue organisations and call other vessels. Once communication is established radio users should move to another ‘working’ channel to continue their conversation so as to free up channel 16.

It is the practice in all Australian waters to observe silence periods on VHF channel 16 during which time no non-emergency radio transmission are to be made. Radio users should listen to the radio to hear any weak distress transmissions during this time.

**Navigational Safety Information broadcast 30 minutes earlier on HF radio**

Due to more detailed reporting from the Bureau of Meteorology, from December 1, 2014 it was necessary to change the broadcast times. A summary of the changes to Navigational Maritime Safety Information (MSI) broadcast times are below;

- The broadcast time of Navigational MSI will be shifted 30 minutes earlier, from 57 past the hour to 25 past the hour.
The allocated time for Navigational MSI will be expanded from 3 minutes to 5 minutes.

Dual broadcasts (25 and 57 past the hour) will occur from 1 December 2014 until 1 January 2015.

From 1 January 2015, the new arrangements (25 past the hour) will take effect.

Radio Repeater Channels

Because VHF communication is primarily “line of sight” a series of “Repeater” stations is set up along the coast to rebroadcast signals over a greater distance. As these stations can broadcast over great distances repeater channels should only be used if directed by Marine Rescue or other organisations, or if vessels cannot be raised on any other channel.

VHF Marine Repeater Channels operate in the Duplex mode on channels 21, 22, 80, 81 or 82.

Position Information

Preference should be given to indicating the position by latitude and longitude (degrees and minutes and decimal points of a minute if necessary, North or South, East or west); or true bearing and distance (the unit of distance should always be specified, for example, nautical miles or kilometres) from a known geographical point (for example 045 degrees true from “Point Danger”, 24 nautical miles); or a precise geographical location (for example, in the case of a vessel running aground).

Where latitude and longitude are not used, care must be taken to ensure that the position given cannot be confused with any other place or geographical point. If afloat and drifting, the rate and direction of drift could be stated in the distress message.
Receiving a distress call

If you hear a distress message from another vessel which is, beyond any possible doubt, in your vicinity, you should immediately acknowledge receipt. However, in areas where reliable communications with a limited coast station (e.g. a Marine Rescue Station) is practicable, you should defer this acknowledgment for a short interval to allow the limited coast station to acknowledge receipt.

If you receive a distress message from another vessel which, beyond any possible doubt, is not in your vicinity should defer their acknowledgment to allow vessels nearer to the distressed vessel to acknowledge without interference.

If you receive a distress message from another vessel which, beyond any possible doubt, is a long distance away, you need not acknowledge receipt unless this distress message has not been acknowledged by any other station.

When you hear a distress message which has not been acknowledged by other stations, but you are not in a position to provide assistance, you should acknowledge the call and then take steps to attract the attention of a limited coast radio station or other vessels which might be able to assist.

Grave and Imminent Danger – Mayday

The distress signal is the word MAYDAY. The transmission of the distress signal indicates that the vessel, or persons aboard the vessel, are in GRAVE AND IMMINENT DANGER and require immediate assistance.

- Tune VHF radio channel 16
- Listen to ensure channel is clear, however you can break into a conversation
- Depress and hold the push to talk button
- Speak clearly at a normal level into the microphone
- “Mayday, mayday, mayday. This is Sea Wasp, Sea Wasp, Sea Wasp.”
  Give position, nature of the emergency, and other information (such as number of people aboard)
- Listen for reply
- Repeat until answered
- Communicate with the receiver to arrange assistance
Urgent message about the safety of your vessel – Pan Pan

The urgency signal consists of the words PAN PAN, and indicates that the caller has an urgent message to transmit concerning the safety of the vessel or person. It has priority over all other communications except distress.

The urgency signal may be used to precede a message where urgent assistance is required, e.g. concerning a ‘man overboard’ requesting assistance to locate that person.

- Tune VHF radio to channel 16
- Listen to ensure channel is clear, however you can break into a conversation
- Depress and hold the push to talk button
- Speak clearly at a normal level into the microphone
- “Pan Pan, Pan Pan, Pan Pan. All Stations, All Stations, All Stations. This is Sea Wasp, Sea Wasp, Sea Wasp.” Give position and urgent message
- Listen for reply
- Repeat until answered
- Communicate with the receiver to arrange assistance
The Safety Signal – Securite

The safety signal consist of the word SECURITE (pronounced SAY-CURE-ETAY), and indicates that the caller is about to broadcast a message concerning an important navigational or weather warning. It has priority over all other messages except distress or urgency messages. Reasons for sending the safety signal may include sighting a hazard to navigation, e.g. a floating shipping container.

The safety warning is announced on the distress, urgency or safety channel (Ch 16) with the safety message being broadcast on a working channel. An acknowledgement is not required.

- Tune VHF radio to channel 16
- Listen to ensure channel is clear
- Depress and hold the push to talk button
- Speak clearly at a normal level into the microphone
- “Securite, Securite, Securite. All Stations, All Stations, All Stations. This is Sea Wasp, Sea Wasp, Sea Wasp.”
- “Navigation warning listen on channel 13”
- Switch to channel 13
- “Securite, Securite, Securite. All Stations, All Stations, All Stations. This is Sea Wasp, Sea Wasp, Sea Wasp.”
- Give navigation warning information.
- Return to channel 16

Non-urgent emergency services contact

Standard radio transmissions of a non-urgent nature can be made using channel 16 to establish communication with the desired receiver before moving to another “working channel”. The most common type of non-urgent communication is to contact Marine Rescue to give Sked calls or request non-urgent assistance.

You should ensure that there is no other traffic on the channel before beginning your broadcast and you should observe radio silence periods.

- Tune VHF radio channel 16
- Listen to ensure channel is clear
- Depress and hold the push to talk button
- Speak clearly at a normal level into the microphone
- “Marine Rescue, Marine Rescue, Marine Rescue. This is Sea Wasp, Sea Wasp, Sea Wasp.”
- Listen for reply
- Other operator will direct you to change channels
- Acknowledge the direction to change and change channels
- Standby on the new channel until called by Marine Rescue
- Communicate with receiver to arrange assistance
The Phonetic Alphabet

When it is necessary to spell words for transmission, ONLY the following phonetic alphabet should be used.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Codeword</th>
<th>Spoken as (bold syllable emphasised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Alfa</td>
<td>AL FAH</td>
</tr>
<tr>
<td>B</td>
<td>Bravo</td>
<td>BRA H VOH</td>
</tr>
<tr>
<td>C</td>
<td>Charlie</td>
<td>CHAR LEE or SHAR LEE</td>
</tr>
<tr>
<td>D</td>
<td>Delta</td>
<td>DELL TAH</td>
</tr>
<tr>
<td>E</td>
<td>Echo</td>
<td>ECK OH</td>
</tr>
<tr>
<td>F</td>
<td>Foxtrot</td>
<td>FOK S TROT</td>
</tr>
<tr>
<td>G</td>
<td>Golf</td>
<td>GOLF</td>
</tr>
<tr>
<td>H</td>
<td>Hotel</td>
<td>HOH TELL</td>
</tr>
<tr>
<td>I</td>
<td>India</td>
<td>IN D EE AH</td>
</tr>
<tr>
<td>J</td>
<td>Juliet</td>
<td>JEW LEE ETT</td>
</tr>
<tr>
<td>K</td>
<td>Kilo</td>
<td>KEY LOH</td>
</tr>
<tr>
<td>L</td>
<td>Lima</td>
<td>LEE MAH</td>
</tr>
<tr>
<td>M</td>
<td>Mike</td>
<td>MIKE</td>
</tr>
<tr>
<td>N</td>
<td>November</td>
<td>NO VEM BER</td>
</tr>
<tr>
<td>O</td>
<td>Oscar</td>
<td>OSS CAH</td>
</tr>
<tr>
<td>P</td>
<td>Papa</td>
<td>PAH PAH</td>
</tr>
<tr>
<td>Q</td>
<td>Quebec</td>
<td>KEH BECK</td>
</tr>
<tr>
<td>R</td>
<td>Romeo</td>
<td>ROW ME OH</td>
</tr>
<tr>
<td>S</td>
<td>Sierra</td>
<td>SEE AIR RAH</td>
</tr>
<tr>
<td>T</td>
<td>Tango</td>
<td>TAN GO</td>
</tr>
<tr>
<td>U</td>
<td>Uniform</td>
<td>YOU NEE FORM or OO NEE FORM</td>
</tr>
<tr>
<td>V</td>
<td>Victor</td>
<td>VIK TAH</td>
</tr>
<tr>
<td>W</td>
<td>Whiskey</td>
<td>WISS KEY</td>
</tr>
<tr>
<td>X</td>
<td>X-ray</td>
<td>ECK S RAY</td>
</tr>
<tr>
<td>Y</td>
<td>Yankee</td>
<td>YANG KEY</td>
</tr>
<tr>
<td>Z</td>
<td>Zulu</td>
<td>ZOO LOO</td>
</tr>
</tbody>
</table>
Other common transmissions

The following are ways to pronounce commonly needed phrases. Note: do not say “Over and out” as you can see below this is incorrect as it invites the receiver to reply, then ends the transmission. To end transmissions simply say “Out”.

<table>
<thead>
<tr>
<th>Intended transmission</th>
<th>Meaning</th>
<th>Spoken as</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Your message is received and understood</td>
<td>ROMEO</td>
</tr>
<tr>
<td>Over</td>
<td>Invitation to reply</td>
<td>OVER</td>
</tr>
<tr>
<td>Out</td>
<td>This transmission is ended</td>
<td>OUT</td>
</tr>
<tr>
<td>Decimal point</td>
<td>Decimal</td>
<td>DAY-SEE-MAL</td>
</tr>
<tr>
<td>Full stop</td>
<td>Stop</td>
<td>STOP</td>
</tr>
<tr>
<td>Comma</td>
<td>Comma</td>
<td>COMMA</td>
</tr>
<tr>
<td>/</td>
<td>Oblique Stroke</td>
<td>OBLIQUE</td>
</tr>
</tbody>
</table>

Figure Code

The pronunciation of some numbers have been modified to make them more easily understood over the radio.

<table>
<thead>
<tr>
<th>Number</th>
<th>Codeword</th>
<th>Spoken as (bold syllable emphasised)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>zero</td>
<td>ZEE ROH</td>
</tr>
<tr>
<td>1</td>
<td>one</td>
<td>WUN</td>
</tr>
<tr>
<td>2</td>
<td>two</td>
<td>TOO</td>
</tr>
<tr>
<td>3</td>
<td>three</td>
<td>TREE</td>
</tr>
<tr>
<td>4</td>
<td>four</td>
<td>FOW ER</td>
</tr>
<tr>
<td>5</td>
<td>five</td>
<td>FIFE</td>
</tr>
<tr>
<td>6</td>
<td>six</td>
<td>SEKS</td>
</tr>
<tr>
<td>7</td>
<td>seven</td>
<td>SEVEN</td>
</tr>
<tr>
<td>8</td>
<td>eight</td>
<td>AIT</td>
</tr>
<tr>
<td>9</td>
<td>nine</td>
<td>NINER</td>
</tr>
</tbody>
</table>
Standard Phrases for Radio Use

In the interests of accuracy, brevity and clarity it is sound practice for operators to use the standard vocabulary when possible. A selection of the standard vocabulary is contained in the following paragraphs.

Message markers

If necessary, messages passed by radiotelephony may be preceded by the following message markers:

“Instruction” Indicates that the following message implies the intention of the sender to influence the recipient(s) by a regulation.

“Advice” Indicates that the following message implies the intention of the sender to influence the recipient(s) by a recommendation.

“Warning” Indicates that the following message informs other traffic participants about dangers.

“Information” Indicates that the following message is restricted to observed facts.

“Question” Indicates the following message is of interrogative character.

“Answer” Indicates the following message is of interrogative character.

“Request” Indicates that the content of the following message is asking for action with respect to the ship.

“Intention” Indicates that the following message informs others about immediate navigational actions intended to be taken.

Responses

Where the answer to a question is in the affirmative, say: “Yes” followed by the appropriate phrase in full.

Where the answer to a question is in the negative, say: “No” followed by the appropriate phrase in full.
Where the information is not immediately available, but soon will be, say: “Stand by”. Where the information cannot be obtained, say: “No information”. Where a message is not properly heard, say: “Say again”. Where a message is not understood, say: “Message not understood”.

**Miscellaneous Phrases**

What is your name (and any other identity)?

How do you read me?

I read you:
- Bad/one with signal strength one (i.e barely perceptible)
- Poor/two with signal strength two (i.e. weak)
- Fair/three with signal strength three (i.e. fairly good)
- Good/four with signal strength four (i.e. good)
- Excellent/five with signal strength five (i.e. very good)

Stand by on VHF channel....

Change to channel....

I cannot read you (pass your message through..../Advise try channel....)


**Corrections** When a mistake is made in a message, say: “Mistake….” followed by the word: “Correction…” plus the corrected part of the message.

Example: “My present speed is 14 knots – mistake. Correction, my present speed is 12 knots, one-two knots”

**Readiness** Go ahead, I am ready/not ready to receive your message I do not have channel.... Please use channel....

**Repetition** If any parts of the message are considered sufficiently important to need particular emphasis, use the word “repeat”, e.g. “Do not repeat do not overtake”
Acknowledgement  Romeo

Position  When latitude and longitude are used, these should be expressed in degrees and minutes (and decimals of a minute, if necessary), north or south of the Equator and east or west of Greenwich. When the position is related to a mark, the mark shall be a well-defined charted object. The bearing shall be in the 360-degree notation from true north and shall be that of the position from the mark.

Courses  Courses should always be expressed in the 360-degree notation from true north (unless otherwise stated). Whether this is to, or from, a mark can be stated.

Bearings  The bearing of the mark or vessel concerned is the bearing in the 360-degree notation from true north (unless otherwise stated), except in the case of relative bearings. Bearings may be either from the mark or from the vessel.

Distances  Distances should be expressed in nautical miles or cables (tenths of a nautical mile), otherwise in kilometres or metres. The unit should always be stated.

Speed  Speed should be expressed in knots (without further notation meaning speed through the water). “Ground speed” meaning speed over the ground.

Numbers  Numbers should be transmitted by speaking each digit separately, for example one five zero for 150.

Names  Geographical Place names used should be those on the chart or Sailing Directions in use. Should these not be understood, latitude and longitude should be used.

Time  Time should be expressed in the 24-hour notation indicating whether UTC, zone-time or local shore time is being used.
Phone Communication

Do not rely on mobile phones.

If you cannot raise emergency services on the radio you can attempt to call on a phone.

In an emergency dial 000 and ask to be connected to the police. (Note: 112 only works with GSM phones and not with 3G phones. Dial 000)

EPIRB – Emergency position indicating radio beacon

Deploy the EPIRB if the vessel is in Grave and Imminent Danger or you have an emergency and cannot establish radio or phone communication.

Deploy the EPIRB if you transmit a Mayday

To deploy the EPIRB
  - Locate EPIRB
  - Follow the instructions on the unit

Figure 12. EPIRB mounted on the port side of Sea Wasp’s console.
Flares

Flares are a visual distress signal. Always delay using flares until you can see an aircraft, or until people on shore or in other boats are in visual range.

Red flares - have a visibility range of 10 km and are designed for use at night but can also be seen during the day.

Orange smoke flares - can be seen for up to 4 km (10 km by aircraft) and should be used in daylight to pinpoint your position.

A red star parachute distress rocket - is used when offshore as they have a greater range. They are designed to fire a single red star to a height of
approximately 300 m. The star burns while falling for at least 40 seconds and can be seen from the greatest distance due to its intensity and elevation from sea level.

Plate 14. A red parachute rocket

V Sheet

A V Sheet is a visual distress signal. Lay the V Sheet on the canopy or fly it like a flag to attract attention and help emergency services locate your vessel.

Plate 15. V-sheet
Plate 16. Waterproof Safety barrel with safety equipment. To be stowed in the bow hatch

Other distress signals that may be used when a vessel is in need of immediate assistance include:

<table>
<thead>
<tr>
<th>Distress Signal</th>
<th>Action/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throwing Red Star Shells</td>
<td>Flame on a vessel</td>
</tr>
<tr>
<td>Fog Horn</td>
<td>Continuous soundings</td>
</tr>
<tr>
<td>Continuous Soundings</td>
<td>Flames on a vessel</td>
</tr>
<tr>
<td>Flares on a vessel</td>
<td>Gun fired at intervals of one minute</td>
</tr>
<tr>
<td>Orange Background</td>
<td>SOS</td>
</tr>
<tr>
<td>Black Ball &amp; Square</td>
<td>&quot;Mayday&quot; by radio</td>
</tr>
<tr>
<td>Sos Flag and Ball</td>
<td>Parachute red flare</td>
</tr>
<tr>
<td>Dye Marker (any colour)</td>
<td>Code flags</td>
</tr>
<tr>
<td>November Charlie</td>
<td>Square flag and ball</td>
</tr>
<tr>
<td>Code Flags November Charlie</td>
<td>Wave arms</td>
</tr>
</tbody>
</table>

December 2014
| Radio-Telegram Alarm | Radio-Telephone Alarm | EPIRB | Smoke |

**Figure 17.** Distress signals to alert observers that immediate assistance is required (adapted from www.boatsafe.com)
Vessel Maintenance

- The vessel must be inspected by the Master prior to all voyages.
- The vessel and all safety equipment must be fully operational.
- If an item of equipment is damaged or safety equipment used the Master must log **Vessel Maintenance Request** and provide it to the Marine Fieldwork Manager.
- The Marine Fieldwork Manager will conduct regular maintenance inspections in addition to those outlined below.
- These checks should be recorded on the **Daily Maintenance Checklist** then returned to the Marine Fieldwork Manager.
### Table 7. Daily maintenance log for Sea Wasp

<table>
<thead>
<tr>
<th>Item</th>
<th>Part</th>
<th>Check</th>
<th>Tick or comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td>Tilt</td>
<td>Check operational</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuel Separator</td>
<td>Check for water</td>
<td></td>
</tr>
<tr>
<td><strong>Steering</strong></td>
<td>Function</td>
<td>Check proper operation</td>
<td></td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td>Lights</td>
<td>Check all lights function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Radio &amp; GPS</td>
<td>Check function</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Instruments</td>
<td>Check function</td>
<td></td>
</tr>
<tr>
<td><strong>Hull</strong></td>
<td>Hull</td>
<td>Check for damage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bung</td>
<td>Check all bungs are present and fit correctly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuel level</td>
<td>Fuel up prior to departure</td>
<td></td>
</tr>
<tr>
<td><strong>Auxiliary motor</strong></td>
<td>5 hp honda</td>
<td>Check tested</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 hp honda</td>
<td>Check tiller extension handle is present</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lanyard</td>
<td>Check auxiliary is secured to transom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuel Caddy</td>
<td>Check unit is full</td>
<td></td>
</tr>
<tr>
<td><strong>Mooring</strong></td>
<td>Lines</td>
<td>Check mooring lines present</td>
<td></td>
</tr>
<tr>
<td><strong>Anchoring</strong></td>
<td>Anchor</td>
<td>Check anchor is present, useable and suitable for task</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chain and Rope</td>
<td>Check present and ready to use (not tangled)</td>
<td></td>
</tr>
<tr>
<td><strong>Trailer</strong></td>
<td>Lights</td>
<td>Check working</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bearings</td>
<td>Check for heating while driving</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safety Chain</td>
<td>Check fitted correctly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stern tie down</td>
<td>Check fitted correctly and condition</td>
<td></td>
</tr>
<tr>
<td><strong>Safety Equipment</strong></td>
<td>EPIRB</td>
<td>Check present</td>
<td>To be mounted in specific bracket</td>
</tr>
<tr>
<td></td>
<td>Fire extinguisher</td>
<td>Check present</td>
<td>To be mounted in front of helm</td>
</tr>
<tr>
<td></td>
<td>Lifejackets</td>
<td>Check present (at least 1 per person)</td>
<td>Stowed in bow hatch</td>
</tr>
<tr>
<td></td>
<td>Dive Flag</td>
<td>When Diving On Board</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flares</td>
<td>Check present (3 parachute, 2 red, 1 orange)</td>
<td>White barrel</td>
</tr>
<tr>
<td></td>
<td>Horn</td>
<td>Check present</td>
<td>White barrel</td>
</tr>
<tr>
<td></td>
<td>Torches</td>
<td>Check present and working</td>
<td>Helm cabinet</td>
</tr>
<tr>
<td></td>
<td>First aid kit</td>
<td>Check present</td>
<td>Helm Cabinet</td>
</tr>
<tr>
<td></td>
<td>Compass</td>
<td>Check present</td>
<td>Mounted on Helm</td>
</tr>
<tr>
<td></td>
<td>V sheet</td>
<td>Check present</td>
<td>White Barrel</td>
</tr>
<tr>
<td></td>
<td>Tool kit</td>
<td>Check present</td>
<td>White Barrel</td>
</tr>
<tr>
<td></td>
<td>Bucket</td>
<td>Check present</td>
<td>Stowed in bow hatch</td>
</tr>
<tr>
<td></td>
<td>Boat hook</td>
<td>Check present</td>
<td>On Board</td>
</tr>
<tr>
<td></td>
<td>Sea Anchor</td>
<td>Check present</td>
<td>White Barrel</td>
</tr>
<tr>
<td></td>
<td>Life ring</td>
<td>Check present</td>
<td>Mounted portside</td>
</tr>
<tr>
<td></td>
<td>Back up navigation device</td>
<td>Check back up paper or electronic chart is present</td>
<td></td>
</tr>
</tbody>
</table>
**Trailers and Towing**

Towing boats can be one of the most hazardous aspects of boat use. Care must be taken as vehicles towing trailers behave and respond differently to normal.

<table>
<thead>
<tr>
<th>A heavy boat needs to be properly secured to the trailer and the driver needs to manoeuvre with care. In this case the tie-down straps (one is still on the transom) were inadequate and under heavy breaking the boat broke loose.</th>
<th>Boats should not be secured to the winch post alone. In this case the force of the boat on the winch post has caused it to snap (it is still attached to the boat!) and in the absence of other tie-downs the boat has come off the trailer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is important to securely tie down boats. This driver did not use a tie-down strap across the rear of the boat and under the motion of driving the boat has shifted severely. This driver was lucky the boat stayed with the trailer and the car managed to stop safely.</td>
<td>Even small boats on trailers can have accidents. Improper maintenance of the wheel hubs caused the bearings to fail on this trailer resulting in a wheel breaking loose.</td>
</tr>
</tbody>
</table>

**Plate 20. Boat trailer accident scenarios**
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 bearing cap check bearings are well greased.

Plate 20. Sea Wasp wheel clamp

- 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.

Plate 21. Sea Wasp trailer hitch lock

- 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. Ensure split pin is in place once the trailer is on the towball.
Plate 22. Sea Wasp trailer hitch and jockey wheel

TROUBLESHOOT: If the handle doesn’t slip all the way over the tow ball then the anti-rattle bolt may be too tight. Or the car and tow ball is not horizontal. May need to reposition or wobble into place.

- Replace the U-lock around the hitch and towbar coupling or use R clip.
- Fold the hand break lever back and secure (if you haven’t done so already).

| A. Manual trailer brake engaged (for parking the trailer) | B. Manual trailer brake disengaged (for driving) |

Plate 23. Manual trailer brake (A) Active; (B) disengaged

- Check that reversing lock is disengaged (open position)
A. Trailer brake active (for driving)  
B. Trailer brake disengaged (for reversing trailer)

**Plate 24. Automatic trailer brake (A) Active; (B) disengaged.**

- 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

**Plate 25. Rear trailer tail light of boat trailer. N.B. Always check that the lights work before taking the trailer onto the road.**

**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)
Plate 26. Sea Wasp secured to trailer. N.B. Check that the safety chain and the winch are connected to the bow.

- Is the Stern strap attached to the trailer are firm, but not tight, and with no rope tails dragging.

| Tie down ratchet strap secured correctly on Starboard quarter without twists | Tie down point of attachment on trailer |

Plate 27. The stern tie down correctly positioned on Sea Wasp.
Are the engines supported?

- Ensure that the engines are supported and cannot drop down while being towed. Never rely on the hydraulics. Use the TILT LOCK LEVERS for short trips (such as between the car park to the boat ramp). For longer trips use the ENGINE SUPPORT POSTS, as engines have been known to bounce off tilt lock levers.

The Tilt Lock Levers is located on the side of each engine above the mounting bracket.

| Tilt Lock Lever Open (for engine operation) | Tilt Lock Lever Closed (for travel) |

Plate 28. Operation of outboard support lever on Sea Wasp main/auxiliary engines. N.B. It is recommended to cover one of the propellers with a fluorescent bag or bucket while towing.

Securing, removing and flushing the auxiliary

Always ensure that the Auxiliary is stored upright in the allocated position within the marine fieldwork room. If the auxiliary does need to be transported, or stored for limited periods on its side, ensure that it lies on the lugs with the tiller handle and gear lever facing upwards.

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. If you need to that the equipment is adequately restrained.
- P1 drivers are not allowed to tow the boat (illegal)
Standard Operating Procedures – Sea Wasp #24167

- Canopy clearance is assumed to be 3.3 m. Slow down when passing under overhead obstructions.

**Boat Ramps**

![Image of boat ramp](image)

Plate 29. Launching your boat note the bow line is held

**Boat Ramp Etiquette**

- For any unfamiliar ramps, walk the ramp to ensure there are no drop-offs or rocks hidden under the water.
- Take care when walking around ramps as they can be slippery and cars will be reversing with limited visibility.
- Park in the preparation area away from the ramp while you ensure the boat is ready to launch. Avoid blocking the ramp unnecessarily.
- Before reversing toward the ramp, explain to the people you are with what you will be doing and what you expect from them.
- At ramps with multiple lanes make sure you only occupy one lane and don’t block others.
- If there is a jetty or pontoon along the ramp (like above) move the boat to the end so that others can launch while you park the car.
- When returning to the ramp, tie the boat up away from the ramp or drop people off and stand off from the ramp until the trailer is ready.
- After retrieving the boat, park in the preparation area while you tidy everything up. Don’t hang around on the ramp unnecessarily.
Locations of Boat Ramps and Recommended Ramps

Locations of boat ramps in NSW waters are typically marked on the NSW Maritime boating maps available from the Maritime website: www.maritime.nsw.gov.au

Information about boat ramps is also available from the NSW Maritime website or from the NSW Marine Directory website: www.marinedirectory.com.au/launch-ramps.html

When preparing for your fieldtrip you should include an assessment of your launching area in your risk assessment and provide details in your fieldwork notification. Discuss the choice of boat ramps with the Marine Fieldwork Manager and other boat users as they may have first-hand knowledge of ramps and their features, e.g. some ramps might only be good in some weather, while others may have facilities like pontoons or toilets.
Small Vessel Handling

These are guides as to how to handle conditions. There is no substitute for learning from experienced masters and having experience.

Beam Seas
In beam seas, excessive roll can cause cargo to shift, creating a dangerous list. This could cause the vessel to capsize. Strong breaking waves could also capsize the vessel.

Following Seas
In following seas, a vessel may lose stability on a wave crest. If the vessel is overtaken by a wave crest, broaching may occur.

Quartering Seas
In quartering seas, the problems of beam and following seas are combined. Quartering seas represent the most dangerous situation in severe weather. Avoid Quartering Seas – turn to take them on a better angle.

Plate 30

Following Seas:

The directional stability of a boat is dependant on two factors:
- the flow of water past the craft’s hull and rudder (on an outboard engine the leg acts similar to a rudder but is much less efficient)
- the directional force provided by the propeller

While the speed of wave travel will vary according to the conditions, it will generally be about two to three times the speed of a planing boat travelling at displacement speeds. This means that each wave will pass under the boat from stern to bow, the opposite direction from which the hull is designed to provide maximum efficiency. As this happens, there is little tracking stability provided by the hull shape or rudder and most of the available control is provided by the propeller.

In these situation throttle is critical. Any tendency of the craft to broach should result in power increases. The throttle increase is required to keep ahead of the breaking crest of the wave without running too fast down the face of the wave and into the back of the next.
The breaking section of the wave is moving at a greater speed than that of the main part of the wave, adding to the broaching forces and reason to keep ahead of the break.

A boat on the face of a wave in a following sea may have the stern elevated and the bow low in the water. This causes the bow to dig in more and the stern to lift further as the breaking wave pushes against it. The wave is an accelerating force which is transferred from a forward acting force to a sideways acting force as the bow digs in further. The craft will then be turned sideways to the wave and in danger of capsize. This is a broach.

![Diagram](image)

**Plate 31**

To reduce the risk of capsize, keep the vessel as squarely positioned on the wave face as you can to avoid the sideways forces. The following choices are available while near the face of a breaking wave:

- Accelerate away from the break to avoid the worst of the breaking force
- Back off the throttle to allow the wave to more rapidly pass under the boat

Or

- Maintain your speed and position

Only one of these actions will be the most appropriate depending on the conditions at the time.

Avoid waves breaking over the stern of the vessel, this is called being swamped or pooped. This can also happen if you rapidly slow from a plane and the wake of the boat catches up to you.
Head on seas and winds

Planning hull boats are designed to perform best when a minimum speed is maintained ensuring that the hull is at an optimum point of air/water interface. The planning position should be maintained whenever possible (except when speed limits dictate otherwise). Some sea conditions mean that maintaining the planning speed results in the boat becoming airborne and sever cavitation of the propeller occurring. It will then become necessary to reduce speed and this may mean dropping down from the planning position, alternatively consider taking the waves at an angle. This reduces the angle and height of the boat when cresting the waves and in some cases means that planning speed can be maintained.

Care should be taken to prevent burying the bow into oncoming waves. If wave height increases the ‘bow on’ to the approaching waves may be the only option, even if it means travelling at a slower speed. This may be the best and safest option but it will result in increased fuel consumption.

Strong head and side winds and steep waves are a hazardous combination particularly for small, lighter boats, and can cause the boat to capsize. It is critical to slow down and have plenty of weight in the bow provided by either crew or cargo.

Tacking at approximately 15 degrees for moderate seas will always make the journey more comfortable. A tack of 15 degrees for 10 minutes followed by a tack of 15 degrees the other way for 10 minutes will maintain roughly your original course.
Plate 33. Taking head on seas at an angle reduces the angle and height of the vessel when cresting the wave

Beam Seas

Generally planning speeds can be maintained for much longer in a beam sea because you are able to direct the boat across the waves at an angle. It may result in more sideways rolling of the boat, but unless the seas are of such a size that you should be taking them bow on, the rolling action is more uncomfortable than dangerous.

Angles up to up to 30 degrees to the wave can be achieved either bow to or stern to. The dangerous aspect is not picking a higher wave that requires a perpendicular approach. Caution must be taken when using this manoeuvre in windy or rough conditions.
Slow speed manoeuvres and reversing

Anyone can drive a boat fast on flat water. It takes skill to manoeuvre a boat slowly and precisely in tight spaces.

Remember, when approaching a wall, jetty, another vessel or the shore, only approach at the speed that you want to hit it with!

Planning hulls are designed to achieve best results at planning speed. At low speeds the boats will have considerably different handling characteristics. These will differ between boats and can only be learnt through practice. Remember to use a combination of steering, forward / reverse and throttle to control the boat.

Reversing characteristics of any boat can also be extremely varied. The guiding rule for reversing is to watch where the stern of the boat is heading. Boats manoeuvre much less efficiently in reverse as the propeller and hull are going the opposite way to their design. Avoid reversing in shallow water where your prop could strike bottom or rocks. Always position your outboard in the direction you wish to go prior to accelerating in forward or reverse.

Maintain a proper lookout and speed appropriate for the conditions and including probability of encountering people or obstacles

If you think someone may be in the water near your stern. Shut the engine off.

All other times, gradually reduce the throttle before switching into neutral and shutting the engine off.
Section 2: Operational Procedures

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).

Plate 34: Preparation: turn the battery switches on leaving the cross-over closed
- Turn on the VHF radio, attach the antennae, and set up the GPS

Plate 35. Antenna attachment

Plate 36: There are two bungs for the transom.

- Ensure the BUNGS are IN! The bungs are kept in the box with the keys and winch handle and should be returned to this box.
- Disengage the engine TILT LOCK LEVERS

Plate 38. Tilt lock lever engaged lift up to disengage prior to lowering the outboard.
- **Secure the anchor and chain** to the anchor line, and check the anchor line is ready to be used.

![Image of anchor, chain, and rope](image1)

**Plate 39:** The anchor, chain and rope correctly stowed in the anchor well. This must be set so that it will run free when deployed.

- Leave the bow safety chain connected in case the winch cable breaks while reversing.

![Image of boat secured](image2)

**Plate 40:** Make sure the boat is secured by the winch rope and the safety chain when reversing down a boat ramp.
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.

Two mooring lines are carried aboard

Two fenders are available and should be used when tying up to prevent damage to the vessel

Plate 41: Mooring lines and Fenders
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. However, the reality is you need someone in to reverse the boat.
- When in deep enough lower the engine (remember to disengage the engine tilt lock). Start the engine (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 unwinchning. 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 engine is left up (and off) until there is sufficient clearance (draught is approximately 0.3 m).
Engine Operation

Engine Start-up

- Turn on the battery switches.

Plate 42.
Plate 43: engine key and kill switch in place.
Plate 44. Engine water intake, Lower engine into the water to a depth sufficient to submerge the water intakes.
Ensure engine control levers are in neutral

Plate 45: Control levers “click” into neutral at the centre of their movement

- Turn key to ‘on’ position check kill switch is in place.
- Start the engine by turning the key to the ignition position then check for tell tale.
- Allow the engine 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. **IS THE KILL SWITCH IN?**
Engine Gauges

There are four gauges on Sea Wasp. These are mounted on the dash in front of the wheel.

Plate 46: The dash of Sea Wasp

From left to right, Fuel gauge, tachometre, speedometer (in miles per hour).

Note fuel gauges on boats are notoriously inaccurate, fuel up each time you depart.

Tachometre provide the RPM optimum throttle is usually ¾ throttle around 4100 to 4500 RPM however it will vary according to sea conditions and the load.

Speedometre in MPH note vessel speeds in waterways are expressed in knots which is closer to MPH rather than KPH.
Trim alters the trim of the outboard. 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.

**Engine Tilt**

The engine can be tilted in two ways: at the engine or from the throttle.

*Plate 47. Tilt lever on engine*

Note disengage tilt lock prior to lowering the outboard.

On the throttle control lever there is a tilt rocker switch. This is useful for trimming whilst underway.
Plate 48. Throttle control lever and engine tilt control.
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.
- Turn off batteries.

Auxiliary Engine

- The auxiliary engine is to be attached to the transom (Starboard side) at all times when the vessel is in operation such that it can be brought into use immediately upon need. Attach lanyard to the handle on the starboard stern
- In the event of engine failure the auxiliary engine is not to be steered from the marlin board.
- Remember to take the tiller extension each time the Sea Wasp is taken out.
- As a pre departure check, check the fuel caddy is full; the auxiliary should be started prior to departure. It may take some time to prime the fuel lines and engine. It will require choke to start. It is better to do this at the wharf rather than in an emergency.
- Upon return use a bucket full of water to flush the motor and drain fuel (run the motor disconnected from the fuel line to drain engine of fuel)
Plate 50: The auxiliary engine secured to the starboard side transom and note the lanyard secured to the starboard stern rail.
Plate 51: Fuel line in place note location of choke.

Plate 52: Tiller extension arm attached and kill switch in place.
Electrical Systems

Sea Wasp is fitted with a 12 volt duel battery system.

Plate 54: The duel batteries are behind the door in the transom.

This type of electrical system allows the engine to have its own battery and provide redundancy.

There are 3 master switches above the battery. The left battery switch is for the instruments and lights the right is for the engine and the centre switch 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.
Plate 56: Boat not in use: both batteries and the cross-over OFF
Plate 57: Normal use: batteries ON, cross-over OFF
Plate 58: Charging one battery off the other battery then both batteries and the cross-over ON
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 then pump the manual bilge to ensure no water is in the floor cavity.

Plate 59: Instrument panel this control all the instruments and lights.

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.
Plate 56 A GPS Mount

Plate 56 B the mounted GPS unit
Retrieving the Boat onto the Trailer

Note: *Sea Wasp* should be nosed up to the back of the trailer and then depending on the conditions driven on or winched on. Consider the skill of the master and the quality of boat ramp and tide levels. Driving a boat on to the trailer may increases the risk of damage to the hull, the props, and the trailer as well as digging up the sediments around the boat ramp. However in good conditions it is much easier to drive the trailer on

- 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 drive the trailer on.
- 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 and in most cases assist with forward throttle.
- Attach the safety chains to the bow, remove the reversing lock.
- Drive trailer to boat ramp preparation area to complete the preparations for towing the boat.

After retrieving

- Open all bungs to drain any water in the boat
- Lower outboard to drain saltwater from engine raise prior to towing
- Fit engine support
- Switch off battery master switches
- Remove GPS / Sounder
- Remove any other equipment that may become loose during travel
- Check trailer lights
- Fit stern ratchet straps
Washing and Flushing

Flushing an Outboard Engine

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.
- The Tell tale should appear within seconds of the engine starting if not turn engine off and reposition “flush muff”
Plate 57: Starboard view of engine water intake.

- 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 muff
- If the telltale is putting out water then run the engines for 30 second or so.
- Flush your outboard with fresh water using flush muff 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.

Plate 58. The flush muffs use 50ml of Macs engine flush.

Washing down the boat, trailer, and towing vehicle

- 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
Plate 59: A mild detergent in the water helps remove dried salt from the vessel
Refuelling and Fuel Systems

Refuel Sea Wasp tank and caddy on your way to the Boat ramp that way you know you have a full tank prior to departure.

Sea Wasp 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 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 ie. Outside of Sydney).

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 intake for Sea Wasp port side of the transom.
Plate 60: The location of the fuel intake

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.)
Fuel System

The fuel tank on Sea Wasp is under the floor. If the engine will not start prime the line by pumping the bulb check the fuel cock on the portside of the fuel filter is open. Also check to see if the kill switch is in.

Plate 61: Location of priming bulbs and fuel lines
Fuel Filters

The fuel filter is located on the portside of outboard. They have clear reservoirs on the bottom of them in which fuel can be seen. These should be inspected to ensure that there is no water mixed in with the fuel. The fuel should appear clear and yellowish. If it is milky white or there are two separate layers there is likely to be water in the fuel. Do not start the engines and drain the bulb into a reservoir (bucket) contact the Marine Fieldwork Manager to coordinate repairs.

Plate 62: The fuel filter and water separator. It should look clear and slightly yellow as above. Note the valve at the base, open up to drain any water.
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

Figure 1: Loading
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.

Figure 2: Trim

Use the engine tilt to properly trim the boat. See
Night Work / Poor Visibility

- Be seen – switch the navigational lights on

![Figure 56 Instrument control panel.](image)

- 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
Figure 3: The correct lights for power vessels less than 12 metres; red and green side lights and an all around white light.

Figure 4: The port-side light for Sea Wasp.
Figure 59 Starboard light Sea Wasp

Figure 5: All round white light Sea Wasp
Discharge / Waste / Spills

Garbage
- All garbage to be collected and placed in an appropriate place aboard 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
Ropework

Rope Safety
Ropes play an important role aboard a boat, both as general equipment and as critical safety equipment. However, ropes must be respected. Aboard boats and in moving seas ropes can load with incredible force and can cause serious injury if misused or mistreated.

- Inspect ropes for damage or wear prior to use
- Ensure all ropes and fittings are suitable for the task at hand
- Never stand coils, tangles or the bight of a rope – they can pull tight and throw you overboard, or sever a limb
- Never wrap lines around your body to help pull – use the fixtures on the boat to secure lines
- Always have a knife or other cutting tool handy – you may need to cut ropes in a hurry

Figure 6: Be aware of ropes aboard boats they can cause serious injury
Knots
Tying proper knots is the safest way to secure ropes and lines. Improper knots can jam under loads, be impossible to untie and can weaken a rope.

Remember you may need to get a knot undone quickly in an emergency!

<table>
<thead>
<tr>
<th>Bowline – the most important knot</th>
<th>Clove hitch</th>
<th>Figure of 8 knot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tied properly it will not shake loose not slip. The large loop has many uses from securing to bollards to lifting people.</td>
<td>Used for securing lines under load to other objects.</td>
<td>Used as a stopper to prevent a rope from sliding through a pulley</td>
</tr>
</tbody>
</table>

Figure 7: Knots
Securing lines
Securing to a cleat or bollard is important, but there is no need to overdo it. A few turns are sufficient.

| Take a few turns in a figure of 8 around the cleat. This is sufficient if only being used for a short time under supervision | Cleat hitch – if the cleat is to hold a load for some time pass the final loop under itself to form a cleat hitch. This is less likely to come loose with movement |

Figure 8: Securing lines
When securing to a staghorn take a couple of turns around the centre before a couple of figure of 8s. If necessary this can be finished with a cleat hitch.

Sea Wasp is fitted with a one Sampson post at the bow and two staghorn cleats at the stern.
Keep Ropes Tidy
Tidy lines can be accessed quickly and don’t need to be untangled before they can be used. They are also less of a tripping hazard aboard. As soon as you finish using a line coil it away. If a line is in use make sure it is tidy and is not tangled.

Figure 9: Rope care
**Anchoring**

**Selecting an anchor**

Sea Wasp carries a “Plough” style anchor as standard. This anchor is fitted to 5 metres of chain and 50 metres of anchor rope. An additional 50 m of rope is available and should be carried and used if anchoring in greater depths or if bad weather is expected.

![Image of Plough anchor](image.jpg)

*Figure 10: Plough anchor*

If the Plough style anchor has excellent holding power. However, if it is anticipated to be unsuitable for anchoring in the expected conditions the Master should discuss anchoring options with the Marine Fieldwork Manager prior to the use of the vessel and arrange alternate anchors.

In some situations it may be appropriate to use multiple anchors. These situations should be discussed with the Marine Fieldwork Manager to ensure suitable anchors are available.
Anchors need to be "set" to hold properly. Setting an anchor involves pulling against it to bury its flukes into the seabed. An anchor that is not properly set will drag and will not hold the boat securely.

**Figure 11: Setting an anchor**
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 aboard – 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

![Fig 7.20](image)

Anchor Recovery

- Personnel to untie and ready for recovering anchor aboard
- 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 is 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.

Table 8

<table>
<thead>
<tr>
<th>Sea Conditions</th>
<th>Anchor Cable</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favourable</td>
<td>Rope and chain</td>
<td>5:1</td>
</tr>
<tr>
<td>Average</td>
<td>Rope and chain</td>
<td>8:1</td>
</tr>
<tr>
<td>Rough</td>
<td>Rope and chain</td>
<td>10:1</td>
</tr>
</tbody>
</table>

Scope = Length of cable paid out / depth
Anchoring Transits

When at anchor line up two objects, one in the foreground and one in the distance. If these two objects stay in line the anchor is holding and the boat is stationary. If the objects move relative to each other then the anchor is not holding and the boat is drifting.

Always keep watch when at anchor to ensure the boat does not drift.

Figure 12: Monitoring the anchor, establishing an anchoring transit
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.

Figure 13: Bar crossings
When bar crossings go wrong vessels can quickly lose control and lives can be lost.
Preparations and Precautions

- All personnel aboard 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?

Figure 14: Look for information on hazards and regulations at the boat ramp
Section 3:
Emergency Procedures
Master Incapacitated

- Another person aboard must take control – preferably one with boating experience
- Assess situation, is the vessel in imminent danger?
- If the vessel is underway stop the vessel by placing the throttles in the neutral position
- Follow emergency communication procedures to contact emergency services, Mayday if in imminent danger, Pan Pan if not in imminent danger or dial 000 on a phone. Try to work out the location of the vessel to tell emergency services
- Follow the directions of emergency services
- If the vessel is drifting near the shore deploy the anchor as told in the briefing
- If the vessel is drifting at sea and you cannot drive it deploy the sea anchor as explained in the procedures
- Attend to the well being of the master and any other injured people
- Navigate to nearest safe wharf depending on the needs of the incapacitated person
- Contact the Marine Fieldwork Manager
Emergency Stopping

Always ensure that the engine tilt is correctly adjusted to prevent “Bow Steering”. This must be done at all times as there will not be sufficient time to adjust engines during an emergency stop procedure.

- Look around to make sure stopping will not cause a collision or roll over if you end up parallel to wave troughs.
- Make sure no one is in a position to be injured by the manoeuvre.
- Give a clear warning to other personnel aboard such as: “Hang on! Emergency Stop!”.
- If clear put throttle almost back to neutral.
- Turn the boat sharply to left or right with steering wheel to end up approximately 90 degrees to your original path.
- Assess the situation (e.g., look for following waves or obstructions) and drive out of danger if necessary.
- See to well-being of those aboard.
- Respond to any other emergencies.
Breakdown / Loss of Steering

- Assess the situation
- Direct all personnel to put on lifejackets
- Confirm the stability and integrity of the vessel
- If the vessel is drifting near to shore deploy the anchor
- If the vessel is drifting at sea deploy the sea anchor
- If the main engine is not operational start the auxiliary attach steering extension steering pole and do not steer from the marlin board. Can you return to a safe haven on the auxiliary engine? Radio marine rescue to relay your situation adjust ETA or ask for assistance.

Problems and potential solutions:

<table>
<thead>
<tr>
<th>Table 9: Breakdown troubleshoot</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine cranks but will not start</td>
<td>Check fuel line, is the tap on? is it primed? is there water in the fuel check fuel filter? Is the kill switch in place</td>
</tr>
<tr>
<td>Engine will not crank</td>
<td>Check battery master switch is on, turn on cross over to crank engine from the other battery.</td>
</tr>
<tr>
<td>Engines run but steering is not operational</td>
<td>Motor slowly try using the auxiliary to steer. If in open waters call for assistance.</td>
</tr>
<tr>
<td>Main engine is not functional – vessel on smooth waters not far from shore</td>
<td>Use auxiliary. Seek assistance.</td>
</tr>
</tbody>
</table>

- If you cannot establish enough propulsion to safely move the vessel to a safe haven call/RADIO Channel 16 emergency services for assistance.
- While waiting for assistance fly the V-sheet to alert other vessels and help the identification of your vessel
- Contact the Marine Fieldwork Manager
Person Overboard

- Call “Man Overboard!” to notify all aboard
- If safe disengage propellers to avoid prop strike, Beware of following seas, don’t get swamped
- Fix position – Man Overboard button on GPS, landmarks or any other way of knowing where the person went into the water
- Assign lookout to look and point at the person in the water – their only job is to keep visual contact with the person
- Throw buoyancy aid / life ring to person in the water
- Perform turn, Williamson turn, turn 60 degrees Port or Starboard (Into the wind) then 180 degrees from original track
- Approach the person slowly
- Prepare for recovery during turn and approach
- Lower the ladder into the water
- Approach on the downwind side if possible, the ladder is on the port side of the vessel
- Disengage propeller
- Throw a line to the person
- Bring them along side
- Assist aboard or secure them to the vessel and seek assistance
- If unconscious try to grab clothing / lifejacket with a boathook
- NOTE: only put another person in the water if safe and the person is experienced / trained e.g. a rescue diver.
- Attend to person
If necessary notify emergency services

If person is not found notify emergency services

Conduct systematic sweeps of the area

Listen for calling or whistle

At night use a torch or if necessary a flare can be used and the light may reflect on the lifejacket

Notify the Marine Fieldwork Manager

**Figure 15: Man overboard**

One person should be assigned to constantly point to the position of the person in the water until they are back at the boat. They should communicate the location of the person clearly to the master of the boat.
Figure 16 Performing a Williamson turn
Fire

Fire is one of the most dangerous situations on a boat. On a small vessel fire can take hold quickly. Be prepared by thinking about how a fire might start and how you would deal with it. Where are the fire extinguisher and the bucket? Do you know how to use them?

If flammable substances are to be carried aboard as part of the fieldwork they must be identified in the risk assessment and suitable controls implemented. Ensure that the containers and storage methods are correct and if necessary carry additional fire extinguishers suitable for the substance.

- Assess the situation
- Direct all personnel to put on a lifejacket
- Move personnel away from fire – be careful of the stability of the vessel
- If possible contain the fire / remove other flammable material
- If safe to do so, fight the fire using extinguishers / buckets
- Monitor the stability and status of the vessel. Make sure that moving people and bucketing water onto the fire does not unbalance Sea Wasp
- Prepare anchor or sea anchor for deployment, depending on location, so that you don’t drift into more trouble while trying to sort out the fire.
- If possible navigate to nearest, suitable and safe wharf or shoreline or drop anchor and wait for assistance
- If necessary contact emergency services either using the radio or by phone and inform them of your intentions
- If you cannot control the fire yourself order **Prepare To Abandon Ship** and **Abandon Ship** as required
- Contact the Marine Fieldwork Manager

![Diagram of fire extinguisher](image)

**Figure 17: Know how to operate the fire extinguisher**
Deploying the Sea Anchor / Drogue

Sea Wasp carries a sea anchor or “drogue” to be used to limit drift in open waters and to control surge when being towed in an emergency.

Sea anchor deployed from the bow

The sea anchor should be used when there is an emergency in open water. It will control the rate of drift, making you easier to find as you will stay in a smaller area, and it will maintain the bow into seas / wind, making a safer and more comfortable ride.

- Attach the sea anchor to the end of the spare anchor rope
- Secure the other end of the rope to the bow Sampson post
- If possible a short tripping line and a float should be attached to the closed end of the sea anchor to aid in retrieval
- Lower the sea anchor into the water and slowly pay out the full length of the anchor rope – this will reduce the shock loading on the boat and rope
- Monitor the sea anchor and rode for chafe and function

![Diagram of sea anchor deployed from bow](image)

**Figure 18: Sea Anchor (Drogue) deployed from bow**
Sea anchor deployed from the stern

When being towed it may be desirable to trail a sea anchor to keep the vessel tracking behind the towing vessel (i.e. stop it from yawing back and forth) and to prevent it from running up behind the towing vessel.

- Attach the sea anchor to the end of the spare anchor rope
- Secure the other end of the rope to a stern Sampson post – if possible make a bridle to distribute the weight between the two Sampson posts, this will make the boat track straighter
- If possible a short tripping line and a float should be attached to the closed end of the sea anchor to aid in retrieval
- Lower the sea anchor into the water and slowly pay out the full length of the anchor rope – this will reduce the shock loading on the boat and rope
- Monitor the sea anchor and rope for chafe and function

Retrieving the sea anchor

- Motor slowly toward the sea anchor
- Assign a person to retrieve the rope as you motor; making sure it is clear of the propellers
- Use the boat hook to catch the float or the closed end of the sea anchor
- Don’t try to pull the sea anchor in by the rope it is too heavy

Figure 19 A sea anchor from the stern
Injury

- Assess the situation – Remember your first priority is your own safety
- How many people are injured and what caused the injury
- Remember DR ABC from first aid training – Danger, Response, Airway, Breathing, Compressions
- Provide first aid within your abilities
- If professional medical assistance is required, contact emergency services, advise ETA to destination wharf or landing place and type of assistance required
 Assign tasks to other personnel aboard – the Master will need to drive the vessel

 Obtain any details of injured person(s) and witnesses to the injury (if injury) – these are important for the Ambulance Officers

 Maintain first aid until relieved by medical personnel

 Upon berthing or landing, clear access for medical personnel boarding. Move equipment or people so they have space to work

 Contact the Marine Fieldwork Manager

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**Figure 208:** Know the location of first aid kit. The first aid kit and a torch is located in the locker below the steering wheel.
Figure 79: Know the location of first aid kit. The first aid kit and a torch is located in the locker below the steering wheel.

Diving Accident / Emergency

- Assess the situation – how many people are involved? what are the obvious injuries?
- Assist divers returning to the vessel
- Provide first aid, including oxygen administration (if you are trained to) follow the direction of the personnel trained in diving first aid
- Collect information about diving profile and accident from divers
- If life threatening e.g. CPR being performed, contact emergency services
- If non-life threatening contact DAN (Divers Alert Network) 1800 088 200, if there is no phone service contact emergency services
o Follow instructions of emergency services / DAN, if instructed by DAN
  contact emergency services

o Notify emergency services of position and intentions

o Navigate to wharf or landing place to meet emergency services

o Upon berthing / landing, clear access for medical personnel

o Supply dive profile information and diving equipment to emergency
  services

o Contact the Marine Fieldwork Manager and the Diving Officer
Collision

- Assess the situation – what have you hit? What has hit you?
- Check on well being of those aboard, ensuring all are accounted for
- Confirm vessel stability and status
- Ensure that everyone aboard has life jackets on
- Throw life ring or lifejackets to people in water
- Investigate damage and watertight integrity – is the vessel still safe to manoeuvre?
- Assist the other vessel as required
- If possible navigate to recover people from the water
- If possible assess any spillage and pollution
- If possible navigate to nearest, suitable and safe wharf or drop anchor / sea anchor and wait for assistance
- If necessary contact emergency services and inform them of your intentions
- If the vessel is sinking order Prepare to Abandon Ship and Abandon Ship as required
- Contact the Marine Fieldwork Manager

Figure 80: Sydney waters can be crowded and busy. These three vessels were involved in collisions on Sydney Harbour resulting in severe injury and deaths
Grounding

- Assess the situation – what have you run aground on? What are the sea conditions?
- Shut off and raise engines to prevent any further damage to the propellers
- Check on the well being of personnel, people may have been injured when you ran aground. Make sure no one was thrown from the boat.
- Ensure all personnel are wearing lifejackets.
- Assess vessel damage and watertight integrity. If you can get off will you still float?
- Prevent environmental harm/pollution. Did the grounding cause the engine to leak oil or rupture a fuel tank?
- Confirm vessel stability and status. Make sure that people moving around the boat don’t destabilise it. Also check if the tide is dropping that the boat will not list. You may need to abandon ship if the boat starts to list too much.
- If possible remove vessel from ground. If you haven’t grounded too hard you should be able to do one of the following.
  - Motor off
  - Lift engine
  - Shift weight
  - Row / punt off using oars
  - Push, if on sand in calm water
  - Wait for tide to rise
- If possible navigate to nearest, suitable and safe wharf or drop anchor and wait for assistance
- If necessary contact emergency services if necessary and inform them of your intentions
- Order Prepare to Abandon Ship and Abandon Ship as required
– Contact the Marine Fieldwork Manager

Figure 81

*Observe navigational marks!* These boats ignored clear signals and became stuck
Flooding / Swamping

- Assess the situation
- Direct personnel to put on lifejackets
- Sea Wasp should have sufficient buoyancy to remain afloat even if flooded. If underway checks that all four scuppers are open.
- Pump the manual bilge.

Operate the manual bilge pump to pump water from floor void

![Image of the manual bilge pump](image)

**Figure 21:** The manual bilge pump is located on the portside of the transom. It is designed to pump water from below the floor look for water exiting from the opening.

- Prepare bucket and if necessary begin bailing
- Investigate the cause, if possible stop the water coming in and monitor the flooding. The most likely location for flooding on Sea Wasp is through a leaking bung
If the vessel is stationary and the scuppers are open water may leak back in through them – check and if necessary close them.

Figure 83: Open Scuppers leave open when in transit

Figure 22: Closed Scuppers close scuppers when reversing from trailer

- Confirm vessel stability and status. You may need to move people and equipment to counter the weight of the water coming into the boat.

- Prepare anchor or sea anchor for deployment. You don’t want to drift into more trouble while you sort out the problem.

- Visually check for pollutants/spillage. Is there any fuel or oil in the boat that can mix with the water? – use the spill kit.
Standard Operating Procedures – Sea Wasp #24167

- If the engine is still operational and the leak is small or stopped, open lower the scuppers and motor slowly. This will drain water from the floor of the vessel.

- Navigate vessel to nearest, suitable and safe wharf or drop anchor and wait for assistance

- If necessary contact emergency services and inform them of your intentions. Radio Marine Rescue your position and circumstance

- If you can’t deal with the flooding prepare people for getting into the water. Order Prepare to Abandon Ship and Abandon Ship as required. Unless there is significant damage to the vessel Sea Wasp should have sufficient buoyancy in its sealed chambers to stay afloat. Stay with the vessel. If you are abandoning ship take the EPIRB with you and turn it ON!

- Contact the Marine Fieldwork Manager
Capsize

- Assess the situation
- Try to locate other personnel
- Locate life jackets and put them on
- Assist others who are not wearing lifejackets to put one on
- Remain as a group with the vessel
- If possible get as high on the vessel as you can to get out of the water and be seen
- Locate safety equipment and signal for assistance – display V sheet, sound horn and / or light flares if other vessels or people are nearby
- Deploy EPIRB
- Liaise with emergency services upon arrival
- Contact the Marine Fieldwork Manager
Dangerous Behaviour / Unlawful Acts

All persons aboard Sea Wasp are expected to conduct themselves properly and safely. All people aboard have an obligation to others to act in a safe way. Anyone who observes another person behaving in a dangerous or unlawful way should notify the master of the vessel.

It is an offence to not follow the reasonable directions of the master of the vessel.

- Inform person that behaviour is unacceptable
- If necessary and safe move the vessel to wharf or safe location
- Contact Police (000) if required
- Advise offending person(s) that an offence is being or has been committed and that the Police have been notified to attend
- Inform all personnel, of the situation and your intentions
- Ask all personnel to remain aboard or near the vessel
- Wait for emergency services
- Contact the Marine Fieldwork Manager

Hold-Up / Hostage Situation

- Obey the person’s instruction, do only what you are told and nothing more
- Do not volunteer information
- Do not resist the hold up
- Observe what you can from the person and provide all information to police
- Contact the Marine Fieldwork Manager
Bomb Threat

- Keep calm
- Listen carefully to the caller
- Record the wording of the threat, date and time
- Note any clues such as: accent / impediment / polite / incoherent / irrational / taped / read out / abusive / traffic / voices / machinery / gender of caller / estimated age
- Ask When, Where, What, Why, Who?
- Keep communications open with the person
- If possible contact emergency services
- Deploy anchor and wait for assistance
- Follow emergency services instructions
- Contact the Marine Fieldwork Manager

Suspicious Object

- Do not touch or tilt the object
- Contact emergency services
- If possible deploy anchor and wait for assistance
- Follow instructions of emergency services
- Contact the Marine Fieldwork Manager
Towing another Vessel

- Assess the risk for undertaking an Emergency tow only, otherwise contact Emergency Services. Read also Part 8. Clause 69 of MSCV (2010).

- Communicate clearly with the other vessel about your intentions, use the radio if weather conditions prohibit voice communication

- Only approach another vessel if it is safe to do so, **DO NOT Put Your Vessel At Harm**

- To affect a tow, check there is appropriate equipment

- If safe to transfer people, take aboard any people that may be in danger

- Use the longest tow line possible to limit snatch in the line

- Secure the tow line to spread the load over the boat – rig a towing bridle between the Sampson posts at the stern of Sea Wasp
Figure 85 Port side stern posts. The two stern staghorn posts are ideal for towing.

Figure 236: Towing another vessel

- Direct the recipient where and how to attach the towline prior to throwing the line.
o Ensure you have a method to slip the tow line if necessary, always have a knife ready to cut the line

o Accelerate slowly to take up the strain of the tow

o Tow only at a sensible speed

o Watch for following waves behind the vessels that may swamp them, slow down

o Monitor chafe in the tow line

o If possible navigate vessel to nearest, suitable and safe wharf
Being Towed by another Vessel

- Communicate clearly with the other vessel, use the radio if the weather prohibits voice communication
- Prepare a tow line, or prepare the vessel to receive the tow line
- Securely attach the tow, Sea Wasp is fitted with a bow Sampson post that is the ideal location for the tow line

![Strong point to attach a tow line](image)

**Figure 247: Strong point to attach a tow line**

- Ensure the tow can be slipped and that a knife is on hand to cut the tow if necessary
- Do not allow people to stand behind the tow line or in the bight of the line – When being towed everyone should be behind the wheelhouse
- Monitor chafe in the tow line
- Watch for wake building behind the boat that may swamp the vessel, slow down the tow

- Monitor speed, if in a following sea watch for surfing or slewing. If necessary deploy a sea anchor to control the speed and movement of the vessel

- In heavy weather a weight such as a bucket full of water, anchor, or rubber tyre can be hung from the tow line to act as a shock absorber and maintain the “dip” in the line

If the vessel being towed does not have appropriate tow points try to spread the load of the tow across multiple points on the boat.

An alternative method of towing is to raft the vessels together. This is best suited for calm conditions.

Figure 25: Preparing to be towed
Prepare to Abandon Ship

- Send **MAYDAY**
- Ensure all life jackets are donned
- Deploy **EPIRB**
- Stop engines
- Deploy anchor or sea anchor
- Prepare emergency equipment for abandoning ship, take the grab bag with you. Keep this equipment with you, don’t let it go down with the vessel.
  - Torch
  - Flares
  - Sound Signal
  - V sheet
  - EPIRB
  - Life ring

**Figure 88: Safety Grab barrel**
The Grab Bag aboard Sea Wasp. It is in the bow hatch.
Keep all personnel informed, calm and under control, explain to remain with the vessel and together as a group if in the water

- Liaise with emergency services upon arrival
Abandon Ship

- Follow procedures for Prepare to Abandon Ship
- Explain how to disembark vessel and to remain together with the vessel
- Order “Abandon Ship”
- Take emergency equipment with you
  - Torch
  - Flares
  - Sound Signal
  - V sheet
  - EPIRB
  - Life ring
- Control transfer of staff/students into the water – check there is no debris or danger in the water before entering
- Muster all personnel together in the water
- Do a head count - Check that all personnel have abandoned ship
- If vessel remains afloat then cling to vessel for support and to be easier to find during a search
- Use emergency equipment to attract attention of emergency services
Hypothermia and the Heat Escape Lessening Position (HELP)

Hypothermia is the condition of low body-core temperature. This condition may result from prolonged heat loss due to long-term immersion or immersion for a short period followed by exposure, particularly to the wind when the body and / or clothing are wet. The combination of wet, wind and cold can kill. Follow your first aid training in the treatment of hypothermia.

H.E.L.P.

A person in the water will lose body heat at a greater rate than in dry air. Attempts to swim or any vigorous movement, while appearing to create body heat, will cause more rapid loss. The areas of the body where the greatest loss of heat occurs are the groin, the trunk, the neck and the head.

Where a person is unable to swim to shore and is likely to be in the water for any length of time they should adopt the Heat Escape Lessening Position (HELP) to minimise the rate of heat loss.

In the HELP the chest and groin are protected from heat loss to the water, with up to a 50% reduction in heat loss.

To effect this position, the person:

- Holds the arms so as to cover the sides of the chest and upper body;
- Raises the legs, shielding the groin and chest; and
- Endeavours to float on their back.

Where a number of people are in the water they should huddle together and should shield as much of their collective body trunks as possible.
Section 4: Other Protocols and Reporting
Faculty of Science Drug and Alcohol during boat use Protocol

The operation of a vessel can become dangerous when under the influence of alcohol and other drugs. That danger extends beyond the master of the vessel to the other personnel aboard the vessel, other waterway users and the general public. Alcohol and drugs may impair a person’s ability to safely carry out tasks aboard and to assist themselves and others in an emergency. There is also the likelihood of putting others at risk by creating an emergency situation.

Because of these risks the Faculty of Science requires that the following protocols be followed by all people aboard a Faculty vessel:

- No alcohol or illicit drugs are to be consumed aboard the vessel
- Prior to boarding the vessel, no alcohol or illicit drugs are to be consumed for a reasonable time, such that at the time of boarding the vessel the person is not under the influence of alcohol or illicit drugs.
- A person under the influence of alcohol or illicit drugs is not to board the vessel
- A person who is taking medication that may impair their ability to safely participate aboard the vessel should seek medical advice before boarding the vessel. If necessary, the person should exclude themselves from boating activities.
Macquarie University Smoke-Free Campus Policy (OHS 34, August 2010):

The University recognises that staff and students have a personal choice to smoke, however, the University also recognises that there is an equal right for staff and students who do not smoke to work and study in an environment that is not polluted by environmental tobacco smoke.

Environmental tobacco smoke poses a significant health risk with overwhelming evidence demonstrating that passive smoking (the inhalation of residual smoke) increases the risk of developing lung cancer, as well as acting as a trigger for other serious medical conditions.

Smoking is prohibited in all Macquarie University vehicles, including boats.

Smoking while on field trips, research activities etc (i.e. during boating activities, but when not aboard the vessel, e.g. at the boat ramp), while not encouraged, must not occur within five metres of a work, meal or living environment.
Environmental Protection Protocol:

The Faculty of Science aims to minimise the impact of boating operations on the environment. Unless specifically permitted to do otherwise (e.g. through an approved research permit) all boat users should follow the protocols given below. The Master of the vessel is responsible for any environmental damage caused by the vessel whilst it is under their control. The protocols given below follow the NSW Maritime Boating Handbook environment recommendations.

- **Discharge of waste or rubbish**
  - No rubbish or waste is to be discharged from a Faculty of Science vessel.
  - All rubbish is to be collected aboard and disposed of appropriately on land.
  - Any waste chemicals used in research should be collected and returned to the University to be appropriately disposed of.
  - Care should be taken with fuel and oil to prevent spills.

- **Noise**
  - The main thing to consider under noise control legislation is the concept of offensive noise, which is based upon how a "reasonable person" would react.
  - In deciding whether the noise from a motor vessel is offensive, the following factors are considered:
    - The character of the noise.
    - The quality of the noise.
    - The noise level.
    - The effect the noise has on activities.
    - The time of the noise event, e.g. early morning.
    - The waterside land use.
  - Noise also disturbs wildlife. Care should be taken to reduce noise in the vicinity of waterbirds and other animals.

- **Bank Erosion and Wash**
  - The wash from a boat can erode banks in sheltered waterways. The larger the wake, the greater the potential for bank erosion.
  - The master of the vessel should be aware of the wash being produced by the boat at all times and when necessary should minimise it as much as possible.
  - Follow all "No Wash" and speed limit signs to limit the damage caused by wash.
● Seagrass
  o Seagrass beds provide food and shelter to a wide variety of fish and invertebrates. They also help bind the sea floor and improve water quality.
  o When possible, do not drive your boat across shallow, weedy areas, as boat propellers may damage seagrass.
  o Do not anchor on seagrass beds.

● Invasive species
  o The movement of trailer boats and boating equipment between waterways has the potential to spread invasive species.
  o *Caulerpa taxifolia* is an invasive marine seaweed that has been found in several NSW estuaries, and can be transported as small fragments on boating equipment.
  o If possible avoid shallow weedy areas where *Caulerpa taxifolia* can be collected on equipment.
  o Obey any local vessel exclusion zones.
  o Inspect all equipment, particularly ropes and anchors, after use.
  o Wash all equipment, the boat, and flush engines after use, particularly if moving between waterways.

● Protected species
  o All native birds, mammals and reptiles are protected in NSW.
  o The master of the vessel should, where possible, minimise the disturbance to these animals.
  o Be aware of the rules relating to approach distances and speeds near marine mammals.
  o At times during the year special restrictions may be in operation to protect species such as the little penguin.
  o It is the master’s responsibility to be aware of any rules or restrictions.
Hazard and Incident Reporting

Reporting Hazards to Macquarie University:

A hazard is anything that has potential to harm life, health, property or the environment. Macquarie University aims to identify workplace hazards before they become “active hazards” or “incidents”.

It is the responsibility of all people involved in the operation of Faculty of Science vessels to report hazards that they identify and have not been adequately controlled.

To report a hazard, vessel users should complete a “Hazard Report Form” available from main Macquarie University Health and Safety Unit webpage: http://www.pers.mq.edu.au/HealthAndSafety.html

The person reporting the hazard should then forward one copy of the Hazard Report Form to the Health and Safety Unit (ohs@mq.edu.au) and one copy to the Marine Fieldwork Manager.

Hazards should be reported as soon as practical upon returning from the voyage. If a hazard is identified prior to vessel operations users should consult with the Marine Fieldwork Manager to assess if action is required before the vessel can be used.

If vessel users require further information or assistance reporting hazards they should contact the Marine Fieldwork Manager.
**Reporting Incidents to Macquarie University:**

An incident is a hazard that has become active and resulted in harm to life, health, property or the environment. Any incident involving a Faculty of Science vessel must be reported.

A person involved in an incident, or a person aware of the details of the incident, must report it to the Macquarie University Health and Safety Unit as soon as practical after the incident has occurred.

To report an incident, vessel users should complete the “*Incident and Accident Report*” located at:
or linked from the main Macquarie University Health and Safety Unit webpage:
http://www.pers.mq.edu.au/HealthAndSafety.html

In addition the reporting person should print a copy of the report and forward it to the Marine Fieldwork Manager.

Any incident involving a Faculty of Science vessel should be immediately reported to the Marine Fieldwork Manager by telephone or in person so that they can take any immediate action that is necessary and assist in coordinating the response.

**Reporting Incidents to NSW Maritime:**

If a marine accident occurs involving a Faculty of Science vessel, the Master of the vessel must prepare a “*Vessel Incident Report*” for NSW Maritime. The Master must coordinate the preparation of this report with the Marine Fieldwork Manager and must not submit the report without their knowledge.

The NSW Maritime Vessel Incident Report is available from:
or through the NSW Maritime webpage:
http://www.maritime.nsw.gov.au

A marine accident is:

a) the loss of life of, or injury to, any person on board the vessel,

b) the loss of a person from the vessel,
Standard Operating Procedures – Sea Wasp #24167

c) the loss of life or injury to a person that is caused by the vessel,
d) the loss, or presumed loss, of the vessel (including the sinking or abandonment of the vessel),
e) the capsizing, grounding or flooding of the vessel,
f) the collision of the vessel with another vessel or with any object,
g) the vessel being disabled at sea (in any case in which it requires assistance),
h) any fire on board the vessel,
i) any damage being caused to the vessel (including any structural failure),
j) any damage to the environment caused by the vessel or by any substance on, or discharged from, the vessel,
k) any incident that causes danger of any of the above