

FLORIDA INTERNATIONAL UNIVERSITY

BOATING SAFETY MANUAL

Updated

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1.0 INTRODUCTION

Vessel operation is critical to realization of Florida International University's research and teaching goals in environmental science. FIU researchers and teachers use boats routinely in South Florida's inland and offshore waters, as well as in locations distant from campus. This document provides policies and procedures for safe boating by FIU faculty, staff, and students, as well as mechanisms for enforcement of these policies.

FIU policies establish roles for faculty, staff and students that are linked to minimum training standards. Boaters are classified as a crew chief, boat crew, science crew, student or observer based on their role in a boat trip. Safe boating requires that all members of the crew demonstrate water skills and local knowledge regarding the research area and boat operations. The crew chief and crew must be able to recognize limitations of their equipment and personnel and make safety decisions using that information to insure the welfare of everyone on board.

1.1 PURPOSE

The Florida International University Boating Safety Manual provides safety guidelines applicable to research operations involving the use of watercraft. The policy statements, recommendations, and guidelines provided here are meant to be minimum standards and are not intended to replace common sense; universally applicable guidelines for the diversity of marine research and teaching activities and conditions are not possible.

The goals of this manual are:

- establish safe practices as the primary concern for all boating activities by FIU students, employees and visitors;
- facilitate the effectiveness and efficiency of research operations through use of safe practices;
- promote environmentally sensitive practices by FIU boating research programs;
- control financial costs while maintaining safe boating practice.

1.2 SCOPE

The FIU Boating Safety Manual applies to all FIU sanctioned research and teaching activities involving the use of any type of watercraft.

1.3 REFERENCES

- 46 CFR, U.S. Coast Guard, Department of Transportation, Requirements
- 33 CFR, Navigation and Navigable Waters, Subchapter S, Boating Safety

1.4 DEFINITIONS

ARB Aquarius Reef Base

Boat Log This document registers permanent characteristics specific to each boat including hull identification numbers, registration number, length, etc. It records underway information

regarding every time the boat is operated, fueled, oil is added, and especially when operation problems arise.

Crew Chief This person is the operator of the boat and is ultimately responsible for all aspects of the boat's operation and the safety of the people on board.

Crew These people assist the Crew Chief and carry out any duties assigned to them in order to aid in boat operation.

EMP Emergency Management Plan is a report

EPIRB Emergency Position Indicating Radio Beacon (EPIRB) is a small transmitter used to send out an emergency signal to rescue services. Required for boats over 26' in length.

Float Plan A written or electronic document that includes boat identification, name of the operator of the boat (Crew Chief), persons on board (Crew and Passengers), boat call sign, trip expectations and vehicle description. Float Plans must be filed with the FIU unit that owns the boat (typically SERC FOC or Marine Biology) and the Boating Safety Officer.

<https://intranet.fiu.edu/research/Pages/Float-Plan.aspx>

FOC The Field Operations Center (FOC) is a unit responsible for maintenance and management of a fleet of vehicles and/vessels assigned to a FIU administrative unit. It is also a support facility for the boat's safety equipment and performs preventative maintenance. For example, the Southeast Environmental Research Center (SERC) has an FOC that schedules many vehicles and boats for FIU research purposes.

Principal Investigator (PI) A detailed description of the PI's role is provided below. This PI is ultimately responsible for all boating personnel under her or his supervision, but they may delegate day-to-day supervision to a Research Coordinator such as their lab manager.

Science Crew Science crew are personnel involved in the research activities, but not in the active operation of the boat itself.

Student Students are persons aboard a boat participating in educational activities.

Observers Observers are persons aboard that are not involved in boat operations or research activities.

Research Coordinator (RC) This person is designated by the PI to manage day-to-day research being conducted by a lab. He or she coordinates field operations and will be the immediate contact person for a Crew Chief when the mission is completed or when assistance is needed. This person may be the PI or lab manager who is supervised by the PI, or a temporary designate of the PI. In labs without a lab manager, the PI is typically the RC, but the PI may designate a temporary RC when they are unable to carry out the responsibilities of the RC, such as when the PI is travelling.

1.5 PROGRAM ADMINISTRATION, RESPONSIBILITY, AND ACCOUNTABILITY

BOATING SAFETY COMMITTEE, a group of at least five faculty and staff appointed by the Vice President of Research and charged to create and enforce safe boating practices at FIU. Members of the board will have boating experience and expertise in conducting boating related research activities. The committee shall include one representative of the Department of Environmental Health and Safety and one of the Division of Research, with the remainder filled by faculty or staff representative of units using boats for research or teaching at FIU. Boating safety committee is responsible for maintaining and updating boating safety regulations as needed. They are also the policing body for boating safety infractions. The Boating Safety Officer will report all boating incidents to the Chair of the Boating Safety Committee, who will determine if a full investigation is required. In such an event, a meeting of the Committee will be called in a timely fashion, at which time the incident report will be presented by the Boating Safety Officer. At that time, the Committee will determine what actions, if any, are required. Actions may include restrictions of boating privileges by personnel, change of safety regulations or enforcement. If infractions are of a serious nature, recommendations will be made to the Vice President of the DOR for further action.

THE BOATING SAFETY OFFICER is responsible for record keeping related to enforcement of FIU boating safety policies and investigation of boating safety incidents. Officer will maintain permanent and secure records of training completed by FIU boaters, boat inspections, reports produced related to boating incidents, and documentation of boating regulations including history of modifications as they are enacted by the Boating Safety Committee. She/he will also be available 24 hours as a contact person for all boating incidents and will conduct investigations into all boating incidents in a timely fashion. On-site investigation may be delegated to an appropriate assistant with no conflict of interest. The boating officer will prepare a report on all incidents for review by the Boating Safety Committee.

PRINCIPAL INVESTIGATOR shall serve as the supervisor of any research activities that require the use of boats and shall be ultimately responsible and accountable for the following:

- Ensuring that all employees and students working under the administration of a given research project are fully advised of potential risks and hazards involved in the operation of a boat.
- That employees and students have no role or responsibility regarding seamanship or operation of a boat until they have received training set forth in the FIU Boating Safety Manual.
- That employees and students be designated as Crew or Crew Chief and receive training to meet the qualifications of the position as set forth in this manual.
- That all passengers have no direct responsibility in operating any of the FIU boats unless properly authorized by the Boating Safety Officer.
- That all employees and students be provided with proper protective equipment that must be used and available during boating operations at the dock and underway.

- That a float plan is filed with the Boating Safety Office, the RC and someone close to the Crew Chief prior to boat operation.
- The PI may serve as the RC or delegate that responsibility within her/his laboratory.

2.0 BOATING SAFETY PROGRAM REQUIREMENTS

2.1 BOAT OPERATIONS

Boating operations by FIU staff present a variety of challenges involved in managing the use of research boats at FIU. Factors that have significant influence on the management of boat operations include:

- The sheer size, remoteness and complexity of the aquatic habitats where research is conducted.
- The severe environmental conditions that exist in the South Florida boating environment.
- The widespread geographical distribution of FIU research sites.
- The communication challenges inherent to working in the Everglades and offshore sites throughout the Florida Keys and Gulf of Mexico.
- Ensuring personnel are qualified in boating operations and emergency management procedures.

2.2 MOTOR BOAT SAFETY REQUIREMENTS

This section establishes the policy that all Crew Chiefs and Crew members must make the prevention of an injury or accident a number one priority.

Crew Chief, Crew, and observers must make every effort to insure establishment of the safest working environment possible.

There are many hazards associated with boat operations, and many ways for personal injury to occur. Some injuries occur suddenly due to human error, equipment malfunction or from changing environmental conditions. Injuries can also occur from long-term exposure. The following safety considerations must be adhered to in order to assure that this policy is enforced.

2.2.1 MOTOR BOAT OPERATOR AND CREW TRAINING

Crew Chief Training

Crew Chiefs need to have documented and verifiable experience and knowledge adequate to the vessels they will be using, and the areas they will be operating in. This ensures Crew Chiefs have the ability to safely operate the vessel in a manner that promotes safety of both the vessel, and most importantly, the personnel aboard the vessel.

The first requirement, which also is required by the state of Florida for anyone born on or after Jan. 1, 1988 operating a motor boat within state waters, is to have a state of Florida Boating Safety Education Card (holders of a valid USGC Captains license are exempt). This is obtained by taking a National Association of State Boating Law Administrators (NASBLA) approved course. The NASBLA approved course is available through local Coast Guard Auxiliary Flotillas, as well as online from such places as the BoatUS Foundation at

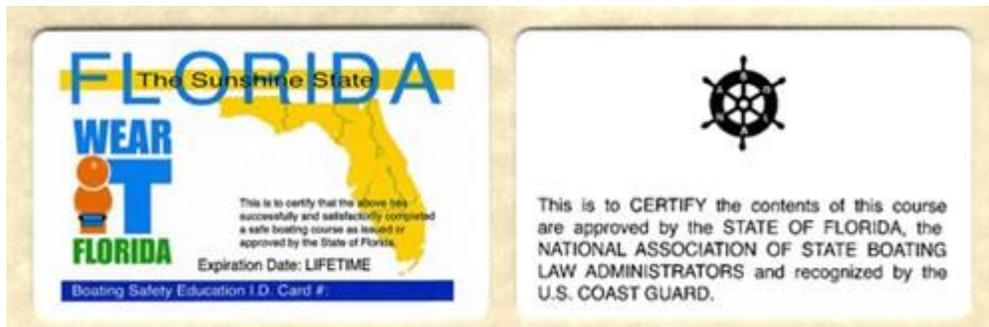
<http://www.boatus.org/onlinecourse/Florida.asp>. Additionally Crew Chiefs need to be certified in both CPR and First Aid.

As Crew Chiefs are acting captains of their vessels, further training, experience and knowledge is needed to ensure their ability to operate safely and keep their crew and observers safe. There are two ways to fulfill these additional requirements. 1) Successfully pass the Department of Interior's (DOI) Motor Boat Operators Certification Course (MOCC) and log 20 hours underway, or 2) complete a Personal Qualification Standard (PQS) under a qualified Crew Chief with a final "dockside" exam and check ride before a Qualified Examiner (QE). The QE is a person appointed by the Boating Safety Committee, typically an MOCC instructor and/or licensed Captain. While the MOCC qualifies one to operate boats up to 26' in any waters suitable for such boats, the PQS is tailored more to the size and operational area. However, completion of a section of the PQS may not automatically lead to qualification for a given role. Attitude, maturity, and related experience are among the items that may impact qualification decisions. As USCG licensing requirements encompass and exceed FIU's Crew Chief requirements; prospective Crew Chiefs holding a valid USCG Merchant Mariners Credential (aka captain's license) as OUPV or greater, will not need to complete the MOCC or PQS, but will need to conduct a check ride with a QE in order to demonstrate knowledge of FIU's boats and boating program, as well as displaying a working knowledge of the operating area. Certain vessels, such as the ARB vessels, and operational areas may have additional requirements because of their complexity.

The purpose of the PQS is to document experience and knowledge gained while working under a qualified Crew Chief in lieu of a formal training course. A "dockside" exam and check ride with a QE provides for verification of the prospective Crew Chiefs knowledge and ability.

Qualified Crew Chief Requirements:

1. Successful completion of a boater education course approved by the Florida Fish and Wildlife Conservation Commission and the National Association of State Boating Law Administrators (NASBLA). This is demonstrated by presenting a Florida Boating Safety Education ID Card to the Boating Safety Officer. For more information visit <http://www.myfwc.com/boating/safety-education/boater-education-id/>.



2. Pass the FIU Boating Safety Manual Examination to ensure full understanding of the FIU policies and procedures of safe boating.

3. Completion of a Personal Qualification Standard checklist for the size of boat being used. This includes demonstrating familiarity with local knowledge of designated research sites; communications training; pool skills; pyrotechnics (flares & fire suppression); trailering skills (launch & retrieval); CPR & First Aid.

Crew Training

1. Successful completion of a boater education course approved by the Florida Fish and Wildlife Conservation Commission and the National Association of State Boating Law Administrators (NASBLA). This is demonstrated by presenting a Florida Boating Safety Education ID Card to the Boating Safety Officer. For more information visit <http://www.myfwc.com/boating/safety-education/boater-education-id/>.

Science Crew, Student and Observer Training

1. Science Crew, Students and Observers are permitted after they are instructed in basic safety requirements outlined for all personnel in this manual (e.g., must wear life jackets at all times, must sit in designated seating on the craft, etc.) by the crew chief.
2. Science Crew, Students and Observers who are neither FIU students nor FIU employees must complete a SERC (<http://sercweb.fiu.edu/forms/serc-release-and-waiver-of-liability.pdf>), Aquarius Reef Base or University liability waiver form in advance of the trip.
3. All Science Crew, Students and Observers participate solely at the discretion of the crew chief.

2.2.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some hazards can be mitigated by the use of appropriate PPE. The PPE must meet and be labeled “approved by the United States Coast Guard”. Some PPE is mandatory when underway, yet some PPE is considered optional or highly recommended depending upon the circumstances involved. The decision to wear the PPE will be based on the decision “to make the safest possible environment” while at work.

PPE Mandatory/Recommended Description

- Personal Floatation Device (PFD) is mandatory. PFDs must be worn at all times while the vessel is underway. "Underway" is defined as anytime except when the vessel is anchored, moored, made fast to the shore, or aground. The wearing of PFDs on station, in this case all times the boat is not underway, is at the discretion of the Crew Chief/Captain based on conditions at the time; all crew must obey the Crew Chief's decision on wearing PFDs when on station. Can be a Type I, II, r III or V PFD with a mirror, and whistle attached. Night operations also require a cyalume stick or personal marker light attached to the PFD.
- Eye Protection. Mandatory when the boat is on plane. The type should exclude wind and debris from hitting the eye.
- Skin Protection. Sunscreen is strongly recommended for daytime operations.

2.2.3 BOAT SAFETY EQUIPMENT

In addition to the PPE, each vessel must be equipped with:

- Anchor with a minimum length of line appropriate to the boat's size and depth of water, where it typically operates. It should be adequate diameter with a suitable length of chain for the size of the boat. For most boats under 26', 3/8 nylon line with 5 – 15 feet of anchor chain is adequate.
- First Aid Kit containing at minimum:
 1. anti-sting antiseptic (7) triangular bandages
 2. (6) 4 x 4 dressings (8) Hydrogen Peroxide
 3. (4) roller gauze bandages (9) Salt Tablets
 4. trauma dressing (10) Gloves
 5. (4) ice packs (11) Pocket mask
 6. (2) splints: leg and arm (12) iodine or Betadine
- Visual Distress Signal Devices (at least 3 day & night flares)
- A "Kill" Switch to immediately shut off the engine for boats 26' and under.
- An electric or air horn.
- An effective method of communication when emergencies arise (VHF, Cell Phones, Satellite Phones).
- Type IV throwable flotation device with length of line in proportion to the size of the boat that can be attached as needed to aid retrieval of a man overboard.
- Mounted Fire Extinguisher(s) according to USCG standards.
- Means to navigate, i.e. GPS, Charts.
- Binoculars for offshore trips
- Hypothermia protection e.g., 'space blanket'
- Minimum of 1 gallon of water per day per person in a cooler with ice. Except for short duration educational trips close to BBC.
- Bailer or other manual dewatering device.
- Float Plan
- Emergency Contact Numbers
- EPIRB(where applicable)
- "Working" Navigational Lights, if required by USCG for the class of vessel

2.2.4 OPERATIONAL SAFETY PROCEDURES

The Crew Chief is responsible for the safety of all passengers on board his/her vessel, as well as for their compliance with safety requirements.

All Crew Chiefs must:

- File a float plan in advance of all boating trips:
<https://intranet.fiu.edu/research/Pages/Float-Plan.aspx>
- Prepare and file an Emergency Management Plan (EMP) as part of the float plan
- Conduct a pre-underway safety briefing familiarizing all persons with the vessel. All persons should be able to locate and use the following safety equipment:
 1. Fire extinguisher(s)
 2. Visual distress signal
 3. Radio/cell phone
 4. Sound producing device

5. Oxygen kit (if the float plan calls for diving activities)
 6. First aid kit
 7. Bailer or other manual dewatering device
 8. PFD's
 9. Tools as required for boat
- Ensure that all required safety gear is on board, in good condition, and stowed properly.
 - Ensure that all persons on board are have a PFD (PFDs must be worn at all times while the vessel is underway. "Underway" is defined as anytime except when the vessel is anchored, moored, made fast to the shore, or aground. The wearing of PFDs on station, in this case all times the boat is not underway, is at the discretion of the Crew Chief/Captain based on conditions at the time; all crew must obey the Crew Chief's decision on wearing PFDs when on station.) and other appropriate PPE.
 - Be attached by a lanyard to the kill switch (boats 26' and under) whenever the boat is underway.
 - Operate the boat at all times at a speed which is prudent under the prevailing conditions, taking into consideration things such as weather, sea state, tides, currents, visibility, presence of hazards to navigation, presence of other boats, presence of people in the water, the handling characteristics of the boat and the operators skill.
 - Never leave the controls when the motor is in gear.
 - Ensure that no one swims when the engine is running.
 - Ensure the boat holds enough fuel to complete the mission with extra for contingency operations.
 - If the Crew Chief has to dive for research purposes during snorkeling or scuba diving operations, absolute assurance has to be made that the staff member remaining on board assumes the responsibility of the Crew Chief and has the qualification to carry out those duties and responsibilities.
 - If any aspect of the boat, truck or trailer does not meet safety requirements, the research mission must be postponed or cancelled by the Crew Chief until all safety standards are met.
 - It is absolutely forbidden to have FIU boats used for personal recreational purposes.

Nighttime operations require additional preparation for navigation and safe operations. Adequate lighting both for the boat and navigation is required. Running lights fore and aft must be in compliance with Coast Guard regulations and in use at all times. Speed should be reduced to be consistent with limited visibility. All operations should be limited to areas where operator has firsthand experience with navigation hazards. In addition to the operator, a crew member must be assigned to serve as a watch for hazards overlooked by the Crew Chief.

2.3 MINIMIZING IMPACT ON THE ENVIRONMENT

SUBMERGED FEATURES

Vessels should be operated at all times in a manner that would *minimize* impacts to submerged natural features. Propellers are extremely damaging to bottom life and sediments. Prop "scarring," which occurs when a propeller cuts through a sea grass bed, results in long-term negative impact on the health of the natural resources of the Everglades National Park. Prop

“dusting,” which occurs when prop wash blows sediment from the bottom, diminishes water clarity and quality, reduces the amount of light getting to plants on the sea bottom, re-suspends nutrients up into the water column and causes sediments to settle out on slow moving or sessile marine life. Any damage to seagrass must be reported...need to add contact information for reporting grounding, etc.

EMERGENT VEGETATION

Airboats can damage emergent vegetation, particularly when previously untraveled areas are crossed multiple times at low water levels. All airboat operations must follow existing approved trails in Everglades National Park (ENP), and should be restricted to trails in all possible occasions outside of ENP. All operations must follow permit requirements of all responsible management agencies.

WILDLIFE

Vessels should be operated at all times in such a way that impacts to wildlife would be minimal. Speed should be reduced when operating in areas where encounters with manatees, crocodiles, or sea turtles are likely. Operators not familiar with these areas may seek guidance from experienced operators or maintain slow speeds at all times.

2.4 COMMUNICATIONS

Communication starts with the filing of the float plan. This plan should be filed with the BSO for approval, also with Departmental FOC, or other appropriate boating operations center and the trip emergency contact person (generally the RC). Each FOC will be the central hub, to establish if teams have returned safe and sound or that a research team may need assistance for a non-emergency boat related incident. The BSO must be notified immediately of boating accidents or incidents. For any “emergency” type situation, where life is threatened, the U.S. Coast Guard should be notified with the EPIRB activated (if present on the boat) if requested by the USCG or no contact can be made. To insure that the research team can communicate during non-emergency or emergency situations each vessel should have at least a working VHF Radio or a Satellite Phone. It is also the responsibility of the Crew Chief to make sure during the pre-departure briefing that anyone on the boat has the ability to operate the radios or phones.

2.5.0 EQUIPMENT INSPECTIONS

All boats used in FIU operations must be maintained in mechanical and structural condition consistent with safe completion of their mission. The unit owning each vessel is responsible for maintenance and upkeep, including all costs incurred. All vessels must be inspected on an annual basis and documentation provided to the BSO. The BSO may designate an appropriate person within each FIU unit to complete the annual inspection and provide documentation to the BSO for filing.

3.0 ACCIDENT REPORTING

All personal injuries and damages to FIU property must be reported to the Boating Safety Officer and the Office of Human Resources as soon as possible and always within 24 hours of the incident. The boating incident report will include:

- Date, time and place of the incident.
- Vessel(s) involved.
- Number of people on board
- Nature and severity of injuries, if any.
- Damage assessment; structural, approximate cost.
- Description of what happened.
- Was a law enforcement agency notified and/or involved?
- What first aid assistance was administered?
- Did the injured parties require emergency evacuation and where were they transported?
- Emergency contact information for administrative follow up and investigation.
- Information given to Human Resources related to Workman Compensation concerns for coverage of employee injuries.
- If witnesses were at the scene, obtain a statement from each one regarding the incident.
- How could this have been prevented?

In the event of an accident:

- Notify the emergency contact person, lab manager and BSO immediately.
- Provide no information at any time in the presence of the media.
- Have media personnel contact the FIU Press Relations Department.

4.0 Motor boating Personal Qualification Standards (PQS)

Personal Qualification Standard (PQS)
Motorized boats up to 20' in confined fresh and marine waters, including
Biscayne Bay and Florida Bay, Keys coastal water insider the reef tract

This PQS is designed to be completed under the guidance of a mentor. Any mentor signing off on a task needs to be a qualified crew chief. The purpose of the PQS is to allow crew members to gain experience and knowledge working under a qualified Crew Chief, while working as crew during normal research operations. This allows for specific “on the job” training with the vessels being used, and the operational area being worked in. Mentors should only sign off on tasks once the trainee is competent in performing the task independently. Once all sections are complete, the Crew Chief/Mentor should notify a Qualified Examiner to make arrangements for the “dockside” exam and underway check ride.

Initial Certifications

Completed

- _____ Obtain state of Florida Boating Safety Education Card. A copy should be submitted with this completed PQS.
- _____ Current First Aid certification. A copy should be submitted with this completed PQS.
- _____ Current CPR certification. A copy should be submitted with this completed PQS.
- _____ Perform as crew for 20 hours underway. Hours underway should be logged and signed off by Crew Chief. A copy of your log should be submitted with this completed PQS.

Accomplished **Mentor signature** _____ **Date** _____

Trailing

Note: The Marine Science BBC Boatyard is an excellent location to practice trailer skills without the complications of traffic.

Completed

- _____ Properly hook truck up trailer. Hitch, chains and lights.
- _____ Conduct safety checks of truck, trailer and boat in preparation for transport.
- _____ Safely drive truck and trailer in forward gear, including pulling up boat ramp.
- _____ Safely drive truck and trailer in reverse, including backing down boat ramp.
- _____ Prep boat for launch, and safely launch boat.
- _____ Retrieve boat onto trailer, pull out of water and secure for travel.

Accomplished **Mentor signature** _____ **Date** _____

Pre-Trip Preparations

Completed

- _____ Demonstrate knowledge of how to reserve FIU vehicle and boat.
- _____ Prepare a float plan.
- _____ Ensure boat is equipped with all necessary safety and operational equipment.
- _____ Verify boat is fully fueled and electrical systems are functional.
- _____ Ensure crew and passengers have sufficient food, water, clothing, and sun protection for anticipated field time, as well as reserves in case of trouble that leave boat and crew stuck for extended length of time.

Accomplished **Mentor signature**_____ **Date**_____

Operational Tasks

Completed

- _____ Safely board all gear, crew and passengers.
- _____ Brief all crew and passengers, both safety and mission briefings.
- _____ Demonstrate proficiency in safely leaving dock/launching area.
- _____ Demonstrate proficiency in safely operating boat underway as part of mission.
- _____ Demonstrate proficiency in safely docking, returning to launching area, and boat retrieval.
- _____ Demonstrate knowledge of communications equipment, use and limitations. VHF radio, cell phone, and satellite phone; as applicable to operating area.
- _____ Demonstrate knowledge of emergency signaling devices. EPIRB, flares, mirror, whistle, etc.
- _____ Tie the following knots and state their use. Cleat hitch, bowline, sheet bend, clove hitch, round turn and two half hitches.
- _____ Demonstrate ability to read and navigate with appropriate charts and/or maps for area.
- _____ Demonstrate ability to use GPS to find your stations and return to launching point.

Accomplished **Mentor signature** _____ **Date** _____

Post Trip Tasks

Completed

- _____ Fuel boat and truck at FIU fuel pumps after return to campus.
- _____ Remove and return all gear that does not remain stored aboard.
- _____ Wash down boat and trailer.
- _____ Close out float plan.

Accomplished **Mentor signature** _____ **Date** _____

Personal Qualification Standard (PQS)

Boats 21’ to 26’ in fresh or marine waters

This PQS is designed to be completed under the guidance of a mentor. Any mentor signing off on a task needs to be a qualified crew chief. The purpose of the PQS is to allow crew members to gain experience and knowledge working under a qualified Crew Chief, while working as crew during normal research operations. This allows for specific “on the job” training with the vessels being used, and the operational area being worked in. Mentors should only sign off on tasks once the trainee is competent in performing the task independently. Once all sections are complete, the Crew Chief/Mentor should notify a Qualified Examiner to make arrangements for the “dockside” exam and underway check ride.

Initial Certifications

Completed

- _____ Obtain state of Florida Boating Safety Education Card. A copy should be submitted with this with this completed PQS.
- _____ Current First Aid certification. A copy should be submitted with this completed PQS.
- _____ Current CPR certification. A copy should be submitted with this completed PQS.
- _____ Perform as crew for 20 hours underway. Hours underway should be logged and signed off by Crew Chief. A copy of your log should be submitted with this completed PQS.

Accomplished **Mentor signature** _____ **Date** _____

Trailing

Note: The Marine Science BBC Boatyard is an excellent location to practice trailer skills without the complications of traffic.

Completed

- _____ Properly hook truck up trailer. Hitch, chains and lights.
- _____ Conduct safety checks of truck, trailer and boat in preparation for transport.
- _____ Safely drive truck and trailer in forward gear, including pulling up boat ramp.
- _____ Safely drive truck and trailer in reverse, including backing down boat ramp.
- _____ Prep boat for launch, and safely launch boat.
- _____ Retrieve boat onto trailer, pull out of water and secure for travel.

Accomplished **Mentor signature** _____ **Date** _____

Pre-Trip Preparations

Completed

- _____ Demonstrate knowledge of how to reserve FIU vehicle and boat.
- _____ Prepare a float plan.
- _____ Ensure boat is equipped with all necessary safety and operational equipment.
- _____ Verify boat is fully fueled and electrical systems are functional.
- _____ Ensure crew and passengers have sufficient food, water, clothing, and sun protection for anticipated field time, as well as reserves in case of trouble that leave boat and crew stuck for extended length of time.

Accomplished **Mentor signature** _____ **Date** _____

Operational Tasks

Completed

- _____ Demonstrate knowledge of the inland “Rules of the Road”. A rules test will be given as part of the “dockside exam”.
- _____ Demonstrate knowledge of the inland and international “Rules of the Road”. A rules test will be given as part of the “dockside exam”.
- _____ Safely board all gear, crew and passengers.
- _____ Brief all crew and passengers, both safety and mission briefings.
- _____ Demonstrate proficiency in safely leaving dock/launching area.
- _____ Demonstrate proficiency in safely operating boat underway as part of mission in class of boat and operating environment you are being qualified for.
- _____ Demonstrate proficiency in safely docking, returning to launching area, and boat retrieval.
- _____ Demonstrate knowledge of communications equipment, use and limitations. VHF radio, cell phone, and satellite phone; as applicable to operating area.
- _____ Demonstrate knowledge of emergency signaling devices. EPIRB, flares, mirror, whistle, etc.
- _____ Tie the following knots and state their use. Cleat hitch, bowline, sheet bend, clove hitch, round turn and two half hitches.
- _____ Demonstrate ability to read and navigate with appropriate charts for area.
- _____ Demonstrate ability to use GPS and depthfinder for navigation and finding your stations.
- _____ Demonstrate ability to use tide tables.
- _____ Demonstrate knowledge of currents and transiting inlets.

Accomplished **Mentor signature** _____ **Date** _____

Post Trip Tasks

Completed

- _____ Fuel boat and truck at FIU fuel pumps after return to campus.
- _____ Remove and return all gear that does not remain stored aboard.
- _____ Wash down boat and trailer.
- _____ Close out float plan.

Accomplished **Mentor signature**_____ **Date**_____

Research Vessel Captain (Crew Chief) For Boats Over 26 feet (Unrestricted)

Qualification Requirements

To qualify as a Research Vessel Captain or Crew Chief for vessels over 26 feet, an individual must have the following qualifications:

- *U.S. Coast Guard Captain (OUPV or Greater)*

The following additional requirements must be met:

- Completion of the Research Vessel Captain or Crew Chief General Requirements portion of the FIU Boating and Safety Manual where applicable and the ARB Personnel Qualification System.

To conduct planned night time operations the following additional requirements must be met:

- Completion of the Research Vessel Captain or Crew Chief Night Time Endorsement section of the ARB Personnel Qualification System and or completion of portions of the FIU Boating and Safety Manual where applicable.

For specific vessel operations the following additional requirement must be met:

- Completion of the Research Vessel Captain or Crew Chief Vessel specific section of the ARB Personnel Qualification System and or completion of portions of the FIU Boating and Safety Manual where applicable.

Note: For a vessel new to FIU, the FIU Boating Safety Officer (BSO) shall determine which Captains have sufficient experience to operate the vessel without completing a relevant PQS section. Qualification in this manner shall be based on experience and skills and shall be documented in writing. FIU/ARB Operations Director will work with the BSO for ARB personnel.

Proficiency Maintenance

A Research Vessel Captain or Crew Chief must maintain a U.S. Coast Guard Captain's license as above for vessels over 26 feet.

5.0 AIRBOAT SAFETY REQUIREMENTS

Airboat operations are similar to motorboat operations, but include additional training requirements and safety procedures because of the special nature of their operations. Airboats lack a rudder in the water, they cannot be operated in reverse or slowed by reversing the motor, steering is dependent on passing an airstream over the ailerons by the rotating prop such that quick maneuvers require acceleration, and a large airplane propeller is spinning immediately behind the operator and passengers.

Operating an airboat is an inherently risky activity and exposes both the operator and passengers to a number of hazards. Though not exclusive to airboats, their operations in the Everglades pose particular hazard from: (1) high level of engine noise; (2) risk of collision with wildlife, trees, pinnacle rocks, and other airboats; (3) injury from flying objects, including loose bolts from airboat, propeller fragments, and improperly secured cargo; (4) being ejected from airboat because of a collision, sudden stop, or fast turn; (5) rapid submersion of a swamped airboat; (6) engine- and fuel-related fires and explosions; (7) lightning strikes; (8) being stranded in remote areas because of mechanical problems or becoming stuck in dry or muddy ground; (9) risk of heat-related health problems and dehydration while in the field; (10) encounters with potentially dangerous wildlife, including venomous reptiles and spiders, large-bodied predators (alligators, crocodiles, panthers, bears, pythons), and biting and stinging insects (e.g., hornets, ants, mosquitos); (11) operating under reduced visibility (e.g., fog, heavy rain, nighttime); and (12) becoming lost in the field.

It is the responsibility of every member of the field crew to maintain vigilance of conditions and awareness of potential hazards at all times. Every individual has the authority to stop any activity that he or she feels places him/herself or their co-workers at risk.

5.1 AIRBOAT OPERATOR AND BOAT CREW TRAINING

The only approved Crew Chiefs or Crew Chiefs in training are permitted to drive airboats. An airboat Crew Chief must have a Florida Boating Safety Education ID Card (see section 2.2.1 or this manual), demonstrated knowledge of material in the FIU airboat operator safety manual through completion of the PQS for airboats, and have documented a minimum of 20 hours supervised drive time in airboat.

Airboat operations are carefully regulated within Everglades National Park and may also be restricted in State-owned lands under special conditions. *FIU airboats may only be operated in a manner consistent with permit guidelines of appropriate management agencies in the area of operations.*

5.2 AIRBOATING PERSONAL PROTECTIVE EQUIPMENT

All personnel are required to wear PFDs, ear-protectors, and protective eyewear while airboat is underway. "Underway" is defined as anytime except when the vessel is anchored, moored, made fast to the shore, or aground. The wearing of PFDs on station, in this case all times the boat is not underway, is at the discretion of the Crew Chief/Captain based on conditions at the time; all crew must obey the Crew Chief's decision on wearing PFDs when on station. Failure to comply with these requirements may lead to loss of airboating privileges from the BSO.

Prior to operations, verify that every crew member has the following items of personal protective equipment: PFD, ear protection (foam ear plugs or headset ear protectors), protective eye-wear (safety goggles or protective glasses). Other personal items that will increase worker comfort and health during airboat operations in the field include a hat (secured by chin-strap or headset to prevent blowing off), sunblock, jacket (especially important during coldest months and rainstorms), food, and water. Always bring plenty of water as the majority of work conditions in south Florida will be under conditions of extreme heat and humidity. Sturdy boots and long pants are recommended clothing for comfort and safety.

5.3 AIRBOATING SAFETY EQUIPMENT

Effective communication with outside support can be critical during emergencies, mechanical problems, or stranding; therefore, ensure that there are cell phones, and if necessary, a satellite phone, in waterproof containers on the airboat. Before departure, familiarize yourself with the routes you will take and the areas you will work in, and bring a GPS unit and map to aid in navigation. Bring a waterproof emergency bag with first aid kit, flashlight, spare batteries, extra ear- and eye-protection, multi-tool, space blankets, flares, water purification tablets, utility cord, rain-ponchos, bug jackets, whistle, cyalume sticks, and emergency contact numbers. It is recommended that crew members also have a personal first aid kit, knife, spare clothes, bug jacket, and reflective object (for signaling air rescue crews). Verify that fire extinguisher is charged and secured. Bring long boards, shovels, and a come-along winch in case airboat becomes stranded on dry or muddy ground. Make certain that there are the necessary tools and spare parts to make any potential repairs in the field. Load extra fuel and oil on the airboat. Attach and secure bow-line for travel.

5.4 AIRBOAT OPERATIONAL SAFETY PROCEDURES

As an airboat driver, your actions and decisions affect everyone in the airboat. Therefore, airboat drivers must take on additional responsibilities. Each time you start an airboat, you are responsible for deciding that: 1) the airboat is in safe operating condition; 2) gear has been stored such that it will not hinder airboat operations or passenger and driver safety; 3) weather conditions are safe for airboat operations; 4) passengers are aware that airboat operations are beginning; and 5) passengers have access to life-preservers and ear protection. Additionally, airboat drivers are responsible for checking to see that the boat and trailer are properly hitched and safe for travel when both traveling to and returning from the field. The towing vehicle should be checked for road worthiness, including checking fluids, tire inflation, and safety equipment, before leaving for the field. Occasionally, situations arise that necessitate airboat maneuvers that are out of the routine. It is the responsibility of the driver, whenever possible, to inform passengers when unusual airboat maneuvers (running dry surfaces, dense sawgrass, fleeing storms, etc.) are required so that they can prepare themselves.

As an airboat driver, you are liable for negligent actions or decisions that injure co-workers, passengers, or other persons. Understand that as an airboat driver you are in a position of additional responsibility, in particular you must adhere to the concerns of your co-workers. **An airboat driver must yield to any request made by any passenger to cease, suspend or alter airboat operations for safety reasons.** If a passenger feels you are driving too fast or unsafely, **YOU MUST** alter your behavior accordingly. If a passenger feels that weather conditions are unsafe for continued airboat operations, **YOU MUST** head in or seek shelter. If a passenger

feels that you are placing him or her in unnecessary danger and wishes to return to shore, **YOU MUST** return to shore.

Prior to airboat operations:

- Airboat Crew Chief must file a float plan prior to work:
<https://intranet.fiu.edu/research/Pages/Float-Plan.aspx>

Airboat exterior pre-flight check:

- Check that airboat is properly secured to the trailer by boat-strap tie down across middle of airboat, two stern chains, bow-chain attached to trailer winch, and the winch is in locked position.
- Make certain that trailer is ready for road operations by checking that (1) coupler is closed, locked, and secured to trailer ball-hitch, (2) trailer lights are plugged in and working properly, (3) safety chains are secured, (4) winch strap secured to bow eye and locked in place, (5) wheel-jack is raised and locked into position parallel to trailer arm, (6) spare tire is properly inflated and secured, and (7) trailer wheels are inflated to appropriate air pressure.
- Make certain that all items in airboat are secured in such a manner as to prevent them from flying out of the boat while on the road.
- Inspect the outside of the hull for any loose rivets or peeling weld joints.
- Check that grass rake or bow rail is securely fastened to bow.
- Securely fasten drain-plugs before launching airboat.

Airboat interior pre-flight check:

- Check battery, magneto, and spark plug connections for damaged or loose wires.
- Verify that there are no broken weld joints on engine stand, that engine mounts are tight and that there are no loose bolts, nuts, and screws.
- Check oil level and inspect outside and beneath engine for signs of oil leaks. If airboat has automotive engine, check coolant level and if applicable, clear out sediment trap. Check fan belts and cooling-fan blades.
- Inspect the propeller for pits, cracks, nicked edges, and that it is securely fastened by its mounting bolts. Some wooden propellers have small weep holes on metal cap-ends that should be checked to ensure they are not clogged.
- Inspect the rudders and rudder assembly for potential damage. Move the stick and verify that there are no problems with the steering connections.
- Make certain the battery switcher moves easily and that battery terminals are not corroded.
- Inspect the cage for broken or loose sections and seat frames for broken weld joints.
- Check that flexible exhaust pipe is securely fastened and not cracked or discolored.
- Verify that bilge pump's discharge hose is securely fastened and clear out any debris build-up inside discharge hose and bilge pump housing.
- Before the airboat is underway, raise the airboat flag into locked position behind the driver.

- Start engine and test magnetos by turning off one magneto at a time. There should not be more than 150 rpm difference when one magneto is turned off. Press the accelerator to verify smooth response between pedal and engine. *Make certain nobody is behind airboat and yell 'CLEAR' before you turn on engine.* While engine is running, check gauges and verify that bilge pump is operational.

Equipment pre-flight check:

- Verify that every crew member has the following items of personal protective equipment: life jacket, ear protection (foam ear plugs and headset ear protectors), protective eye-wear (safety goggles or protective glasses).
- Other personal items that will increase worker comfort and health during airboat operations in the field include a hat (secured by chin-strap or headset to prevent blowing off), sunblock, jacket (especially important during coldest months and rainstorms), food, and water. Always bring plenty of water as the majority of work conditions in south Florida will be under conditions of extreme heat and humidity. Sturdy boots and long pants are recommended clothing for comfort and safety.
- Effective communication with outside support can be critical during emergencies, mechanical problems, or stranding; therefore, ensure that there are cell phones, and if necessary, a satellite phone, in waterproof containers on the airboat. Before departure, familiarize yourself with the routes you will take and the areas you will work in, and bring a GPS unit and map to aid in navigation.
- Bring a waterproof emergency bag with first aid kit, flashlight, spare batteries, extra ear- and eye-protection, multi-tool, space blankets, flares, water purification tablets, utility cord, rain-ponchos, bug jackets, whistle, cyalume sticks, and emergency contact numbers. It is recommended that crew members also have a personal first aid kit, knife, spare clothes, bug jacket, and reflective object (for signaling air rescue crews).
- Verify that fire extinguisher is charged and secured.
- Bring long boards, shovels, and a come-along winch in case airboat becomes stranded on dry or muddy ground. Make certain that there are the necessary tools and spare parts to make any potential repairs in the field.
- Load extra fuel and oil on the airboat.
- Attach and secure bow-line for travel.

It is critical to make certain that all equipment is properly stowed and secured so as to prevent any items from blowing into crew members or the propeller. Do not overload the airboat and balance distribution of cargo weight as much as possible.

File float plan and check in with park rangers before and after each mission (for all ENP operations; see NPS permits for phone numbers). Float plan includes informing lab manager and family member/partner/reliable friend of where you will be, what you will be doing, and when you expect to return. After returning from field, do not forget to let your contacts, including park rangers for all ENP operations, know that you have returned safely.

Underway safety procedures

- When starting airboat, make certain nobody is behind vessel and yell 'CLEAR' before you turn on engine. An appropriate speed for routine travel is between 1800 and 2000 rpm's. The airboat will move most smoothly while at a speed sufficient to maintain plane. Crew chief should have kill switch attached with lanyard to life-jacket.
- While operating the airboat, have a bright orange flag raised in the locked position behind the driver so that other vessels can spot airboat in advance. Avoid approaching other vessels too closely, especially at fast speeds. Avoid catching other vessels and people onshore with the prop-wash from the airboat's propeller. Drive away slowly (idle speed if possible) from boat ramps with other boats and people. When vessels are approaching each other while underway, the stand-on vessel (i.e., the vessel that maintains course) is the one on the starboard side (i.e., if vessel is on your starboard side, stay out of its way). Vessels approaching head-on should drift slightly to starboard so as to pass along each other's port side.
- Inertia causes the airboat stern to swing wide on turns, and so do not come off accelerator completely to execute a turn as control of the airboat can only be maintained while air flow is maintained over rudders. When maneuvering through congested areas, avoid over-compensating with the accelerator, which creates a pin-ball effect of the airboat's stern repeatedly swinging into obstacles as driver attempts to over-correct to avoid collisions. Maintain a conservative speed around obstacles, such as dense sawgrass strands and trees.
- Whenever it is necessary to stop the airboat, reduce power gradually, staying ahead of your wake. If the wake overtakes the stern, it will swamp the boat.
- Airboats do not have brakes and cannot go in reverse, and so to avoid hitting an obstacle, the driver must either turn right or left to avoid the object, execute a turn-around, or hit the obstacle head-on. A head-on collision at slow speed is safer than hitting an obstacle from the side at high speed, as a fast, broadside crash can flip the airboat. In general, always keep your vision focused ahead of the boat so as to increase your awareness of approaching conditions and improve your ability to respond in a timely fashion to potential hazards.
- Many airboat trails are signed with marker posts (often pvc with reflectors). If you need GPS unit to navigate to your destination, avoid spending too much time looking down at GPS unit as you will not see approaching hazards or drive off the trail.
- During night-operations, turn on running lights and reduce driving speed.
- In the dry season, you may be confronted with a partially dried stretch of trail. If possible, get out of the boat and walk ahead to fully assess the situation. When running the airboat through a dry or muddy section, forward motion must be maintained to avoid becoming stuck. You may need to increase acceleration and move rudder back and forth to keep moving. While driving through muddy or dry ground, try to avoid turns that reduce your momentum. As soon as you reach water, reduce power so as to avoid catapulting forward.
- When operating in deep water (e.g., canal), avoid excessive speeds that can cause the bow to nose under the water and avoid rapid turns. Primarily use left turns in deep water because turning in this direction reduces listing of the airboat. Avoid abrupt stops because your wake may overtop the stern. Stop gradually and watch your wake; if the wake looks like it will overtake the airboat, stay ahead of the wake by gently accelerating forward. Be conscious of the wakes generated by other vessels operating in the area as

they may swamp the airboat. If you must cut through a wave, approach it obliquely at a 45° angle.

- Getting stuck in an airboat is a common occurrence, especially during seasonally-low water levels. Be aware of appropriate measures to take in the situation where the airboat is stuck. When trying to extricate vessel, avoid overheating airboat engine by not going above 2500 rpms for more than a few seconds. Under some circumstances, you will need to call a towing vessel. While waiting for assistance, **STAY WITH THE BOAT**, drink plenty of fluids, and if possible, stretch a tarp over the seat mounts for shade. Attempting to walk back to land from the stuck airboat is extremely dangerous and should **NOT** be tried. It is also much easier for rescue crews to find a stuck or disabled airboat than a person walking in dense vegetation.
- If the airboat swamps and begins to sink (this will happen **FAST**), the first priority is for all passengers to get off the vessel safely and, if possible, for driver to turn off the engine (spinning propeller can break on impact with water). Recover any floating cargo and mark airboat location if it is completely submerged, especially in navigable waterways used by other vessels.
- During the wet season, lightning storms are a regular hazard in the field. Florida has the highest rate of lightning strikes in the country. Always pay attention to cloud conditions and be prepared to leave the area before storms can develop.
- The high heat and humidity of south Florida increases the chance of heat-related health problems in the Everglades. Preventative measures include drinking plenty of liquids (water, Gatorade, fruit and vegetable juices best), wearing a wide-brimmed hat, wearing loose-fitting and light-colored clothes, and modulating your activity according to your physical ability and the time of day (i.e., reserve most strenuous activity for early morning and evening).
- Be aware that hypothermia is possible when operating an airboat under cold or wet conditions. Wear clothes appropriate for the conditions, including a jacket while underway in the airboat.
- In the case of fog, turn on the boat's running lights, make sure the flag is visible, and reduce speed.
- Familiarize yourself with the location and use of the fire extinguisher. During a fire, aim spray from fire extinguisher at base of fire.
- Take extra care to avoid colliding with wildlife. Alligators are frequently found in trails that cut through tall sawgrass and birds and deer may dart suddenly into airboat's path from areas bordering the trail.
- Depending on the area where you are working, emergency contacts include Everglades National Park rangers (302-242-7740), Loxahatchee National Wildlife Refuge rangers (1-800-307-5798), SERC FOC (305-348-4240), your supervisor or lab manager, and 911.

5.5 ACCIDENT REPORTING

See section 3.0 of this manual for procedures.

5.6 Airboat Personal Qualification Standard (PQS)

This PQS is designed to be completed under the guidance of a mentor. Any mentor signing off on a task needs to be a qualified crew chief. The purpose of the PQS is to allow crew members to gain experience and knowledge working under a qualified Crew Chief, while working as crew during normal research operations. This allows for specific “on the job” training with the vessels being used, and the operational area being worked in. Mentors should only sign off on tasks once the trainee is competent in performing the task independently. Once all sections are complete, the Crew Chief/Mentor should notify a Qualified Examiner to make arrangements for the “dockside” exam and underway check ride. All Airboat operators are considered Crew Chiefs unless they are in a training mode being supervised by a Crew Chief. They must fulfill general boating requirements outlined in section 2.2.1 of this manual.

TRAINEE’S NAME: _____ DATE: _____

INSTRUCTOR’S NAME: _____

AIRBOAT PRACTICAL CHECKLIST

1. Pre-flight safety inspection
2. Trailering
 - _____ Appropriate hook-ups (safety chains, trailer lights)
 - _____ Launching/loading
 - Drain plugs, safety chains, boat strap, trailer lights
 - Backing trailer (positioning, proper trailer depth)
 - Use of winch and bow line
3. Personal protective equipment (life jacket, ear- and eye-protection)
4. Airboat operation
 - _____ Starting/stopping engine (adequate engine warm-up and cool-down)
 - _____ Shallow-water operation
 - Gradual turns
 - Sharp turns
 - 180-degree turns
 - Zig-zag operations
 - Operating speed
 - _____ Deep-water operation
 - Turns
 - Operating speed
 - Stopping (monitoring wake)
 - _____ Other skills (ability to follow trail, caution for wildlife)
 - _____ Knowledge of and response to hazards
 - Getting stuck
 - Swamped boat
 - Lightning
 - Heat-related health issues
 - Operations during fog, heavy rain, nighttime (low visibility conditions)

5. Preventative maintenance and repairs

- _____ Post-operation clean-up
- _____ Trailer maintenance (tire condition, wheel bearings, trailer lights)
- _____ Airboat maintenance
 - Refueling
 - Checking/adding oil
 - Cleaning sediment trap and bilge pump
 - Checking fan belts
 - Secure bolts/screws (engine mount, grass rake)
 - Condition of spark plugs, wiring, and battery terminals
- _____ Emergency repairs and trouble-shooting mechanical problems

ADDITIONAL REMARKS _____

Initial Certifications

Completed

_____ Obtain state of Florida Boating Safety Education Card. A copy should be submitted with this completed PQS.

_____ Current First Aid certification. A copy should be submitted with this completed PQS.

_____ Current CPR certification. A copy should be submitted with this completed PQS.

_____ Perform as crew for 20 hours underway. Hours underway should be logged and signed off by Crew Chief. A copy of your log should be submitted with this completed PQS.

Accomplished **Mentor signature**_____ **Date**_____

Trailing

Note: The Marine Science BBC Boatyard is an excellent location to practice trailer skills without the complications of traffic.

Completed

- _____ Properly hook truck up trailer. Hitch, chains and lights.
- _____ Conduct safety checks of truck, trailer and boat in preparation for transport.
- _____ Safely drive truck and trailer in forward gear, including pulling up boat ramp.
- _____ Safely drive truck and trailer in reverse, including backing down boat ramp.
- _____ Prep boat for launch, and safely launch boat.
- _____ Retrieve boat onto trailer, pull out of water and secure for travel.

Accomplished **Mentor signature** _____ **Date** _____

Pre-Trip Preparations

Completed

- _____ Demonstrate knowledge of how to reserve FIU vehicle and boat.
- _____ Prepare a float plan.
- _____ Ensure boat is equipped with all necessary safety and operational equipment.
- _____ Verify boat is fully fueled and electrical systems are functional.
- _____ Ensure crew and passengers have sufficient food, water, clothing, and sun protection for anticipated field time, as well as reserves in case of trouble that leave boat and crew stuck for extended length of time.

Accomplished **Mentor signature** _____ **Date** _____

Operational Tasks

Completed

- _____ Safely board all gear, crew and passengers.
- _____ Brief all crew and passengers, both safety and mission briefings.
- _____ Demonstrate proficiency in safely leaving dock/launching area.
- _____ Demonstrate proficiency in safely operating boat underway as part of mission.
- _____ Demonstrate proficiency in safely docking, returning to launching area, and boat retrieval.
- _____ Demonstrate knowledge of communications equipment, use and limitations. VHF radio, cell phone, and satellite phone; as applicable to operating area.
- _____ Demonstrate knowledge of emergency signaling devices. Mirror, whistle, etc. *Note that flairs are not commonly used in airboats because of risk of fire in sawgrass.*
- _____ Tie the following knots and state their use. Cleat hitch, bowline, sheet bend, clove hitch, round turn and two half hitches.
- _____ Demonstrate ability to read and navigate with appropriate charts and/or maps for area, as appropriate.
- _____ Demonstrate ability to use GPS to find your stations and return to launching point.

Accomplished **Mentor signature** _____ **Date** _____

Post Trip Tasks

Completed

- _____ Fuel boat and truck at FIU fuel pumps after return to campus.
- _____ Remove and return all gear that does not remain stored aboard.
- _____ Wash down boat and trailer.
- _____ Close out float plan.

Accomplished **Mentor signature**_____ **Date**_____