



# **BOATING SAFETY MANUAL**

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## 1.0 INTRODUCTION

Vessel operation is an important part 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, volunteers, 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 ensure the welfare of everyone on board.

## 1.1 PURPOSE

The Florida International University Boating Safety Manual provides safety guidelines applicable to research operations and teaching activities involving the use of watercraft. The policy statements, recommendations, and guidelines provided here are meant to be minimum standards for the FIU boating program when conducting marine research and teaching activities and are not intended to replace common sense nor good judgement.

The purpose of this manual is to:

- Establish safe practices as the primary concern for all boating activities by FIU employees, students, volunteers, 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 activities involving the use of any type of watercraft as well as offsite use of charter boats and personal vessels.

## 1.3 REFERENCES

1. 46 CFR, U.S. Coast Guard, Department of Transportation, Requirements
2. 33 CFR, Navigation and Navigable Waters, Subchapter S, Boating Safety

## 1.4 DEFINITIONS AND TERMINOLOGY

**Accountability:** The willingness to be transparent and acceptance of responsibility for one's own actions. If personnel are found to be negligent and disregarding policies set forth by this manual, repercussions may include restricting boating privileges or a probationary period of personnel, as well as the lab/s that were involved in violations.

**ARB:** Aquarius Reef Base as part of the Medina Aquarius Program.

**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 when operation problems arise.

**Call Tree:** Located in Appendix I, the Call Tree is used in case of emergencies and is a flow chart of who to call.

**Crew:** The crew members assist the crew chief and carries out any duties assigned to them in order to aid in boat operations. Crew must be registered with the Office of Boating Safety.

**Crew Chief:** The crew chief is the operator of the boat and is ultimately responsible for all aspects of the vessel's operation and the safety of the people on board. Crew chiefs must be registered with the Office of Boating Safety and keep required certifications current. Designations for crew chiefs are Motorboat Crew Chief and Airboat Crew Chief.

**Crew Chief Emergency Contact (CCEC):** This person is an FIU affiliate designated by the crew chief to be the emergency shore contact who knows where the boat is going and has knowledge of the on-going research. They will be the immediate contact person for a crew chief when the mission begins, is completed, or when assistance is needed, and must be listed on the float plan. Refer to Appendix II for more information for the crew chief emergency contact.

**EMP:** Emergency Management Plan is a report that outlines how the crew chief, crew, and any other passengers should act during an emergency. The EMP for each lab may differ depending on location and type of research.

**EPIRB:** Emergency Position Indicating Radio Beacon is a small transmitter used to send out an emergency signal to rescue services. This can account for a second method of communication when operating in areas with questionable or no cell phone service. Each EPIRB should be tested within the parameters of the manufacturer.

**First Aid Kit:** The first aid kit is a waterproof box that holds materials to be used in case of emergencies and is required on all boating excursions. It contains a few extra items than a basic first aid kit and has a tamper seal for the indication something has been used and needs to be restocked by the BSO. The inventory is listed in Appendix III.

**Float Plan:** A written or electronic document that includes boat identification, name of the operator of the boat (crew chief), persons on board (crew, scientists, and guests/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 Sciences), the Boating Safety Officer, and the crew chief emergency contact assigned by the float plan, at least two (2) hours prior to commencing boat operations. The crew chief must receive notification that the BSO has received the float plan. Float plans can be found on the Boating Safety Program website.

**FOC:** The Field Operations Center (FOC) is a unit in the Institute of Environment (IoE) responsible for maintenance and management of a fleet of vehicles, vessels, and trailers assigned to an FIU administrative unit. It is also a support facility for the boat's safety equipment and performs preventative maintenance. The FOC has been divided into two operational divisions, the Marine and Freshwater branches.

**Guest:** Guests are persons aboard a boat that are not involved in boating operations or scientific research activities, they are only observing. Guests must fill out the Institute of Environment Release and Waiver of Liability and send to BSO.

**Handheld VHF:** A handheld VHF radio is used, in most cases, as an emergency back up to a mounted VHF. A handheld VHF can be given a registered MMSI number that allows the VHF to automatically give off certain information about the vessel if activated in a distress scenario. A handheld VHF can also be used as a primary source of communication on vessels too small to carry a mounted VHF.

**Oceanographic Research Vessel (ORV):** An oceanographic research vessel is a vessel that is employed in the instruction and research in oceanography or limnology, or both, or only in oceanographic and limnological research, including marine geophysical or geological surveys, atmospheric and biological research. ORV is a formal designation in writing from the USCG.

**Passenger:** A passenger is any individual carried on a vessel, except: (1) the operator or crew chief, or (2) a member of the crew engaged in the business of the vessel, who has not contributed consideration for carriage.

**Passenger for Hire:** A passenger for whom consideration is contributed as a condition of carriage on the vessel, whether directly or indirectly flowing to the owner, charterer, operator, agent, or any other persons having an interest in the vessel.

**Passenger Vessel:** Any vessel that is: (1) carrying at least one passenger for hire, or (2) is chartered with consideration is contributed as a condition of carriage on the vessel, whether directly or indirectly; these vessels are inspected using USCG-Subchapter T.

**Personal Flotation Device (PFD):** Various types of floatation aids that are required of all persons on board FIU vessels while underway. PFDs are required components onboard all vessels.

**Personal Locator Beacon (PLB):** A small device that can be used for communication, it is used as backup to cellphones and VHF radios for vessels operating in places with limited or no cell phone reception.

**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.

**Personnel Qualification Standard (PQS):** List of required skills needed by persons to meet requirements to operate vessels under FIU Boating Safety guidelines.

**Qualified Examiner (QE):** Directors of the PI, FOC, the Boating Safety Officer, or their designee.

**Research Boating:** Boating operations involving the gathering of scientific data, training of scientists, or other research boaters.

**Satellite Phone:** A phone used for communication that uses satellites instead of cell phone towers. It is used as backup to cellphones and VHF radios for vessels operating in places with limited or no cell phone reception.

**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 under the direction of a PI or as requirements of a sanctioned class at FIU.

**Volunteer:** Volunteers are persons who can contribute on a FIU project within their applied qualifications, such qualifications could be either for research, boating operations (excluding crew chief duties), or others. However, volunteers can not be paid. They are considered employees ONLY for workman's compensation purposes. Volunteers must be registered with HR and do not need the Institute of Environment Release and Waiver of Liability.

## **1.5 PROGRAM ADMINISTRATION, RESPONSIBILITY, AND ACCOUNTABILITY**

### **1.5.1 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 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. The Boating Safety Committee will elect one of its members by a majority vote to serve as the Chair of the Boating Safety Committee.

Boating Safety Committee is responsible for maintaining and updating boating safety regulations as needed. They shall meet at least twice per year and maintain meeting minutes on a secure website or other storage option that makes them routinely available to ORED, EH&S, and committee members. They are also the policing body for boating safety infractions. The Chair of the Committee is responsible for calling and organizing meetings of the Committee and is the chief liaison between the Committee, the Boating Safety Officer, and other parties at the university.

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 Office of Research and Economic Development for further action.

### **1.5.2 Boating Safety Officer (BSO)**

The BSO is responsible for record keeping related to logistics and enforcement of FIU boating safety policies and investigation of boating safety incidents. The BSO 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. They 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 BSO will prepare a report on all incidents for review by the Boating Safety Committee.

### **1.5.3 Principal Investigator**

The 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 actions of their lab members and performance in the field.

The principal investigator must assure the following:

1. 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.
2. 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.
3. 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.
4. That all passengers have no direct responsibility in operating any of the FIU boats unless properly authorized by the BSO.
5. 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.
6. That a float plan is filed with the BSO, the Crew Chief Emergency Contact and the owner of the vessels within a two (2) hour timeframe prior to boat operation.
7. The PI may serve as the Crew Chief Emergency Contact or delegate that responsibility within their laboratory.

## **2.0 GENERAL PROCEDURES AND REGULATIONS**

### **2.1 VESSEL OPERATORS**

All personnel who operate any powered or sailing vessel of any type under FIU auspices must meet requirements set forth in this Boating Safety Manual.

- All operators of State-owned or personally owned power boats must meet the following requirements that confirm boater competence.



- Required paperwork, and certification of successful completion must be submitted to, and kept on file with the BSO prior to operating a vessel.
  1. FIU boating application/information sheet.
  2. Florida Safe Boater course (or other state equivalent) if boater does not hold Motorboat Operator Certification Course (MOCC) or USCG Merchant Mariners Credentials of Operator of Uninspected Passenger Vessels (OUPV) or higher
  3. Twenty hours logged operating a vessel comparable to the one being certified.
  4. Current CPR/First Aid/AED certification.
  5. Evidence of boater competence:
    - Motorboats: USCG merchant mariner credentials of OUPV or higher, MOCC/MOICC, or via Personnel Qualification Standards (PQS).
    - Airboats: MOCC/MOICC with airboat extension, or via Personnel Qualification Standards (PQS).
- All operators must demonstrate to the satisfaction of the BSO, or designee, knowledge of safe operating procedures for the boat they will be using including: engine starting, fueling, passenger and vessel safety including man-overboard, docking and undocking, anchoring, knowledge of basic navigation, right-of-way, communications, and filing of float plans (copies of training and/or check-out records must be on file with the BSO prior to any departures).
- ALL FIU vessel operators operating small boats at or beyond 12 nautical miles from shore must receive offshore training and be approved for such operation by the BSO, or designee.

## **2.2 VESSEL SAFETY INSPECTIONS**

A Visual Safety Inspection (VSI) of all vessels used under FIU auspices must have proof of an annual inspection.

- The BSO or a designate will inspect vessels and boats registered and/or owned by Florida International University and based in south Florida.
- The BSO or a designate will inspect privately owned vessels or boats used under FIU auspices.
- The Coast Guard or Coast Guard Auxiliary can complete a courtesy inspection on these vessels.
- Commercial vessels or boats rented or chartered, domestically or abroad, under FIU auspices must provide documentation of an annual inspection.

Vessels maintaining a current U.S. Coast Guard Certificate of Inspection (COI) and which are subject to annual U. S. Coast Guard inspections are exempt.

## **2.3 FLOAT PLANS**

A float plan must be submitted to the BSO, or designee, by 3:00 pm EST (15:00) the business day before field activities and approved in advance to any boating activity for each excursion. If a given trip and/or activity is essentially repetitive, or of an ongoing type, a blanket Float Plan may be filed for a given time period or area of operation at the discretion of the BSO. This does not eliminate the responsibility of the operator to provide daily departure and arrival notification to a designated agent.

The float plan link is: [www.go.fiu.edu/floatplan](http://www.go.fiu.edu/floatplan)

Float plans are to be submitted by 3:00 pm EST (15:00) the business day before field activities, and contain:

1. Departure and Arrival Times – A Crew Chief Emergency Contact (CCEC) not part of the boating operation must be designated to monitor departure and arrival times of each vessel and all passengers aboard. This person must be based on land and have access to their phone the entire time the vessel is offshore. This person should be given a complete copy of the float plan and fully understand missing boat procedures. Additionally, the BSO needs to receive a copy of all float plans.
2. Arrival Notification - Once a boat returns from an outing, the boat operator must notify the Crew Chief Emergency Contact to report that the boat and its passengers have returned safely.
3. If a boat operator fails to call in upon return or at the scheduled time, the CCEC will initiate an investigation to determine whether the boat has in fact returned or whether Federal or local Search and Rescue agencies should be requested. Once Search and Rescue has been requested the FIU Boating Safety Officer must immediately be notified. Refer to the Call Tree in Appendix I.

## **2.4 VESSEL CHECKLIST**

A vessel checklist must be completed and verified prior to leaving the dock. The checklist includes looking over all safety gear, testing communication devices, and making sure the vessel is ready for the trip.

There are three options for a checklist:

1. The FIU online checklist form on SharePoint: <https://go.fiu.edu/vesselchecklist>
2. A paper checklist that is kept on file: <https://research.fiu.edu/boating-safety/>
3. A reusable laminated sheet, not erased until after the vessel returns safely back to dock.

The checklist may be completed by the crew chief, a qualified crew member, or a crew member training under the watch of the crew chief. If a paper checklist or reusable laminated sheet is used, a copy must be sent to the BSO.

## **2.5 ILLEGAL AND CONTROLLED SUBSTANCES**

Florida International University adheres to a Zero Tolerance policy for illegal drugs and alcohol aboard FIU vessels. Operators of vessels under the auspices of FIU shall not operate vessels if under the influence of alcohol, drugs (legal or illegal), or prescription drugs which may impair or influence their judgment or capabilities.

- Drugs – It is unlawful for any person to operate a vessel in the State of Florida while under the influence of controlled substances. Crew chiefs or vessel operators must ensure themselves and crew members are not under the influence of any controlled substances prior to departure.

- Alcohol – It is strictly prohibited by federal and State of Florida regulations to operate a vessel under the influence of alcohol. It is the responsibility of the crew chief or vessel operators to ensure that no alcohol is brought onboard unless done in compliance with University Policy Alcoholic Beverages and Illegal Drug Possession #185.001, University Policy Drug-Free Campus/Workplace Drug and Alcohol Abuse Prevention, and FIU Regulation 2505 Alcoholic Beverages.
- Smoking – Following FIU protocol deeming FIU campuses as smoke free zones, this also pertains to FIU and SERC vessels. See FIU Regulation 113 Smoke and Tobacco-Free Campus. For the health of everyone on the vessel, as well as the safety of the vessel, smoking of any kind is not permitted aboard an FIU vessel. Smoking aboard chartered or private boats is at the discretion of the vessels' owner and operator.

### **2.5.1 Drug and Alcohol Policy for Certain University Marine Employees**

FIU has a Drug and Alcohol Policy and Procedure for Certain University Marine Employees. This policy applies only to University employees (full-time, part-time, temporary, or seasonal), and volunteers who, as part of their job requirements and as noted in their job description: (1) operate vessels in commercial service as defined by U.S. Coast Guard regulations (e.g., crew members as defined by U.S. Coast Guard regulations and those required to have a Coast Guard license), and/or (2) perform safety-sensitive duties in safety-sensitive positions on a vessel when it is operating as an uninspected passenger vessel regardless of size (collectively covered individuals). Congruent with maintaining U.S. Coast Guard Merchant Mariner Credential, this requirement is met by participation in a maritime comprehensive drug testing consortium. The drug testing consortium provides all the paperwork, record-keeping, random test generation, and report submission to the USCG as required by the regulations This requirement is pursuant to FIU Policy 1710.349.

### **2.6 SAFETY EQUIPMENT AND PROCEDURES**

All vessels in use under FIU auspices must comply with federal and State of Florida safety regulations. All vessels or flotillas of vessels (i.e., groups of kayaks and/or paddleboards) must have at least one first aid kit available. First aid kits should contain at a minimum first aid supplies described in section 2.6.1. Sunscreen, and insect repellent are also recommended.

Prior to departure, the crew chief, vessel operator, or supervisor should conduct a safety briefing for participants, passengers and/or crew which at a minimum shall include:

1. Location of any fire-fighting equipment or fire extinguishers, and description of proper use.
2. Location of life jackets and directions of how and when to don. It is an FIU requirement that all passengers always wear a PFD when the vessel is in motion. Those who have passed a swim test may remove the PFD when anchored, docked, or aground. Those who have not passed, or chose to not take, the swim test, must always wear their PFD when on the vessel. Refer to section 2.9 in the manual for swim test protocol.
3. Location of any throwable rings, line bags, or man overboard buoys as well as man overboard procedure.
4. Location of first-aid kit.
5. Location of emergency communication equipment such as a VHF radio or a satellite phone and procedures.

### **2.6.1 First Aid Kit**

All FIU vessels and flotillas are required to carry at least one first aid kit. The first aid kit(s) must be in an area that is quickly accessible and not buried under gear. At the end of every trip, boaters will check the first aid kit for water damage and report any. Personnel on vessels are not to use contents of the first aid kit for research (ex. using the scissors to cut line).

First Aid Kit: The first-aid kit is provided by the vessel owner (SERC, Marine Science, etc.) and required on all boating excursions. It is to be used in case of emergencies. The kits will be inspected by the BSO when the vessels are inspected, when returning from a research trip, if it is thought to be contaminated, or quarterly when applicable. A tamper seal is present to indicate if any materials have been used and need to be re-stocked by the BSO.

All FIU vessels are required to carry a first-aid kit, however, a different iteration of the first-aid kit(s) may be on a vessel as long as it contains the minimal requirements.

### **2.6.2 Communication Standards**

All FIU vessels and flotillas are required to carry at least two forms of functioning, two-way communication. The primary form will be an ORED- owned satellite phone if the lab does not have one (i.e. a satellite phone must be on all FIU airboats and vessels). In addition to the satellite phone issued at the time of check out, all FIU airboats and vessels must have at least one additional form of functioning, two-way communication NOT including a cell phone (e.g. VHF radio, Garmin/DeLorme inReach unit, or SPOT).

If a lab does not have a second form of communication, one can be checked out with the vessel. All FIU vessels will check in and out when entering and leaving areas with no cell phone reception.

All FIU boaters not using an FIU boat must have at least two forms of functioning, two-way communication (e.g. VHF radio, satellite phone, Garmin.DeLorme inReach, or SPOT).

Emergency Position Indicating Radio Beacons (EPIRBs) are separate systems for marine going vessels and individuals that are very important but are not a two-way means of communication.

## **2.7 ANCHORING AND MOORING PROCEDURES**

It is the sole responsibility of the vessel operator to assure that vessels are properly anchored or moored and that all Federal, State, and local anchoring and mooring laws and regulations are complied with. Anchors must be present on all FIU vessels and should be appropriate for the specific bottom characteristics. Kayaks and paddleboards are not required to carry an anchor.

The following assurances must be made when deploying an anchor:

1. Anchors shall not be dropped on living coral at any time.
2. Vessel Swinging Arc – Vessels must not be anchored unless there is sufficient space available to adequately allow a 360-degree swing without colliding with objects or a vessel. When mooring on balls or in mooring fields, the added scope of line must not exceed a length which will allow the vessel to contact other vessels.

3. When using mooring fields containing ball color codes, FIU vessels must not utilize balls designated for commercial vessels or exceed hourly or daily limits. In no case should a dingy ball be used unless the vessel is in fact a dingy or small inflatable. FIU vessels will follow all other rules regarding mooring balls in national marine sanctuaries and national parks.
4. Anchors and anchor rode should be of proper composition and include at a minimum an anchor, a chain, and/or the anchor line with appropriate shackles and swivels.
5. When tying to a mooring ball it is preferable to use a bridle system with both bitter ends affixed port and starboard cleats and the line passed through the eye of the mooring ball tail.
6. Anchor scope must be at least 7:1 for average conditions and least 10:1 if storm conditions are expected. Example: If the water that is being anchored in is 3m deep, you must use no less than 21m of scope.
7. All FIU vessels should be equipped with docking/mooring lines. Boaters are not to use, cut, or otherwise dismantle vessel lines or equipment to use for their research.

## **2.8 DIVING AND SNORKELING FROM VESSELS**

All FIU employees, students, and collaborators conducting scientific diving operations are governed by the FIU-Scientific Divers Safety Manual; all non-research diving operations are governed by the FIU-Diving Operations Manual.

### Diving:

The crew chief shall be ultimately responsible for the safe conduct of all boating operations; the diver supervisor or lead diver is ultimately responsible for the safe conduct of diving operations. The dive supervisor or lead diver shall provide the crew chief with all information requested to assure safety of divers. Refer to the FIU-Scientific Divers Safety Manual or FIU-Diving Safety Manual for all protocols and procedures for diving operations at FIU and on FIU vessels.

### Snorkeling:

All snorkeling is at the discretion of the crew chief. Students, faculty, staff, and guests who wish to participate in snorkeling activities associated with research, classes or tours who have not taken a swim test approved by the Boating Officer, shall adhere to the following guidelines:

- They shall be required to wear a standard snorkeling vest.
- The snorkeling vest shall have enough air to keep the person afloat.
- They shall receive instruction on the proper use of a snorkel vest.
- They shall receive instruction on the proper use of a mask and snorkel.
- An FIU faculty or staff employee who is a qualified boater and successfully completed a swim test as defined within this manual and qualified in CPR, shall act as a safety swimmer during all snorkeling activities.

### Breath-Hold Diving:

29 CFR 1910 Sub-Part "T" does not define Breath-Hold Diving as an activity in which an employee uses an underwater apparatus which supplies compressed gas, and therefore is not governed under the FIU Scientific Divers Safety Manual nor the FIU Diving Operations Manual.

Breath-Hold Diving may be used as a tool only when conducting in-water FIU approved research projects, and when all the following requirements are followed:

- Must pass a swim test in accordance with this manual.
- Must be qualified in CPR and First Aid.
- Must complete the FIU Breath-Hold Diving Training lecture.
- Must demonstrate the proper use of a mask, snorkel, and fins to the BSO, DSO, or a designated person approved by this manual.
- There must be a minimum of two (2) qualified persons in the water at all times.
- Breath-Hold Diving is limited to a maximum depth of 20 feet of water without proof of other formalized training.
- During a Breath-Hold Dive, one qualified person must remain on the surface acting as a safety observer and ready to render assistance.
- All other applicable boating requirements listed within this manual also apply.
- FIU qualified Boaters and Divers may be given credit for prior documented training meeting these requirements where applicable.

## **2.9 SWIM TEST PROTOCOL**

All boaters are asked to take a swim test prior to boarding a vessel under the auspices of FIU. Boaters can go to the BBC pool during open swim hours and request the lifeguards or an approved Boating Safety Committee designee to monitor a swim test. Boaters will receive confirmation, as will the BSO. If a boater does not pass, or does not want to take the swim test, they must always wear their PFD when aboard the vessel. If the boater passes the swim test, they may remove their PFD when the vessel is anchored, moored, or docked. Registered FIU scientific divers are exempt from the swim test, as well as others listed below. A Boating Safety Program Swim Test & Acknowledgment Form (Appendix IV) will be used for documentation of the boater passing, having an exemption, or declining to take the swim test.

### Swim Test Requirements:

- Enter the water and submerge head
- Swim 100 yards (4 lengths, 2 laps) continuously without stopping
- Tread water for 3 minutes (stay in position with head above the water)
- Exit the pool under their own power without using the ladder

### Exemptions for the swim test:

- FIU scientific diver
- Certified Scuba Diver
- Certified Lifeguard
- Active swim team athlete

- Active water polo athlete
- Water Safety Instructor
- Other exemptions will be reviewed on case by case basis

### **3.0 MOTORBOAT OPERATIONS**

#### **3.1 BOAT OPERATIONS**

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

- The sheer size, remoteness, and complexity of the aquatic habitats where research is conducted.
- The severe and extreme 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.

#### **3.2 MOTORBOAT SAFETY REQUIREMENTS**

This section establishes the policy that all motorboat 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 ensure 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, while others occur from long-term exposure. The following safety guidelines must be adhered to in order to assure that this policy is enforced.

This section defines the minimum personnel requirements for Power Boat Operations.

##### Minimum personnel requirements:

- Each vessel must have a minimum of two persons on board during normal operations
- At least (1) person shall be a qualified motorboat crew chief
- Persons on board not qualified as crew members shall receive instruction on emergency and communication procedures
- Vessels operating in remote locations out of VHF or cell phone range, are required to have (1) qualified motorboat crew chief and (1) qualified crew member on board

#### **3.3 MOTORBOAT OPERATOR AND CREW TRAINING**

All boaters are required to submit all certification paperwork, as well as a scientific boating application and information sheet, to the BSO prior to any boating activities. Guests who are neither helping in boating operations or scientific research will need to send the BSO the Institute of Environment Release and Waiver of Liability, meanwhile science crew will need to send the BSO the Visiting Scientists and Trainee Waiver.

An all-hands meeting will be held annually to update the boating community, due to circumstances if any boaters are not available to attend the meeting, the presentation and minutes will be accessible for review via the Boating Safety Program website.

### **3.3.1 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 (motorboat and/or airboat). This ensures crew chiefs can safely operate the vessel in a manner that promotes safety of the vessel, the environment, the research equipment, and most importantly, the personnel aboard the vessel. In addition, each crew chief must take a qualification examination for their respective type of vessel of operation. The information contained in the exam includes information in the FIU Boating Safety Manual as well as basic “rules of the road” for boating.

1. The first requirement for all FIU boaters is to have a Florida Boating Safety Education Card (holders of a valid USGC Captain’s license or MOCC/MOICC 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>.
2. Crew chiefs must have a current certification in both CPR and First Aid from a nationally recognized association that includes both book and practical assessments.
3. Crew chiefs must take the appropriate Crew Chief Qualification Examination for the type of vessel they intend to operate. Candidates must pass with a score of 90% or better.
4. Options to account for boater competency:
  - a) Candidates must provide evidence of at least 20 hours of experience on the class of vessel one is looking to operate (motor vessels or airboats).
  - b) Successfully pass the Department of Interior’s (DOI) Motorboat Operators Certification Course (MOCC) and log 20 hours underway. The MOCC qualifies one to operate motorboats up to 26’ in any waters suitable for such boats. If one has completed the MOCC with airboat extension, this qualifies someone for both motorboats and airboats.
  - c) Personnel Qualification Standard (PQS) under a qualified motorboat or airboat crew chief and signed by a crew chief trainer who is designated by the PI, FOC, and the BSO. 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. The purpose of the PQS is to document experience and knowledge gained while working under a qualified motorboat or airboat crew chief in lieu of a formal training course. The first 2 trips or 6 hours of training must be with a qualified crew chief trainer designated by the PI, FOC, and the Boating Safety Officer. The last trip of training must also be with a motorboat or airboat crew chief trainer who can determine if training is complete



and the PQS can be signed, or if more supervised time is needed. All other hours can be with a crew chief who is qualified on the type of vessel being operated.

- d) 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.
- e) Certain vessels, such as the ARB vessels, and operational areas may have additional requirements because of their complexity, and training for those are not included in this boating safety manual.

### **3.3.2 Crew Training**

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/>.

### **3.3.3 Science Crew, Guests, and Volunteers**

Science crew and guests are permitted to board the vessel after they are instructed in basic safety requirements outlined for all personnel in this manual by the crew chief.

- All science crew who are not FIU employees must complete and send the BSO the Visiting scientists and Trainee Waiver before all boating activities. All science crew may participate with only the scientific research solely at the discretion of the crew chief.
- Guests who are not FIU employees must complete and send the BSO an Institute of Environment Release and Waiver of Liability before all boating activities. All guests will only observe and not participate in boating operations or scientific research.
- Volunteers are persons who can contribute on a FIU project within their applied qualifications, such qualifications could be either for research, boating operations (excluding crew chief duties), or others. However, volunteers can not be paid. They are considered employees ONLY for workman's compensation purposes. Volunteers must be registered with HR and do not need the Institute of Environment Release and Waiver of Liability.

## **3.4 PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Some hazards can be mitigated using appropriate PPE. The PPE must meet and be labeled "approved by the United States Coast Guard". Some PPE is mandatory when underway, while 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.

### **3.4.1 PPE Mandatory and Recommended Equipment**

Personal Floatation Device (PFD) is mandatory. PFDs must always be worn while the vessel is underway. "Underway" is defined as anytime except when the vessel is anchored, moored, made fast to the shore, or aground. If traveling in a cabin or other enclosed space, the PFD is to be removed as it becomes an entrapment hazard in the event of the vessel sinking. The wearing of PFDs on station, in this case all times the boat is not underway, is at the discretion of the crew chief based on conditions at the time; all crew must obey the crew chief's decision on wearing PFDs when on station. Those who have not passed, or chose not to take the swim test, must always keep their PFD on when aboard. A Boating Safety Program Swim Test & Acknowledgment Form will be used for documentation of the boater passing, having an exemption, or declining to take the swim test. See 2.9 for swim test protocol. The PFD can be a Type I, II, or 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 is required when the boat is on plane. The type should exclude wind and debris from hitting the eye.
  - Eye protection is not required when personnel are protected by a windshield or cabin.
  - Sunglasses and standard safety glasses are considered acceptable eye protection except at night when sunglasses are not acceptable.
- Skin protection such as sunscreen or SPF protection clothing, is strongly recommended for daytime operations.

### **3.5 VESSEL SAFETY EQUIPMENT**

Each vessel should be equipped with a minimum amount of required safety equipment prescribed by the U.S. Coast Guard in relation to the size of the vessel. The following is the minimum requirements to be adhered by vessel users under the auspices of FIU.

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.
  - Line 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
- Visual Distress Signal Devices (at least 3 day & night flares) for motorboats
- Signal mirror and non-pyrogenic visual distress signal devices for airboats
- A "Kill" Switch to immediately shut off the engine for boats 26' and under.
- An electric or air horn
- Two effective methods of two-way communication (Satellite Phone, VHF radio, Garmin/DeLorme inReach Unit, SPOT).
- 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, in accordance with 46 CFR 160.150.
- Mounted Fire Extinguisher(s) according to USCG standards.

- Means to navigate, i.e. GPS, etc.
- Charts for the particular area provided by the PI
- Binoculars for offshore trips (>12nm) provided by the PI
- Minimum of 1 gallon of water per day per person (exception of short duration educational trips)
- Bailer or other manual dewatering device.
- Float Plan submitted prior to departure
- Vessel Checklist completed prior to departure
- Emergency Contact Numbers
- “Working” Navigational Lights, if required by USCG for the class of vessel
- Tool kit

### **3.6 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 for all boating trips by 3:00 pm EST (15:00) the business day prior to boating operations: <https://go.fiu.edu/floatplan>
- Prepare and file an Emergency Management Plan (EMP) with lab manager as part of the float plan.
- Complete a vessel checklist.
- Conduct a pre-underway safety briefing familiarizing all persons with the vessel.
  - All persons should be able to locate and use the safety equipment on board.
- Ensure that all required safety gear is on board, in good condition, and stowed properly.
- Ensure that all persons on board have a PFD. PFDs must always be worn while the vessel is underway.
- 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 unless live boating with prior authorization.
- Ensure the boat holds enough fuel to complete the mission with extra for contingency operations.
- If the crew chief must dive for research purposes, during snorkeling or scuba diving operations, an additional crew member, preferably someone with crew chief credentials, must remain on board in case of emergencies and may need to carry out the duties and responsibilities (such as driving and docking the vessel) if the appointed crew chief cannot.
- If any aspect of the vessel, 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.

- Vessels are never to be run continuously at maximum RPM.
- Vessel on trailer is not to be used to transport cargo.
- Do not overload the vessel (check placard and note max weight and do not exceed this number considering all gear, electronics, and personnel).
- It is absolutely forbidden to have FIU boats used for personal recreational purposes.

### **3.6.1 Nighttime Operations**

Navigation after sunset requires additional preparations for navigation and safe transit. Adequate lighting both for the boat and navigation is required. Running lights fore and aft 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.

Operations outside of routine business hours, including night, require PI or CCEC to arrange for onshore contacts and response plans for non-emergency mechanical issues, grounding events, and accounting for absence of campus support staff. They must also set protocols for contact of emergency personnel when support staff may not be immediately accessible.

### **3.6.2 International Operations**

FIU boaters shall obey all laws governing activities on the water during research boating operations abroad. Boaters are required to maintain the standards, qualifications, and operational requirements outlined in the FIU-Boating Safety Manual, regardless of roles as crew or crew chief on international trips.

### **3.6.3 FIU Crew Chiefs and Crew on Non-FIU Vessels**

Boaters are required to maintain the standards, qualifications, and operational requirements outlined in the FIU-Boating Safety Manual, regardless of roles as crew or crew chief on privately owned vessels as well as vessels owned by organizations collaborating with FIU.

## **3.7 MINIMIZING IMPACT ON THE ENVIRONMENT**

Crew chiefs and crew should always be alert when operating watercraft in the field. While on the water, safety should be the number one priority, followed by considerations for environmental conservation. To avoid or lessen impacts to fish and wildlife resources, associated habitats, and water quality, the following guidelines have been implemented.

### **3.7.1 Submerged Features**

Vessels should always be operated 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 seagrass bed, results in long-term negative impact on the health of the natural resources of Biscayne Bay and 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. Much of the boating also occurs in the Florida Keys National Marine Sanctuary. Coral reefs are known to exist close to the surface, so local knowledge

is important for operating a vessel near coral reefs. If a vessel does run aground on a coral reef, immediately contact the National Marine Sanctuary at (888) 404-3922.

### **3.7.2 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.

### **3.7.3 Wildlife**

Vessels should be operated to avoid all impacts to wildlife. Speed must be reduced when operating in areas where encounters with manatees, crocodiles, or sea turtles are likely. Operators unfamiliar with these areas must seek guidance from experienced operators.

## **3.8 COMMUNICATIONS**

Communication starts with the filing of the float plan. This plan is to be filed with the BSO for approval, with a copy sent to the vessel owner, as well as with the crew chief emergency contact (CCEC). It is the responsibility of the CCEC 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 or designee, 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 first. Other steps would be to activate the EPIRB (if present on the boat) if requested by the USCG or no contact can be made. To ensure that the research team can communicate during non-emergency or emergency situations each FIU vessel must have a satellite phone as primary communication and another two-way communication device as secondary communication. This will ensure communications while out of cell phone range. It is the responsibility of the crew chief during the pre-departure briefing to instruct and assure that anyone on the boat can operate the vessel communication devices.

## 4.0 MOTORBOATING PERSONNEL QUALIFICATION STANDARDS (PQS)

### Personnel Qualification Standard (PQS)

#### Motorized vessels in open or confined fresh and marine waters, including Biscayne Bay and Florida Bay, Keys coastal water inside the reef tract

Crew Chief Candidate: \_\_\_\_\_

This PQS is designed to be completed under the guidance of a mentor. Any mentor signing off on a task must be a qualified Motorboat Crew Chief. The purpose of the PQS is to allow crew members to gain experience and knowledge working under a qualified Motorboat 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/trainer should notify a Qualified Examiner to make arrangements for the “dockside” exam and underway check ride. Qualified Examiners are designated by the BSO with input from SERC and the FOC.

### 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 completed PQS.
- \_\_\_\_\_ Current CPR certification. A copy should be submitted with this completed PQS.
- \_\_\_\_\_ Pass the Motorboat Crew Chief Qualification Examination with a score of 90% or better. The exam should be submitted with this completed PQS.
- \_\_\_\_\_ Log at least twenty (20) hours behind the helm. Hours underway must be logged and signed off by qualified motorboat crew chief. A copy of the log should be submitted with this completed PQS.

#### **Accomplished:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

## Trailer

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:**

<b>Applicant Signature</b> _____	<b>Date</b> _____
<b>Trainer Signature</b> _____	<b>Date</b> _____
<b>PI Signature</b> _____	<b>Date</b> _____

**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 enough 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:**

<b>Applicant Signature</b> _____	<b>Date</b> _____
<b>Trainer Signature</b> _____	<b>Date</b> _____
<b>PI Signature</b> _____	<b>Date</b> _____



**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 proper usage and knowledge of engine cut of switch.
- \_\_\_\_\_ 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, and if applicable the depthfinder to find your stations.
- \_\_\_\_\_ Demonstrate ability to use GPS to return to launching point.

If applicable for vessels in open waters:

- \_\_\_\_\_ Demonstrate ability to use tide tables.
- \_\_\_\_\_ Demonstrate knowledge of currents and transiting inlets.
- \_\_\_\_\_ Demonstrate knowledge of the inland and international “Rules of the Road”.

**Accomplished:**

<b>Applicant Signature</b> _____	<b>Date</b> _____
<b>Trainer Signature</b> _____	<b>Date</b> _____
<b>PI Signature</b> _____	<b>Date</b> _____

**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:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

As noted above, I have successfully completed the PQS for FIU motorized vessels and as crew chief acknowledge that I am authorized to operate vessels in a manner that promotes safety of the vessel, the environment, the research equipment, and most importantly, the personnel aboard the vessel. I do acknowledge if any unsafe operations may occur, my crew chief title may be revoked, and I may be responsible for damage fees.

Signature \_\_\_\_\_ Date \_\_\_\_\_

As this candidate's PI, I acknowledge that they have completed the PQS for FIU motorized vessels with either myself or my designated crew chief trainer and authorize them to operate FIU vessels in a manner that promotes safety of the vessel, the environment, the research equipment, and most importantly, the personnel aboard the vessel. I also acknowledge that if any unsafe operations may occur, their crew chief title may be revoked, and we may be responsible for damage fees.

Signature \_\_\_\_\_ Date \_\_\_\_\_

**Personnel Qualification Standard (PQS)  
Motorized vessels that are Chartered**

To qualify as a motorboat crew chief for chartered vessels, an individual must have a U.S Coast Guard Merchant Mariner Credential (OUPV or Greater).

**Personnel Qualification Standard (PQS)  
Motorized vessels at Aquarius Reef Base**

To qualify for ARB Vessels, the candidate must complete the ARB Personnel Qualification System with the Aquarius Operations Director or an appointed designee.

**Personnel Qualification Standard (PQS)  
Motorized vessels at night**

To conduct planned night-time operations the following additional requirements must be met: completion of the Research Vessel Captain or motorboat 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.

**Personnel Qualification Standard (PQS)  
Specific vessels**

For specific vessel operations the following additional requirement must be met: completion of the Research Vessel Captain or motorboat 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 (i.e. Dewey Dwayne). For specific vessels, the Marine or Freshwater FOC, depending on who owns the vessel, will have the final say if the motorboat crew chief candidate has sufficient experience to operate the vessel.

**Personnel Qualification Standard (PQS)  
New Motorized vessels brought into FIU fleet**

For a vessel new to the FIU fleet, the BSO shall determine which operators 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.

## **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 several 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 always the responsibility of every member of the field crew to maintain vigilance of conditions and awareness of potential hazards. Every individual has the authority to stop any activity that they feel places themselves or their co-workers at risk.***

### **5.1 AIRBOAT OPERATOR AND BOAT CREW TRAINING**

Only approved airboat crew chiefs or airboat crew chiefs in training are permitted to drive airboats. An airboat crew chief must have a Florida Boating Safety Education ID Card (see section 3.3.1 of this manual), demonstrated knowledge of material in the FWC airboat operator safety manual through completion of the PQS for airboats, and have documented a minimum of 20 hours supervised drive time in an airboat. In addition, each crew chief must take a qualification examination specific to airboat operation. The information contained in the exam includes information in the FIU Boating Safety Manual as well as information specific to airboating and must be passed with a score of 90% or better.

Airboat operations are carefully regulated within Everglades National Park and may also be restricted on 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. 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 eyewear (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 chinstrap or headset to prevent blowing off), sunscreen, jacket (especially important during coldest months and rainstorms), food, and water. Always bring plenty of water as work conditions in south Florida commonly include 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 is 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, “space” blanket, 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). Before departure, verify that the fire extinguisher is charged and secured. When working in low-water conditions, bring 2x4 boards, a shovel, 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 bowline for travel.

### **5.4 AIRBOAT OPERATIONAL SAFETY PROCEDURES**

As an airboat operator, your actions and decisions affect everyone in the airboat. Therefore, airboat operators 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 operator safety; 3) weather conditions are safe for airboat operations; 4) passengers are aware that airboat operations are beginning; and 5) passengers have life-preservers, eye protection, and ear protection. All airboats operating on Florida waters must be equipped with a rectangular flag, at least 10" x 12" in size and international orange in color, which is displayed at least 10 feet above the bottom of the boat. Additionally, airboat operators 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 tires, 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 operator, whenever possible, to anticipate when unusual airboat maneuvers (running dry surfaces, dense sawgrass, fleeing storms, etc.) may be required and inform passengers so that they can prepare themselves.

As an airboat operator, you are liable for negligent actions or decisions that injure co-workers, passengers, or other persons. **An airboat operator 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 them in unnecessary danger and wishes to return to shore, **YOU MUST** return to shore.

Prior to airboat operations:

- Airboat crew chiefs must file a float plan prior to two (2) hours of departure.

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:
  - Coupler is closed, locked, and secured to trailer ball-hitch.
  - Trailer lights are plugged in and working properly.
  - Safety chains are secured.
  - Winch strap secured to bow eye and locked in place.
  - Wheel-jack is raised and locked into position parallel to trailer arm.
  - Spare tire is properly inflated and secured.
  - 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. 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.
  - If any of these conditions is observed, cancel the trip and bring the issue to the attention of the boat manager.
- 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 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 operator.
- 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 or headset ear protectors), protective eyewear (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), sunscreen, jacket (especially important during coldest months and rainstorms), food, and water (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, non-pyrogenic visual distress signals, 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.
- When operating in marsh conditions, particularly in the dry season, bring 2x4 boards to use as levers to free the boat, 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 bowline for travel.

***\*It is critical to make certain that all equipment is properly stowed and secured 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 a float plan (separate from the required FIU float plan) and check in with park rangers before and after each mission (for all ENP operations; see NPS permits for phone numbers). A float plan includes informing lab manager and crew chief emergency contact (CCEC) 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 difficult to measure and maximum safe engine rpms depend on the engine/propeller in use (in open condition, the airboat will move most smoothly while at a speed sufficient to maintain plane, but not too fast to navigate unexpected obstructions that arise, which include floating peat masses that may not rise noticeably above the water surface).
- Airboat crew chief must have a kill switch attached with lanyard to lifejacket.
- While operating the airboat, a bright orange flag must be raised in the locked position behind the operator so that other vessels can spot airboat in advance; this is required by Florida law.
  - Avoid approaching other vessels too closely, at speed.
  - 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 vessel that maintains course is the one on the starboard side (starboard is the operator's right side).
  - Vessels approaching head-on should drift slightly to starboard to pass along each other's port side (operator's left 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 operator 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 airboat).
- In general, always keep your vision focused ahead of the boat to increase your awareness of approaching conditions and improve your ability to respond in a timely fashion to potential hazards.
- Airboats do not have brakes and cannot go in reverse, and so to avoid hitting an obstacle, the operator 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.
- Many airboat trails are marked with posts (often PVC with reflectors).
- If you need a 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 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 uses engine torque to reduce listing of the airboat.
  - 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 operator 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 windbreaker 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.
  - Hot airboat engines can start fires if they come in contact with dry sawgrass.
- 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, it is important to know emergency contacts.
  - Everglades National Park rangers (305-242-7740)
  - Loxahatchee National Wildlife Refuge rangers (1-800-307-5798)
  - SERC FOC (305-348-4240)
  - Boating Safety Officer (215-359-6661)
  - Your supervisor or lab manager, and 911

## 6.0 AIRBOAT PERSONNEL QUALIFICATION STANDARD (PQS)

### Personnel Qualification Standard (PQS)

#### All Airboats at FIU

Airboat Crew Chief Candidate: \_\_\_\_\_

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 airboat crew chief. The purpose of the PQS is to allow crew members to gain experience and knowledge working under a qualified airboat 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 airboat crew chief/trainer should notify a Qualified Examiner to make arrangements for the “dockside” exam and underway check ride. All airboat operators are considered airboat crew chiefs unless they are under training, being supervised by a certified airboat crew chief. They must fulfill general boating requirements outlined in section 3.3.1 of this manual.

#### **AIRBOAT PRACTICAL CHECKLIST**

1. Pre-flight safety inspection

2. Trailing

\_\_\_\_\_ 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)

Knowledge of engine cut off switch

\_\_\_\_\_ 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 \_\_\_\_\_

**Accomplished:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**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 completed PQS.
- \_\_\_\_\_ Current CPR certification. A copy should be submitted with this completed PQS.
- \_\_\_\_\_ Pass the Airboat Crew Chief Qualification Examination with a score of 90% or better. The exam should be submitted with this completed PQS.
- \_\_\_\_\_ Log at least twenty (20) hours operating an airboat. Hours underway must be logged and signed off by qualified airboat crew chief. A copy of the log should be submitted with this completed PQS

**Accomplished:**

<b>Applicant Signature</b> _____	<b>Date</b> _____
<b>Trainer Signature</b> _____	<b>Date</b> _____
<b>PI Signature</b> _____	<b>Date</b> _____

## 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:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI 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 enough 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:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI 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 proper usage and knowledge of engine cut of switch.
- \_\_\_\_\_ 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, all airboats have non pyrogenic visual distress signals due to the 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:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI 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:**

**Applicant Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**Trainer Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**PI Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

As noted above, I have successfully completed the PQS for FIU airboats and as crew chief acknowledge that I am authorized to operate these airboats in a manner that promotes safety of the vessel, the environment, the research equipment, and most importantly, the personnel aboard the vessel. I do acknowledge if any unsafe operations may occur, my crew chief title may be revoked, and I may be responsible for damage fees.

Signature \_\_\_\_\_ Date \_\_\_\_\_

As this candidate's PI, I acknowledge that they have completed the PQS for FIU airboats with either myself or my designated crew chief trainer and authorize them to operate FIU airboats in a manner that promotes safety of the vessel, the environment, the research equipment, and most importantly, the personnel aboard the vessel. I also acknowledge that if any unsafe operations may occur, their crew chief title may be revoked, and we may be responsible for damage fees.

Signature \_\_\_\_\_ Date \_\_\_\_\_

## **7.0 NON-POWERED WATERCRAFT PROCEDURES**

Non-powered watercraft including sailboats, kayaks, canoes, jonboats (rowboats) and dinghies belonging to FIU, as well as those owned personally by an employee or student, or non-powered watercraft rented or chartered must adhere to the following requirements:

1. Prior to each outing, a float plan, submitted to the BSO or a delegated authority, must be completed including the names of all participants.
2. Non-motorized boating cannot be done solo and must use the buddy system; more than 1 person in a single vessel, or multiple vessels. Multiple vessels traveling together must maintain visual and audible contact.
3. A Non-Motorized Vessel Safety Checklist must be completed and sent to BSO.
4. Each person must have and wear a Coast Guard approved Personal Floatation Device (PFD).
5. At least one boat in the group must be equipped with a means of communication such as a cell phone or handheld radio. These items should be stored in waterproof, floating containers when not in use.
6. At least one boater must have a current certification in CPR, First Aid, and AED.
7. Boats should be equipped with a bow and/or stern line to aid in docking or towing.
8. Lines should be properly stowed when not in use.
9. If your boat capsizes, account for your safety and the safety of others before attempting to recover equipment.
10. Offer your assistance to any other capsized boats.
11. Always remain within sight and voice contact of your group.
12. Do not overload small boats. If not stated on the boat, contact the manufacturer for weight capacity.
13. Get off the water as soon as possible when a storm threatens.
14. Inspect boats frequently to identify cracks or leaks. Damage to a nonmotorized vessel's bulkheads can severely hinder the vessel's buoyancy.

## **8.0 INCIDENT / ACCIDENT REPORTING**

### **8.1 PROCEDURES**

It is unlawful for any person operating a vessel involved in a boating accident to leave the scene without giving all possible aid to the involved persons and without reporting the accident to the proper authorities.

#### Immediately following an accident:

- a.) Determine if the vessel is in danger of sinking or other immediate peril and if everyone is on board.
- b.) If there is more than one vessel involved, ascertain as quickly as possible if the other vessel(s) are in danger or if anyone is missing. Render assistance if this can be done without further danger to your vessel or personnel.
- c.) If necessary, issue a distress call, or notify local emergency medical services (call 911 if accessible, ENP Dispatcher, or use Coast Guard distress channel on VHF).
- d.) If it is necessary to abandon ship, make sure each person has a PFD, that flares or other signaling devices are present, and if possible, a handheld marine radio. All personnel must always remain together and wait for assistance.
- e.) As soon as possible after emergency help arrives, notify the BSO and CCEC.

### **8.2 REPORTING**

Report any incident, not matter how small or seemingly insignificant using the form in Appendix V. By keeping track of the smaller incidents, such as minor engine trouble or basic first aid, we can hope to prevent further incidents. These minor incidents will be used for data compiling and not for disciplinary action unless negligence is obvious.

### **8.3 DISTRESS CALLS**

It is the responsibility and discretion of the crew chief or vessel operator to make the decision to request assistance at sea in the event of an emergency. However, for any of the following reasons it is mandatory to request emergency assistance:

- When the vessel has become seriously disabled or there is reason to believe it is in the process of becoming seriously disabled.
- When there is serious injury.
- When the vessel is likely to sink.
- When it becomes necessary to abandon ship.

In the event of a serious accident or vessel in distress event, one or all the following procedures must be used to call for help.

- Digital Selective Signaling (DSC) – If vessel radio is equipped with DSC/GPS follow the directions for activation, then immediately follow-up with a voice MAYDAY call.
- MAYDAY-On frequency 2182 (offshore) or Channel 16 (near-shore <25-50 nautical miles) state:
  - “MAYDAY, MAYDAY, MAYDAY.”
  - Latitude and longitude or proximity to known landmark or aid to navigation.
  - Nature of emergency.
- PAN – On Channel 16 state:
  - “PAN, PAN, PAN”
  - “All stations, or the name of a particular vessel or station.”
  - “This is (boat name).”
  - “We (nature of emergency).”
  - “We require (type of assistance needed).”
  - “This is (boat name) over.”
- Activate Emergency Position Indicating Rescue Beacon (EPIRB).
- Call 911 if close enough to cell tower.
- If no radio or electronic communication is possible, use flares or other distress signaling devices.

## **8.4 NOTIFICATION**

The operator of a vessel involved in a boating accident where there is personal injury beyond immediate first-aid, death, disappearance of any person under circumstances which indicate death or injury, or if there is damage to the vessel(s) and/or personal property of at least \$2,000, must, by the quickest means possible, give notice to one of the following: the Florida Fish and Wildlife Conservation Commission, the sheriff of the county in which the accident occurred, or the police chief of the municipality in which the accident occurred, if applicable. The U.S. Coast Guard must be notified in writing within 48 hours.

After any serious boating accident or incident which results in the disappearance of any person, a fatality, personal injury which requires medical attention beyond first-aid, or damage to vessel(s) and or personal property exceeding \$2000 diving accident or incident, the following personnel must be notified as soon as possible and no sooner than 24 hours:

- Boating Safety Officer
- Chairman, Boating Safety Committee

The Boating Safety Officer will investigate any serious accident and a written report will be submitted by the Boating Safety Officer within one week to the Chairman, Diving and Boating Safety Committee with the following information:

1. Name, address, phone number of the principal parties.
2. Summary of experience of operators involved.
3. Location, description of area of operation and conditions that led up to the incident.
4. Disposition of the case.
5. Recommendations to avoid repetition of incident.

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:

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

In the event of an accident:

- Follow Call Tree located in the appendix.
- Provide no information at any time in the presence of the media.

## **9.0 CHARTERING AND RENTALS**

If a commercial charter vessel is engaged and compensation is provided under the auspices of FIU, it is the responsibility of the supervising faculty member, staff, or principal investigator to assure that the vessel is properly licensed, insured, and if applicable, inspected. Further, vessel operators must have and maintain a current captain's license appropriate to the tonnage of the vessel and number of passengers on board.

If a vessel is rented or chartered "bareboat" without a hired operator and compensation provided under the auspices of FIU the supervising faculty member, staff, or principal investigator must assure that the vessel has had an annual safety inspection and meets all required safety regulations.

The operator of the “bareboat” vessel will meet the minimum requirements set forth by the FIU boating safety manual for type and size of vessel.

A Float Plan must be submitted prior to departure to the BSO and Crew Chief Emergency Contact who will begin notification should the boat fail to return.

## **10.0 VOLUNTEERS**

All volunteers must submit forms A and B to FIU HR. Once these are submitted, volunteers must fill out a waiver for the department they are working in. Once the waiver and HR forms A and B are submitted and approved, the volunteer may work on the vessel in accordance with the FIU Boating Safety Manual and are covered by workman’s compensation. Volunteer forms for HR can be found at: <https://hr.fiu.edu/employees-affiliates/affiliates/> listed under Volunteers & Interns - Forms.

Interns and volunteers under the age of 18 may not join on any FIU owned vessels.

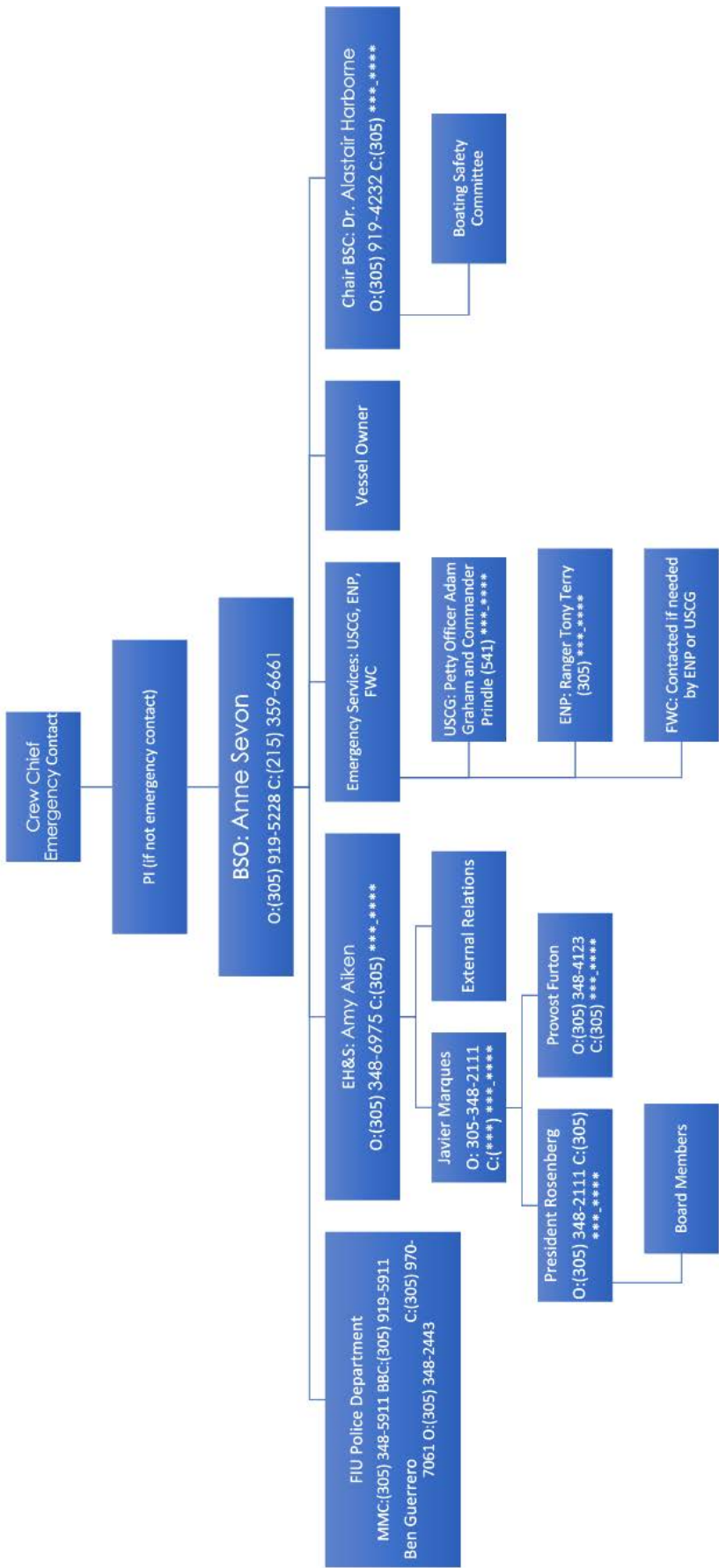
## **11.0 HURRICANE PROCEDURES**

It is the responsibility of all boaters to monitor weather throughout the year and make knowledgeable and informed decisions regarding the safety of the vessel, boaters, and equipment. If at any time there is question, the BSO can be contacted.

In case of an approaching hurricane, refer to the ARB Storm Response Plan for Aquarius Reef Base vessels and to the FIU Storm Response Plan for all other vessels under FIU auspices.

## **APPENDIX I: FIU BOATING CALL TREE**

The FIU Boating Call Tree is to be followed in case of an emergency or incident. Do not skip levels, and the sequence must be followed. If the BSO cannot be reached, notify the Chair of the Boating Safety Committee. In cases where there is no injury or danger, and resolving the situation remains within FIU or affiliates, the BSO or designee can discontinue the call tree. Any case which involves the US Coast Guard, Emergency Medical Services, or multi-agency searches, the entire call tree must be completed.





## **APPENDIX II: DUTIES OF CREW CHIEF EMERGENCY CONTACT**

It is the duty of the Crew Chief Emergency Contact to monitor when the vessel leaves and returns to dock. The Crew Chief Emergency Contact must:

- Remain on land.
- Remain near the agreed upon form of communication (ex. cell phone).
- Be of sound and sober mind.
- Have knowledge of where the vessel is going.
- Know what personnel is onboard.
- Have knowledge of what activities or type of research they are doing.

### Timeline for a Crew Chief Emergency Contact (CCEC):

1. Notified that they are the Crew Chief Emergency Contact.
  - a. Given information about personnel and activity/research
  - b. Given information about destination, and expected route
  - c. Told what time the vessel is expected back to shore
2. Boaters on vessel may check in throughout the day. Boaters must check in if:
  - a. Route changes
  - b. Destination changes
  - c. Return time changes
  - d. Non-emergency incident occurs
  - e. Emergency occurs
3. Return time
  - a. Boaters on vessel notifies CCEC that they are safe and back at dock.
  - b. Boaters do not check in at agreed-on time
    - i. CCEC should attempt to contact boaters.
    - ii. If cannot contact boater, begin call tree in Appendix I.

## APPENDIX III: FIRST-AID KIT INVENTORY

### Standard Inventory

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1	Adult CPR Mask
1	Anti-itch/bite relief
6	Antiseptic/Alcohol Wipes
5	Band-Aid Adhesive Bandages
1	Blister prevention/moleskin
2	Burn Jel External Analgesic Cream
1	Combat Application Tourniquet
2	Drain Sponge 2" x 2"
2	Drain Sponge 4" x 4"
1	Elastic Bandage 3"
2	Extra Large Band-Aid adhesive bandages
2	First Aid Antiseptic Burn Cream
1	Glucose Gel 15g
1	Hydrogen Peroxide 2oz. Spray Bottle
1	QuickClot Advanced Clotting Sponge
1	Sam Splint 36"
1	Self-Adhesive Bandaging Tape 4" x 5"
1	Sterile Abdominal Pads 8" x 10"
1	Sterile Burn & Wound Dressing 4" x 4"
2	Sun Burn relief
4	Surgical Gloves Non-Sterile (2 Pairs)
1	Surgical Tape 2"
1	Trauma Shears
1	Triangular bandage
2	Triple Antibiotic Cream
1	Tweezers
1	Water-Jel Burn Dressing 18" x 8"
1	Xeroform Petrolatum Gauze Dressing 5" x 9"

**APPENDIX IV: FIU BOATING SAFETY PROGRAM SWIM TEST & ACKNOWLEDGMENT FORM**

**Boating Safety Program Swim Test & Acknowledgement Form**

**Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**PID:** \_\_\_\_\_

\_\_\_\_\_ Enter the water and submerge head

\_\_\_\_\_ Swim 100 yds/m (4 lengths/2 laps)

\_\_\_\_\_ Tread water for 3 minutes

\_\_\_\_\_ Exit pool without use of ladder

\_\_\_\_\_  
Approved Designee of Boating Safety Committee Name (print)

\_\_\_\_\_  
Approved Designee of Boating Safety Committee Signature

Option 1:

As noted above, I have successfully completed the swim test and as crew, fully acknowledge that I am only authorized to take my Personal Floatation Device (PFD) off while the research vessel is stationary (either moored or anchored).

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Option 2:

Due to the \_\_\_\_\_ (attached) certification for proof of swimming ability, I find myself exempt from the above swim test and as crew, fully acknowledge that I am only authorized to take my Personal Floatation Device (PFD) off while the research vessel is stationary (either moored or anchored).

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Option 3:

I have chosen to not take the above swim test and fully acknowledge that it is my responsibility to always wear my Personal Floatation Device (PFD), even when the research vessel is stationary (either moored or anchored).

\_\_\_\_\_  
Scientific Boater Signature

\_\_\_\_\_  
Boating Safety Officer Signature

## **APPENDIX V: FIU BOATING SAFETY PROGRAM – INCIDENT REPORT**

### **FIU Boating Safety Program - Incident Report**

**Date:**

**Time:**

**Vessels involved:**

**Place of incident:**

**Personnel:**

**Nature and severity of injuries:**

**Damage Assessment:**

**Description of what happened:**

**Law enforcement agencies notified and/or involved:**

**First Aid administered:**

**Injured persons require emergency evacuation:**

**Administrative contact for follow up and investigation:**

**Witnesses:**

**How could this have been prevented?:**

**Follow Up:**

**Notes:**

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**This area for Boating Safety Committee and Boating Safety Officer Comments:**