**UVM**

**Small Boat**

**Safety Manual**

**May 2014**

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# OVERVIEW

* 1. **PURPOSE**

Small boat operations involve certain risks that must be addressed prior to beginning any fieldwork. Knowing what equipment is required to be on the boat, the rules of the road, understanding the weather and its effects on the marine environment, and even the variations in operating one type of boat compared to another are all obstacles that must be overcome in order to minimize the risks to those on board, as well as maximizing efficiency in data collection.

The purpose of this manual is to establish good boating practices, to ensure that all boating is conducted in a safe and efficient manner, and to familiarize participants with the basic procedures that affect their own safety and the safety of their fellow users.

All UVM small boat operators and passengers are required to observe the provisions of this guide.

* 1. **APPLICABILITY**

The provisions of this manual apply whenever UVM personnel are using small powerboats to conduct research and whether or not the University owns the boat.

Specific examples of boat operations under UVM auspices include but are not limited to: persons engaged in research; employees acting within the scope of their employment; students engaged in any research operation including those receiving or providing boat operation instruction or involved in boat checkouts.

For the purposes of this program, a small boat is ***any boat less than or equal to 27 feet in length.***

## RESPONSIBILITY

**2.1 COMMITTEE**

The Dean’s Office of the Rubenstein School of Environment and Natural Resources will appoint representatives from boat users to serve on the Rubenstein Ecosystem Science Laboratory Boat Safety Committee. The Dean’s Office will maintain one seat on this committee has final judgment on a person’s competency in boat operations should a conflict arise. The Dean’s Office in conjunction with this committee also has the responsibility of approving any changes to this safety manual.

**2.2 BOATING SAFETY MANAGER**

The Rubenstein Ecosystem Science Laboratory Boat Safety Committee will appoint a Boating Safety Manager in each location with UVM-owned and operated vessels.

**2.3 PRINCIPAL INVESTIGATORS, ACADEMIC ADVISORS & SUPERVISORS**

Principal Investigators, Academic Advisors and Supervisors will assure all small boat operations that are part of a program under their direction are conducted in accordance with this manual. It is required that Principal Investigators and Academic Advisors who operate UVM boats or supervise those using the boats have taken the required training that is published in this manual. The Principal Investigators, Academic Advisors and Supervisors are also responsible for assuring all the required safety equipment as outlined in Appendix III is on board prior to use.

Principal Investigators, Academic Advisors and Supervisors are required to submit the Boat Operator Statement of Responsibility form for each boat operator working under them. This form is Appendix I in this manual.

**2.4 BOAT OPERATOR**

In all boat operations, one individual shall be responsible for boat operations and designated as the boat operator. This term does not imply that this person must be at the helm at all times; however, s/he is responsible at all times and the person at the helm must have completed all required trainings prior to assuming boat operation responsibilities. The designated boat operator is responsible for all aspects of boating operations. In the presence of a more experienced staff or faculty member in the boat, it is reasonable that safety decisions regarding boat operations may be made collaboratively. These responsibilities include, but are not limited to:

1. The safe navigation of the vessel to and from the site(s) of operation.
2. The safe operation of all equipment, either in the collection of data, or the handling of the vessel.
3. Safe transport of the vessel to and from the launch site.
4. Insuring that all required operational and safety equipment is on board before getting underway and properly stowed upon return
5. Enforcing safe behavior of all persons on board, including the wearing of Coast Guard approved PFD’s at all times when outside the cabin or when on board an open skiff.
6. Acquainting all passengers with safety equipment, it’s proper use, potential hazards and an emergency action plan before departure.

Non-compliance with this manual is to be reported to the Dean’s Office for review by the Boat Safety Committee.

**2.5 PASSENGERS**

Passengers are required to comply with this manual as it pertains to them. The boat operator is in charge at all times. Passengers are required to wear Coast Guard approved PFDs at all times when outside the cabin or when on board an open skiff unless they are engaged in SCUBA diving activities. These safety guidelines should not be deviated from unless a specific situation has occurred where following a guideline could cause personal injury – this decision should be made by the boat operator. If the passenger does not feel the weather and/or vessel condition is safe, it is their responsibility to inform the boat operator and not participate in the cruise. The passenger should inform the Boating Safety Manager of any safety concerns.

##  ADMINISTRATIVE PROCEDURES

**3.1 GENERAL**

The regulations in this manual must be observed wherever small boat operations are carried out under the auspices of UVM. All operators must follow the provisions of the manual and all equipment used must conform to U.S. Coast Guard requirements. When using a small vessel owned by a cooperating agency, boat operators and passengers who are staff, faculty or students of UVM must comply with this manual *and* any boat use policies established by the cooperating agency.

**3.2 OPERATION AREAS**

The regulations herein shall be observed at all locations where boating operations are conducted under the auspices of the UVM Small Boat Program.

**3.2.1 Boat Operator Training**

Boat operators are expected to have 1) Boating Safety Certificate Course for Vermont or equivalent and 2) competencies for handling the vessel they intend to use in the expected environment and condition for their fieldwork, and 3) familiarity with the vessel. The training requirements consist of three parts.

**A. Theoretical Knowledge**

Theoretical knowledge and an understanding of the “Rules of the Road” also known as [US Navigation Rules](http://www.navcen.uscg.gov) can be gained through any of several formal boating courses. The following online class is required training for all boat operators to gain this theoretical knowledge:

[Vermont Boating Safety Certificate](http://www.boat-ed.com/vermont/?gclid=CO37jIGOrL4CFUMQ7AodzksABQ)

Submit the course completion certificate to the Boating Safety Manager for a copy to be kept on file.

**B. Operating Experience**

Boat operating experience is invaluable, and there is no substitute for time at the wheel on the water. Principal Investigators, Academic Advisors and Supervisors are responsible for making sure that boat operators have the experience to recognize dangers associated with Vermont waters.

To ensure that boat operators have basic on-the-water skills, a training program that provides hands-on demonstration of on-water skills (Appendix IV) is required of all boat operators that lack formal certification (e.g. Coast Guard Captain’s License). Boat operators can gain these skills through a formal course (e.g. the AMSEA Small Boat Operator Training course, a Motor Boat Operator Certification Course (MOCC) or an equivalent) or through an apprenticeship program of going out on the water with an experienced boat operator and then completing a demonstration of skills with a Principal Investigator, Academic Advisor, Supervisor or the Boating Safety Manager. Individuals with significant previous experience may demonstrate their knowledge of the skills in the checklist in Appendix IV through an on-the-water skills demonstration and bypass this training/apprenticeship program.

**C. Vessel Orientation**

In addition, all operators will need to complete a one-time boat orientation for the particular vessel they will be using. This orientation will include an overview of vessel-specific procedures, including trailering and launching, starting the motor, fueling, troubleshooting, and operating the vessel. It is the responsibility of the PI, Academic Advisor, Supervisor or the Boating Safety Manager to perform the orientation according to these guidelines.

**3.3 BOAT AND EQUIPMENT**

All boats and equipment used by authorized boat operators will conform to U.S. Coast Guard requirements and the standards set forth in this manual.

The operator shall be familiar with the operation of the equipment and shall inspect all emergency equipment prior to departure (see Appendix III for a list of required equipment). Special attention should be given to Personal Floatation Devices (PFDs) and communication equipment (radios and cell phones). The operator shall notify the Principal Investigator, Academic Advisor, Supervisor and the Boating Safety Manager of any malfunctioning equipment discovered during their operation. Coast Guard approved PFDs are to be worn at all times outside the cabin. On boats equipped with VHF radio, operator must know how to operate the radio.

**3.4 FLOAT PLAN**

All Operators of boats must leave a float plan with a responsible party on shore (Appendix II). The minimum requirements for a float plan are:

1. The boat being used;
2. The planned date, time and place of departure;
3. The planned date, time and place of return;
4. The site(s) of operation;
5. The Principal Investigator;
6. The names and affiliation of people on board;
7. Communication schedule, i.e. cellular telephone number and/or VHF working frequency;
8. Safety equipment on board;
9. Emergency contact information for people on board;
10. Cognizant Person will designate who is responsible for knowing if the boat is overdue and what actions will be taken if this is the case.

 **3.5 COMMUNICATIONS**

Scheduled communications with agreed upon frequency shall be maintained with a responsible person. To initiate any change in an approved schedule, the shore contact must be notified and changes confirmed. If the boat operator is unable to notify the shore contact or assigned alternate, the filed plan must be adhered to. Failure to maintain communications will cause initiation of contact with the U.S. Coast Guard.

 **3.6 ENVIRONMENTAL CONDITIONS**

 Use of any boat is always contingent upon environmental conditions. Responsibility for monitoring

 weather and water conditions, including wind, sea conditions, river discharge levels, flood

 advisories, etc., prior to departure and during operations resides with the operator. When small craft

 advisories are issued by the National Weather Service for the waters of a planned operation or

 experiment, boats that are scheduled for operations within that area should postpone their operations

 until more favorable conditions prevail.

 **3.7 SCUBA DIVING**

Any persons SCUBA diving are required to contact the UVM RSENR Diving Safety Officer and to observe the University’s requirements for safe diving.

 **3.8 SAFETY CHECKS AND GENERAL BOAT USE GUIDELINES**

 **3.8.1 Prior to Departure on the Day of Checkout the Boat Operator Shall:**

1. Perform a functional inspection of the boat and all equipment
2. Check all fluid levels in the vessel.

Conduct a vessel and trailer “walk around.”

1. Check for all safety equipment, including PFDs and communications equipment.
2. Assess all environmental risk-weather conditions, river/lake conditions.
3. Inform all passengers of emergency procedures - man-overboard, fire, and abandonment and methods for seeking assistance.
4. Inform all passengers of the location of emergency equipment including PFDs.
5. Complete a verbal risk assessment with all passengers, to discuss additional hazards and appropriate precautions for the particular environment, weather, and objectives of the operation.
6. File a **COMPLETE** Float Plan with a responsible shore contact person (see Appendix I). Please note: All the information on the Float Plan is required. Do not leave sections blank, this document is your lifeline, take the time to complete all information. Leave one copy of the Float Plan with a responsible party.

 **3.8.2 While Underway**

It is expected that all operators and passengers will adhere to the guidelines in the safety manual and follow [US Navigation Rules](http://www.navcen.uscg.gov). This includes, but not limited to, appropriate and safe behavior, PFD usage, and remembering you represent UVM when you are on the water and in transit.

 **3.8.3 After Returning**

1. Upon return the operator will check in with the shore contact person.
2. Use a fresh water hose to thoroughly rinse and scrub the boat and trailer. Be sure to remove all mud and debris. Pay close attention to the trailer brakes.
3. If freezing conditions will occur prior to the next boat use, fog the motor and/or winterize the boat to prevent engine damage. Make sure the procedures for doing so are followed.
4. Make sure all electronics are shut down. Turn off battery switches (if applicable).
5. Take all of your trash off the boat. Tidy up the boat. Properly stow all items. Leave the boat cleaner that you found it!
6. Park the boat where you found it and place wheel chocks. Conduct a vessel and trailer “walk around.”
7. You are expected to return the vessel with full fuel levels.
8. Note any problems with the boat or equipment that occurred and inform the Boating Safety Manager within 24-hours.

 **3.9 TRAILERING AND LAUNCHING GUIDELINES**

These are general trailering and launching guidelines. Note that some of the specifics will vary depending on the vessel.

**3.9.1 Trailering**

1. Check that the boat is properly secured to the trailer and that the motors are in the trailering position (for most boats, the motors should be up and resting on tilt support lever).
2. Secure lines in the boat so they won’t get caught in a trailer wheel.
3. After hooking up the trailer check the following:
	1. The hitch is secure and the lock/pin is in place.
	2. The trailer chains are crossed under the hitch and secured so that the end of the hook

is facing the boat.

* 1. The emergency brake cable is secured to the vehicle with the end of the hook facing the boat.
	2. All of the lights are functioning properly.
	3. The tires are properly inflated (NOTE: recommended psi depends on the specific boat & trailer). Check for a spare tire and make sure it is inflated properly.
1. A spotter is required standing outside the University vehicle when a trailer with or without a vessel is backing up. The spotter should always stay in the driver’s sight.

 **3.9.2 Launching**

 Before backing the trailer into the water check the following items:

1. Drain plug(s) are installed (if applicable).
2. The securing straps on the back of the boat have been removed.
3. Disconnect the trailer lights.
4. The battery switch has been turned on (if applicable).
5. The fuel switch is in the on position (if allocable).
6. The trailering lock is off (if the trailer has one).
7. The tilt support lever is up. Motors are up and ready to be lowered.
8. All of your gear has been loaded into the boat and you are ready to deploy.

 Once the boat has been backed into the water to the point that boat is buoyant, lower motor and get it

 started before releasing the boat from the trailer. Once the engine is started allow it to warm up briefly

 until you are confident that it will not stall.

 **3.9.3 Retrieving**

Retrieving the boat can be difficult if the conditions are not fair. Wind and currents need to be

considered on your approach to the trailer. Once you have the boat on the trailer and secured by the winch and security chain, make sure it is properly secured and pull out and into the prep area and do the following:

1. Secure the rear of the boat with the straps.
2. Raise the engine; lower the trailering lock, and lower engine into the locked position.
3. If there is a kicker motor on the boat, secure the kicker bracket and make sure the motor is locked in the down position. Some vessels will have ratchet straps for securing the kicker motor-this may vary from boat to boat.
4. Remove drain plugs to allow any water to drain from the boat.
5. Secure all loose lines and gear.
6. Turn off the battery switch and fuel switch (if applicable).
7. Lower any antennae or objects that project above the boat.

 **3.10 RECORD KEEPING AND ACCIDENT REPORTING**

**3.10.1 Routine Records**

The Boat Safety Manager or designee will keep a log of usage for all University owned vessels, including a log of scheduled and unscheduled maintenance for boat, boat trailer and outboard engine. The Boat Safety Manager will also maintain all records of training and ensure that all training/competency requirements identified in this manual are met. These training records will be kept in the individual boat logs.

**3.10.2 Accident Reporting**

*All* accidents, incidents, injuries and illnesses involving boats must be reported to the Boating Safety Manager, the RSENR Dean’s Office and the Department of Risk Management & Safety. The Boating Safety Manager and/or the Dean’s Office will contact the appropriate Risk Management personnel. The boat operator will be required to give a full written accounting of the accident/incident.

**APPENDICES**

**APPENDIX I Boat Operator Statement of Responsibility**

**APPENDIX II UVM Float Plan (2 Pages)**

**APPENDIX III Mandatory Safety Equipment**

**APPENDIX IV Skills Development and Checklist (5 Pages)**

**APPENDIX I**

**BOAT OPERATOR STATEMENT OF RESPONSIBILITY**

I understand that as a designated boat operator I am responsible for all aspects of boating operations, regardless of the presence of any senior staff or faculty in the boat. These responsibilities include, but are not limited to, the safe navigation of the vessel to and from the site(s) of operation, the safe operation of all equipment, safe transport of the vessel to and from the launch site, insuring that all required operational and safety equipment is on board, and enforcing safe behavior of all persons on board. I have thoroughly read and understand the contents of the Small Boat Use & Safety manual.

Boat Operator Date

**APPENDIX II**

**UNIVERSITY OF VERMONT FLOAT PLAN**

This 2 page document is for your benefit and is required. In the event of mechanical difficulties, weather related problems, or other boating hazards, having a plan and the proper equipment to deal with these issues can make a huge difference in the outcome. Fill out this form completely and leave it with a responsible party on shore. In the event your return is delayed and communications are lost, this shore party should activate the appropriate response as detailed on this form. It is recommended that you bring a second copy with you in the boat. Please be specific in the areas you will be operating in.

Name and description of vessel:

Purpose of trip:

Operator Name: Telephone #:

Local address:

Principal Investigator/Academic Advisor/Supervisor On board?

**SURVIVAL and SAFETY EQUIPMENT ( Check as appropriate)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | PFDs (# ) |   | Paddles |  |   | Bell/whistle/horn\* |
|  |  |  |  |  |  |  |
|   | *Working Radio\** |   | Day Signals\* |   | Cell phone (# ) |
|  |  |  |  |  |  |  |
|  | Monitoring Channel:  |   | Night Signals\* |   | Exposure Protection |
|  |  |  |  |  |  |  |
|   | Anchor |   | Line (Amount: ) |   | Fire Extinguisher\*1 |
|  |  |  |  |  |  |  |
|   | Bailing Device |   | Tool Kit |  |   | Satellite Phone |
|  |  |  |  |  |  |  |
|   | Compass and Charts |   | First-aid kit | \* | Required Equipment |
|  |  |  |  |  | 1 | see USCG regulations for details |
|   | Food/Water |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | School Equipment checked out:  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**NOTIFICATION**

Shore Contact: Phone#

If no contact is made with Shore Contact by: (time), the contact will:

**Call the U.S. Coast Guard Station Burlington at 802-951-6792.** After contacting the U.S. Coast Guard, call the Manager: Phone #

FOR TRIPS OVERNIGHT: the Shore Contact will be contacted each day by the time certified above.

**UNIVERSITY OF VERMONT FLOAT PLAN**

**TRIP DETAILS**

**Purpose/Travel Notes:**

**Departure Date:** Time: **Return Date:** Time:

Departing From: Returning To:

All destination(s) including planned route:

**Latest Time of Return**:

**Weather Considerations:**

Forecast/Advisories: Source:

**PEOPLE ON BOARD**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **NAME** | **GENDER** | **AGE** | **PHONE #** | **EMERGENCY CONTACT(Name, Phone#)** |
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**APPENDIX III**

**MANDATORY SAFETY EQUIPMENT**

**Don’t Leave Port Without It!**

**We’ve put together a list of required and recommended boating equipment:**

|  |  |  |  |
| --- | --- | --- | --- |
| U.S. COAST GURAD MINIMUM EQUIPMENT REQUIREMENTS |   |   |   |
| **EQUIPMENT** | Boats lessthan 16 feet | 16 toless than26 feet | 26 to lessthan 40 feet | 40 to notmore than65 feet |

Recreational boats must carry Coast Guard approved Personal Floatation Devices, in good and serviceable condition, and of the appropriate size for the intended user. Wearable PFDs must be readily accessible, not stowed in bags, locked or closed compartments or have other gear stowed on top of them. Throwable devices must be immediately available for use. There must be one Type I, II, III or V PFD for each person on board or being towed on water skis, etc., PLUS one Type IV throwable device. Throwable, Type IV PFDs may no longer be substituted for wearable types on boats less than 16 feet. State laws on mandatory PFD wear may vary.

**3.10.2.1.1.**

**Personal Floatation Devices**

**(Life jackets)**

At least two B-1 type approved portable fire extinguishers; OR at least one B-2 type.

At least three B-1 type approved portable fire extinguishers; OR at least one B-1 type PLUS one B-2 type.

**Fire Extinguishers**

**(Coast Guard Approved)\***

At least one B-1 type (see below) Coast Guard-approved hand portable fire extinguisher. Not required on outboard boats less than 26 feet long and not carrying passengers for hire if the construction of such motorboats will not permit the entrapment of explosive or flammable gases or vapors, and if fuel tanks are not permanently installed.

Must carry visual distress signals approved for daytime and nighttime use. For pyrotechnic devices (hand-held or aerial red flares, floating or hand-held orange smoke, and launches for aerial red meteors or parachute flares) a minimum of three required, in any combination that totals 3 for daytime and 3 for night use. Three day/night devices will suffice. Devices must be in serviceable condition, dates not expired and stowed accessibly. Exceptions are open sailboats less than 26 feet long and not equipped with propulsion machinery, and manually propelled boats; both required to carry only night signals.

Must carry approved visual distress signals for nighttime use.

**Visual Distress Signals**

Every vessel 39.4 (12 meters) long, but less than 65.6 feet (20 meters) must carry a bell and a whistle.

Every vessel less than 39.4 feet (12 meters) long must carry an efficient sound-producing device.

**BELL, WHISTLE**

**BACKFIRE FLAME ARRESTOR**

One approved device on each carburetor of all gasoline engines installed after April 25, 1940, except outboard motors. Device must be marked to show compliance with SAE J-1928 or UL 1111 Standards.

Containing a gasoline engine with a cranking motor must contain power-operated exhaust blowers controllable from the instrument panel.

**VENTILATION (boats built after April 25, 1940)**

At least two ventilator ducts for the purpose of efficiently ventilating every closed compartment that contains a gasoline engine and every closed compartment containing a gasoline tank, except those having permanently installed tanks vented outside the boat and containing no unprotected electrical devices. Also, engine compartments.

**VENTILATION (boats built after August 1, 1980)**

At least two ventilator ducts fitted with cowls or their equivalent for the purpose of properly and efficiently ventilating the bilges of every closed engine and fuel tank compartment of boats constructed or decked over after April 25, 1940, using gasoline as fuel and other fuels having a flashpoint of 110 degrees F or less.

\*When fixed fire-extinguishing system is installed in machinery spaces, it will replace on B-1 type portable fire extinguisher.

Coast Guard minimum equipment requirements vary with the size of the boat, type of propulsion, whether operated at night or in periods of reduced visibility, and, in some cases, the body of water on which it is used. For a more thorough discussion and complete details on how many and what types of equipment you must have aboard your boat use this link for the [“Federal Requirements for Recreational Boats”](http://www.uscgboating.org/regulations/federal_requirements_brochure.aspx) from the Coast Guard.

**Recommended Equipment:**

Coast Guard minimum requirements are just that, minimum.

**It is suggested you carry additional safety equipment, such as:**

* Anchor with sufficient line/chain (at least five times water depth)
* Bailer (bucket)
* Oars or paddles
* First Aid Kit
* VHF radio – Cell Phone
* Extra fuel & water
* Tool kit
* Sun protection
* Flashlight
* Personal Locater Beacon (PLB)
* Grab and go Survival Container

**APPENDIX IV**

***AMSEA Vessel Operation Drill Sets, Certification Skills and Check off List***

**RB Drill Sets**

Verbalize ALL Throttle And Direction Changes, Wait for Receive Crew Responses.

1. Slalom Course
2. Figure Eights
3. Object Avoidance/Advance & Transfer
4. Stopping Distance (Safe Speed)

**++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++**

1. **Slalom Course**

**Set 3 or 4 buoys in a straight line, approx. 2 boat lengths apart each.**

 **Return**

1. Begin…Bow-on to first buoy
2. Back thru all (engines trimmed up lifts stern…)
3. Variations 1 – 2 engines
4. Bow thru all both engines

*(Engine(s) Trim, Advance and Transfer, Wheel & Throttle Ctrl, Crew Positioning and Help, Lookouts, Close-Qtrs…)*

**++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++**

1. **Figure Eighths 8s**

**Set buoys approx. 200+ yards apart**

1. Begin 8s at minimum planning speed.
2. Turn as tight around buoys as possible.
3. Increase speed by approx. 500 rpms and control max. to short of hooking a chine.

This is NOT an E or J turn but continuous turns

*(Hands on Wheel & Throttle, Centrifugal force, Advance and Transfer, Trim and Throttle, Safe Turning Speed, Verbalization, Crew Positioning, Lookouts assigned)*

**++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++**

1. **Object Avoidance / Advance & Transfer**

**Set one buoy/fender for run**

 Or

 Or

1. Begin first run(s) at minimum planning speed.
2. Instructor tap Coxn to announce object in time to closely avoid Approx. 30 ft.
3. Increase subsequent runs by 500+rpms
4. Direction to Turn? Fish-tale to Avoid?

*(Hands on Wheel/Throttle, Advance and Transfer, Trim and Throttle, Safe Turning Speed, Verbalization, Crew Positioning, Lookouts assigned,)*

**++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++**

1. **Stopping Distance/Safe Speed**

**Use a fixed object attached to bottom (away from fast currents)**

 *………………………..*

1. Begin first run(s) at minimum planning speed.
2. Abeam of object pull throttles to Clutch (not neutral)
3. Note stopping distance/seconds (stopped when wake catches stern)
4. Increase subsequent runs by 1000rpms until reaching full throttle.
5. Note distance/seconds between *Minimum-Planning and Full Throttle.*

Note:

1. Instructor may throw over a fender to mark advance limits between runs.
2. Reducing to clutch instead of neutral keeps prop in gear for more drag…

(Hands on Wheel/Throttle, Advance, Trim and Throttle, Safe Stopping Speed, Verbalization, Crew, Positioning, Lookouts)

**SKILL-BASED OPERATOR CERTIFICATION**

Certification of operators is intended to assure that any person who operates a NOAA small boat has passed minimum criteria relating to knowledge and skill. The wide range of operational risks inherent in the vast array of NOAA small boat operations dictates that field activities must be responsible for implementing operator skill certification criteria. The importance of text-based training and evaluation toward establishing and verifying a basic knowledge base for all small boat operators is not superseded or replaced by certification through demonstration of practical skills.

Skill criteria should be used:

1. In conjunction with underway time accumulated without accident in order to establish “grandfathering” criteria for existing operators.
2. To supplement the minimal operator training criteria in NAO 217-103 when that criteria is not sufficient or not applicable to address specific operational risks, or
3. As a means to ensure that boat operations are conducted in a safe and professional manner, which when visible to the general public, will reflect positively on NOAA.

The following exercises involve various degrees of small boat handling expertise and can/should be considered in developing skills-based certification criteria. For skill based certification to be meaningful, the successful demonstration of the skills must include specific criteria for evaluation and passing. For example, being able to dock a boat without causing a 2” bolt standing on its head to fall over, is a specific criteria for passing a docking exercise.

**Responsibilities and Requirements as a NOAA Small Boat Operator**

**Operational Risk Assessment**

**Vessel Inspections**

* Vessel integrity
* Engineering
* Safety Equipment

**High Speed Operation and Handling Theory & Practical**

* Demonstrate bringing the vessel up to full speed
* Demonstrate and describe importance of maintaining proper lookout
* Conduct tight radius turns without causing propeller cavitation and describe signs of propeller cavitation
* Demonstrate high speed avoidance techniques including turns and emergency astern

**Close Quarters Maneuvering Theory & Practical**

* Maneuver boat through 360 degrees within two boat lengths by utilizing back and fill turns
* Maneuver boat astern around obstacles/buoys
* Maneuver boat through anchorages

**Docking/Undocking Theory & Practical**

* Demonstrate use of various lines (fore and aft spring, end lass, breast, stern, bow) in getting away from and alongside a dock
* Demonstrate docking and undocking in currents and wind
* Demonstrate mooring a boat in a slip

**Anchoring Theory**

* Demonstrate dropping anchor, setting anchor, selection of proper scope for bottom characteristics
* Describe effect of scope, bottom type, and environmental conditions on anchor watch radius
* Raise anchor and discuss tactics or cautions in freeing fouled anchors

**General Operations Theory & Practical**

* Maneuver and hold station within 1 boat length of a fixed object (buoy, mooring, piling)
* Maneuver and take an adrift object alongside and aboard the vessel (PFD, float)
* Deploy and retrieve SCUBA divers **– Theory**
* Demonstrate coming alongside an underway vessel

**High Risk Operations Theory & Practical**

* Describe risks and demonstrate proficiency for landing and launching boats from low energy coasts
* Describe risks and demonstrate techniques for landing and launching boats in high energy costs (Surf Zone or Beach landings).
* Describe risks and demonstrate techniques for towing vessels alongside or astern
* Describe risks (stability and general risks) and demonstrate deploying and retrieving fishing gear or heavy apparatus **– Theory**

**Miscellaneous Theory**

* Demonstrate safe speed and navigational techniques for various situations including reduced visibility, heavy weather, or large traffic avoidance
* Describe precautions to take prior to encountering heavy weather
* Identify of signs of impending weather
* Identify local hazards to navigation

**Engineering Theory**

* Underway troubleshooting
* Corrective Actions

**Damage Control Theory**

* Emergency corrective actions