**MOCC Teaching Aids (v2010-10-26)**

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# MOCC Teaching Aid - Pool Session

Typically for this session students are taught first as a class then broken up into four groups and taught at four “stations”, rotated in 20-minute intervals.

**Class Exercise**

Immersion suit - Describe how an immersion suit is stowed. Use a student volunteer to demonstrate how to get into an immersion suit. Point out that they are to be worn with all clothing including shoes. Explain that plastic bags work well to allow your feet to slide into the garment. Explain that extra gear (food, water, clothing) should be carried. Describe how to jump in the water and that air will rush out, and has a tendency to blow the hood back. Emphasize zipper maintenance (waxing) and not allowing zipper to bottom out.

Inflatable PFD demo - Demonstrate use, maintenance, pros/cons, and review agency policy.

Swimming rescue - Discuss dangers of conducting a swimming rescue. Show ways to handle a conscious and unconscious victim.

**Group Rotations**

Emergency gear: Teach the students about emergency gear and give them the opportunity to familiarize themselves with different gear and practice using it.

Equipment: Float Coats, Chest Waders with belt, Work suits, Immersion suit, Type I, II, III, V, PFDs.

Talking points:

1. Immersion suit – Oversee students donning the suits. If they are already skilled, and time permits, time them, or have them try to don the suit while in the water.
2. Waders – Have students try on waders and go in the water with and without extra floatation, and/or chest belt, on. Add PFD to show difference.
3. Float coat and Work Suit – Have students try both. Show students how to limit water flow using straps/buckles.
4. Contrast Type I, II, III, and IV PFDs and their ability to turn a victim face up.
5. Extra gear - Explain that each individual should personalize gear (e.g. carry strobe, whistle, flares, balaclava, etc).

Throwing devices: Teach students how to throw Type IV PFDs and rescue bags.

Equipment: Throw Bags, Type IV cushions, Type IV rings, with lines attached.

Talking points:

1. Throw bag – Demonstrate how to throw it while packed, and coiled in hand. How to fill the bag with water and re-throw. Throwing options (over and under hand). How to stuff the bag. Allow students to practice with “victim” at 30’. Advise that Throw Bag does not meet USCG regulations (i.e., is not a PFD). Don’t tie to yourself.
2. Throw ring – Discuss the need for a line attached. Type of line to use (floating). Use of throw bag for line source. Demonstrate throwing options.
3. Other options – Discuss pros and cons of Type IV throw cushions. Contrast throwing a cushion versus a ring.
4. Discuss benefits of throwing other objects that float.

Rescue Techniques: Teach students techniques to get themselves back on board a vessel, or get someone else onto a vessel.

Equipment: Boat hook, line, cargo net, lifting strap, webbing. Conduct this station using a boat (e.g., inflatable at pool) or dock if possible.

 Talking points:

1. Explain that, before anyone gets on a vessel they should ask themselves “how would I get back on if I fell off?”
2. Explain and demonstrate the different methods that might be used to get back on, including: bounce, using the cavitation plate or drive unit, ladder, leg over gunwale, webbing in PFD, permanent lines in boat.
3. Describe how the OB trim switch can be used to lift you out of the water.
4. Discuss getting a victim on board and review the “talk, reach, throw, row, go”, and “self, partner, victim”, priorities.
5. Discuss how any item that floats might aid a victim. Explain that you need to minimize additional harm a victim who has injuries (e.g., spinal or compound fractures).
6. Demonstrate and practice how to bounce a victim on board (without immersing the victim’s airway), and “roll” a victim on board by parbuckling. Demonstrate how to get a victim on board using a cargo net if available.
7. Also, emphasize reaching with something you can let go of (e.g., shirt, stick, boat hook).
8. Discuss rescue scenarios.

Survival Tactics: Teach students how to survive if in the water.

 Equipment: PFDs students bring/wear.

Have all students with their PFDs on swim the length of the pool. This allows the instructors to determine the competency of students, and adequacy of gear. Demonstrate adjustment and proper fit of gear and method for donning in water.

Ask students the question: “you end up in the water, now what?”

1. Discuss and demonstrate the HELP (heat escape lessening posture) position. Show (or talk about) how the difficulty of this exercise differs when using a Type I versus a Type III PFD. Point out that you should get as much of your body out of the water as possible.
2. Discuss and demonstrate the group “Huddle.” Explain the importance of keeping everyone together for psychological advantage and helping those who are in the worst condition. Rotate people into the center. Explain the advantages of having a group (heat, stability, visibility), and locking arms or tethering together.
3. Practice handling signaling mirrors if available.
4. Discuss cold water (<50F) immersion

Present 1-10-1 principle (1min to control breathing, gasp reflex and hyperventilation, 10min of good motor skills, the time to get things done to set up for long-term survival, 1hour before unconsciousness)

 Present post-rescue collapse – Attitude, adrenaline

# MOCC Teaching Aid - Fire Suppression

**Talking points**

* Review when, where, and for what boats, fire extinguishers are required, including FWS policy (i.e., what they were taught in the classroom).
* Review and show different sizes of approved extinguishers.
* Discuss where you should mount an extinguisher and that they must be mounted to meet USCG approval.
* Review the types approved agents, contrasting the pluses and minuses of the most common types, and give information about extinguishers themselves.
	+ Working parts.
	+ The downside of extinguishers with plastic parts and no gauge.
	+ What the dry chemical looks like, ability to pack down, and proper storage and maintenance (keeping chemical fluid).
	+ How a dry chemical extinguisher functions, thus how to (and not to) hold them.
* Present some do’s and don’ts for extinguishers.
	+ Do inspect them.
	+ Don’t test them and put them back.
	+ Do carry extra’s.
* Discuss protocol in case of fire.
	+ Self, partner, victim (in this case whatever is on fire).
	+ Face the wind (be aware smoke toxicity can be extreme).
	+ Shut down motor and turn off master switch.
	+ Eliminate fuel source, or another essential element (e.g., heat, oxygen).
	+ Aggressively fight the fire (follow smoke to source).
	+ Set a fire watch after flame is extinguished.
* Discuss the protocol for putting out a fire with an extinguisher.
	+ PASS (Pull, Aim, Squeeze, Sweep).
	+ Spread the agent on what’s burning (dry chem).
	+ Don’t turn your back on a fire.
	+ Don’t splatter the burning fuel.
* Clothing considerations when fighting a fire
	+ Synthetic clothing that melts to skin (PFDs, Waders, Rubberized rain gear)

**Demonstrations (for propane system)**

For a MOCC at \_\_\_\_\_\_\_\_\_\_ we will have a propane fire-demo apparatus.

We will line the students up and let them attempt to put out the demo fire using a B-I extinguisher. If an extinguisher still has pressure when one student is done with it, the next student will use it.

There will be two instructors, one on the propane valve and one managing the students.

We will notify local authorities about the demo beforehand.

# MOCC Teaching Aid – VDS (v10-18-10)

**Talking points**

* Review what VDS do (i.e., alert people that you’re in trouble, provide a homing signal to aid in locating you).
* Review when, where, and for what boats, VDS are required (i.e., what they were taught in the classroom).
* Review the types (i.e., Pyrotechnic, Non-pyrotechnic).
	+ Contrast the pluses and minuses of each in terms of effectiveness and safety.
	+ Review requirements (number, expiration) if pyrotechnics are chosen.
* Explain that there are two standards for pyrotechnic (USCG, and SOLAS).
* Describe what SOLAS is, and where SOLAS grade VDS is required.
* Verbally contrast USCG v. SOLAS grades in terms of effectiveness and safety, cost/benefits.
* Discuss safety concerns – Pyrotechnics and spilled fuel, burning slag, smoke and wind.

**Demonstrations**

There are a variety of ways to conduct the VDS demonstration. The approach should be determined based on safety.

Consider sending a team of two instructors out in a boat and have them contrast the various types of VDS (calling for them in a pre-arranged order), while students observe from shore.

This can also be demonstrated on land or from dock in front of students.

Notify local authorities about the demo ahead of time.

The order typically followed is:

 1) Flag

 2) SOS light

 3) Display USCG and SOLAS grade smoke flares

 4) Display USCG and SOLAS grade hand flares

 5) Display USCG and SOLAS grade rockets

**Other**

 Be cautious about putting live pyrotechnics in the hands of students.

Discuss other (non USCG required) signaling devices and techniques (mirror, laser flare, improvised, dyes, streamer, signaling kite, strobes).

Be cautious of errant turns with SOLAS rockets, and that you should not store aerial flares horizontally.

# MOCC Teaching Aid – Trailer Orientation

The objective is to have students understand the common components of boat trailers, how they function, and general information on maintenance and use. The talk typically takes about 15 to 20 minutes.

**Equipment**

* Select the most complex boat trailer (e.g., one with surge brakes, and dual axels), and the lightest trailer (for using the D-jack).
* Have a block of wood for demonstrating dual axel tire change, and D-jack for single axel.
* Other teaching aids: Example coupler (cut out), trailer light adapter(s), example hub assembly.

**Talking Points**

Starting at the coupler, take the class as a group and walk them around the trailer as you cover the different components/topics:

* **Boat weight** – Generally a good idea to know what your boat and trailer weigh fully loaded. Essential with larger vessels. Use a truck scale.
* **Trailer and vehicle weight capacities** - Check trailer capacity on the trailer frame, vehicle towing capacity in the vehicle manual.
* **Proper weight distribution** – 60% forward of the wheels.
* **Trailer hitch rating** – Indicates the maximum trailer load and tongue weight of the hitch: Examples - Class I handles a Gross Trailer Weight (GTW) up to 2,000 lbs., Class II a GTW to 3,500 lbs., Class III to 5,000 lbs., & Class IV up to 10,000 lbs.
* **Coupler** – Explain there are different ball sizes and the need to make sure the ball and coupler match (use example coupler and ball to show how the mechanism works).
* **Receiver hitches** – Explain the advantages of receiver hitches versus bumper hitches.
* **Locking mechanisms** – Describe the locks available for receiver hitches, couplers, and tongues.
* **Safety chains** – Explain that hooks are facing aft, chains crossed and length allows tongue to be cradled and not hit the pavement. Can twist chains to shorten.
* **Wiring** – Recommend using a flat-four connector with adapters and the benefits of that. Also note there is a standard for wiring color and use, and that you should stick to that.
* **Boat to trailer attachments (winch, tie downs)** – Bow positioned properly on trailer. Emphasize caution needed when working winch (stored load, and lock mechanism), and value of inspecting springs, locks, strap/cable, before departure, and periodically while in transit.
* **Trailer frame** – Look for wear (cracks).
* **Tires** – Check inflation, including spare.
* **Hubs** – Describe different types (e.g., simple with buddy bearings, flow through, encased). Describe general maintenance. Emphasize need to check with dealer specs. Discuss options for repair and replacement in the field (i.e., can carry a spare). Discuss the need to check for signs of bearing failure (heat).
* **Surge brakes** – Describe form and function. Point out downside when backing up and towing slow down long, steep, grades, and ways to deal with that.
* **Lighting checks** – Describe how to check lights using running lights and emergency flashers.
* **Bunk types** – Describe function, advantages, and disadvantages, of trailers with bunks versus rollers. Describe options (e.g., UHMW on bunks).
* **Demonstrate trailer jack techniques** – Driving onto a block for dual axel, and D-Jack for single axel.
* **Emphasize that vehicle operator is responsible for securing the trailer.**

# MOCC Teaching Aid – Prop Change

The purpose of this demonstration is to make sure the students have the knowledge to change out a propeller. They need to see that this is an easy simple task that can be done under many different circumstances. The demonstration should take about 15 to 20 minutes.

**Equipment**

1. Adjustable wrench/prop tool.
2. EMPHASIZE that a spare prop, cotter, locking washer, thrust washer and bushing needs to be part of the tool kit for an outboard.
3. Block of wood.
4. Small outboard motor, either mounted on a boat or stand alone demonstration model.
5. Anti‑corrosion grease (optional).

**Talking Points**

Steps for propeller replacement:

* Shut down engine (master switch, remove key)
* Move gear shift to neutral.
* Straighten and remove cotter pin or tab washer.
* Place block of wood between gear case and propeller to hold propeller and remove propeller nut.
* Pull propeller straight off shaft, remove front thrust washer.
* Coat propeller shaft with grease, wipe off extra and keep it clean.
* Check to make for items wrapped around the prop and for possible damage to grease seal.
* Install front thrust washer, propeller, rear thrust hub, and propeller nut onto shaft.
* Place block of wood between gear case and propeller to prevent rotation and tighten nut. Secure propeller nut to the shaft with cotter pin.

**Discussion Topics**

 Pitch and slip.

 Propeller materials (aluminum, stainless, brass, synthetic).

 Innovations - Variable pitch, replaceable blades.

# MOCC Teaching Aid – Outboard Jet Pumps

The purpose of this is to familiarize the student with inboard jet pumps, how they work, and how to maintain them.

**Components**

**Inboard jet pump** – Replaces lower unit of outboard motor.

**Intake (Jet shoe)** - The intake shoe is the removable piece where the water first enters the pump, and is composed of the housing, intake grate, and impeller.

 **Intake grate** - Metal slats designed to allow water to pass while preventing large debris from entering the pump.

 **Wear ring** - A replaceable sleeve within the intake shoe that is designed to wear as the pump ages.

 **Impeller** - The jet pumps equivalent to a propeller.

 **Bowl** - The rounded “donut-shaped” component of the pump.

 **Nozzle** - The long tube where the water exits.

**Exhaust pipe** - Located within the nozzle. This is where engine exhaust exits. Jet pumps are loud compared to propeller driven boats because the exhaust exits above the water line when the boat is on plane.

 **Reverse gate (cup)** - Designed to redirect water while passing exhaust.

**Impeller shaft/shear pin/nut/shims** - There is a shear pin on the impeller shaft. The shear pin is designed to break if the impeller gets bound. The impeller is held on with a brass nut, and shims are located between the nut and impeller (these are spares) and the impeller and pump housing. Often there is a cotter pin that holds the nut in place.

**Design concept**

Jet pumps are designed to allow boats to run in very shallow water because the intake does not extend far below the bottom of the boat.

 **Water movement**

 **Forward** - Reverse gate is down (out of the way completely).

 **Neutral** - Reverse gate is about half-way up, blocking (redirecting) water coming out of the nozzle.

 **Reverse** - Reverse gate is completely up, redirecting all of the water coming out of the nozzle.

**Performance and handling**

Jet pumps are relatively inefficient. In general they reduce the performance of an engine (hp) by ~30%.

At slow speeds (idle), jet pumps are slow to respond compared to motors with propellers. Because there is no skeg on jet pumps, steering response is dependent on the amount of water moving through the pump.

Because there is no skeg on a jet pump, boats with jet pumps tend to slide on turns while planing more so than propeller driven outboards.

Neutral is achieved by the proper adjustment of the reverse gate and not a transmission. Therefore, it’s common to encounter boats with jet pumps that move (either forward or backward) while in “neutral”.

**Maintenance**

**Lubrication** - Most pumps have a grease fitting above the bowl. Typically there is a short section of hose that allows grease to exit. The pump should be greased after each use. Grease should be added until all water is evacuated through the exit tube.

**Intake** - The intake should be kept free of any debris. Due to the inherent inefficiency of jet pumps, a very small object blocking the intake can result in a large reduction in performance.

**Impeller** - Maintain the impeller so that it has sharp edges, and is free of damage.

**Wear ring** - Because the wear ring is designed to slowly wear, adjustment is needed periodically using shims. Typically on a new pump there will be two to three shims between the pump and the impeller. One way to determine if a shim needs to be added is by checking the rpm’s of the engine. If the engine rpm is operating within specs, then the impeller is likely adjusted correctly. If the rpm’s are high, then a shim may need to be added to reduce the gap between the impeller and wear ring. Extra shims are typically stored between the nut and impeller. After adding shims, check to see if the impeller is making deep gouges in the wear ring. If so, remove a shim, or re-diagnose.

**Reverse gate** - Due to normal wear, the reverse gate may periodically need adjustment to maintain neutral. There’s typically an adjustment nut.

**Spare parts and tools** - Some spare parts should be carried. These include spare impeller nut, shims, shear and cotter pins, and spare impeller. Carry a wrench (or wrenches) to fit the nuts for the intake and impeller shaft. Also, carry a screw driver or other prying device to remove debris from the intake grate and the area between the exhaust pipe and nozzle walls. A small file may also be useful for sharpening the impeller.

**Modifications and options**

There are various modifications that can improve performance of jet pumps. These include welding aluminum extensions to each side of the intake (angling out), and to the back of the intake that (angling forward). This improves the loading of the pump with water. Another modification involves welding a keel to the bottom of the intake to improve slow-speed steering.

Standard impellers are made of aluminum. Stainless steel impellers are available which improve the efficiency of the pump, but are more expensive and may increase the likelihood of damage to the motor in case of impact.

Synthetic (UHMW) molded intakes are now available.

# MOCC Teaching Aid – Motor Maintenance

The objective is to cover basics on maintaining and troubleshooting boat motors.

**Equipment**

 Outboard motor(s) — 4-cycle and/or 2-cycle, and Inboard motor(s) if available.

**Talking points**

**General**

* Records:
	+ Log book required by policy and common sense;
	+ Use hour meter to track intervals. Install aftermarket hour meter (Hobbs meter) on smaller engines;
	+ Record fueling and oil used by hour;
	+ Track gallons per hr for check on performance and fuel needs;
	+ Record point-to- point fuel use for future reference;
	+ Record vital readings when new (running well) – e.g., RPM @ idle, cruise, and top speed, at known load;
	+ Record gauge readings (e.g., temp, oil psi, volts);
	+ Record maintenance performed;
	+ Record problems/symptoms.
* Having an owner’s manual on board with newer motors.
* Keeping boat and bilge clean – safety/accountability.
* When troubleshooting, always go from simple to complex.
* Tools‑ at least enough for basic repairs.
* Spare parts – At least have those that are designed to break (e.g., shear pins), and those known to break or foul (e.g., spark plugs, belts, filters).

**Fuel issues**

* Fuel odor – always stop and figure out where it’s coming from and what the risk is.
* Won’t start fuel issues:
	+ Trace fuel line for outboards (fix problems);
	+ Pump bulb for outboards;
	+ Check fuel vent for outboards (open);
	+ Vapor lock for inboards (cool by opening cowling and running blower);
	+ Water in gas (value of fuel/water separator);
	+ Check spark plugs for fouling;
* E10 fuel (issues regarding fuel going bad).

**Electrical**

* Keep batteries serviced – use on-board chargers.
* Won’t start electrical issues:
	+ Check master switch;
	+ Check kill switch;
	+ Check battery and cables;
	+ Check fuses.

**Cooling**

* Never start a boat motor out of water.
* How to supply water when on land.
* What to look for to be sure your cooling system is working:
	+ Outboard – Stream;
	+ Outboard - Overheat alarm;
	+ Inboard – Temp gauge (know what’s normal – log book);
	+ Inboard – Alarm/lights/temp of exhaust manifolds.
* Trouble with cooling system:
	+ Check intakes;
	+ Follow lines – remove debris, ice;
	+ Know motor – thermostat before or after indicator stream?
	+ Inboard – check heat exchanger;
	+ Inboard (new motors) – go to idle when overheating.

**Lubrication**

* System’s oil warning (see manual).
* Two cycle versus four cycle oil needs.
* 2-cycle – Oil pre-mixed or in reservoir (symptom if not mixed).
* Lower Unit oil, check, change, leakage.
* Winterizing – keep upright and dry is sufficient for normal storage. Explain winterizing if needed.

**Other**

* Sacrificial anodes – for in‑water storage.
* Trim tabs – Steering control. Very important on tiller controlled engine.
* For tiller steered motors, point out the steering friction adjustment and the throttle friction adjustment if equipped.
* Starting procedures (neutral, fast idle).

# MOCC Teaching Aid – Launch & Retrieve

**Equipment Needed**

Vehicle with trailer.

Launch site away from public access or other people and close to trailer-backing course (if possible).

**Talking Points**

* Briefly go over the trailer you are using and all tie down points and hitch.
* Tell student to prep the boat for launching before blocking the ramp (boat plugs, tie downs, load boat with equipment necessary for trip, weight and balance etc.).
* In vehicle - Windows down and radio, seatbelt, PFD off. Use of four-wheel drive as needed/available.
* Establish communication means (hand signals) between vehicle and boat operators and/or spotter.
* EMPHASIZE the importance of never unhooking the bow contacts (pulley strap and safety chain) until the boat is in the water, and hook up before pulling boat away from the water.
* Check launch site for people, objects/debris and general condition, and ramp end/edges/drop offs.
* Dealing with variables (current, wind, unimproved ramps).
* Make sure the operator is prepared to handle the boat once it is launched (lines, waders, boots etc.).
* Make sure the boat runs before it is removed from the trailer, and forward pressure applied before unhooking the winch strap if powering off.Make sure lines are not tangled on trailer. EMPHASIZE moving slowly.
* Retrieval is the opposite of launching. However, discuss what to take into account regarding slippery ramps.
* Pull drain plugs.
* Discuss loading – Powering on versus not, dealing with sticky or slick bunks, the dangers of people balanced on trailer when launching/retrieving, and use of aftermarket platforms for the trailer tongue.

# MOCC Teaching Aid – Victim Recovery & Rescue Scenarios

This outline is for the MOCC rotations of the two victim recovery sessions and the rescue scenario session.

**First rotation – Object & Personnel Recovery:**

* Boat Introduction & Handling Familiarization.
* Explain Object & Personnel Recovery Theory & Methodology.
* Demonstrate Object Recovery (explain importance of bare steerage-way into prevailing elements to avoid damage/injury and to avoid multiple approaches and excessive stern propulsion).
* Demonstrate why the drive must be in neutral, and the helm turned so propeller won’t impact the victim if forward power is accidently engaged.
* If boat operator has to leave the helm, engine should be shut down.
* Emphasize: Operator Responsibility (Operator is responsible for all aspects of the rescue). Need to assign Crew Duties (lookout and tasks). Need for Strong Verbal Communication (within vessel and between vessel and victim). Value of Crew Preparations before Approach. Considering Vessel Safety related to surrounding Hazards.
* Review priorities: Self>Crew>Victim, and Talk>Reach>Throw>Row>Go

**Second rotation: MOB and Personnel Rescue Recovery:**

* Rotation Brief; Procedures for Personnel Overboard & Personnel Recovery
	+ (Sound Alarm / Turn in direction person fell to avoid contact with stern / Throw Type IV for flotation and mark location, GPS if available also / consider calls for assistance / Five short blasts. danger signal for heavy VSL traffic / provide crew roles & instructions, provide verbal description for personnel recovery relative to surrounding conditions and hazards, direct or indirect pick up).
* Each student performs MOB minimum twice, at least one direct recovery: ( Direct: Cargo Net / Bounce & Lift / Par buckle or Sling Lift).
* One indirect recovery using throw bags, (Crew: good throwing practice for finding range and knowing limitations and need for communication with operator. Operator: good boat positioning practice, avoid allowing throw bag line to fall astern of vessel).
* Time permitting, students approach rescue victim in confined area requiring them to safely secure victim alongside boat, slowly re-position boat out to a safe area for victim recovery.
* Emphasize: Communication and Situational Awareness / Have realistic understanding of self and vessel limitations during rescues / Know when to radio for help or request Medical Aid.
* Explain relevance of rotation pertaining to upcoming Rescue Scenarios.

**Last rotation - Rescue Scenarios:**

The Emergency Procedures practical must be done on the water. Students must use the techniques taught in this session to solve practical scenarios dealing with victim rescue from a boat.

*(Instructors should, if possible, use a large boat that allows students not actively involved in the scenario to observe. Jet drives are most desirable for this exercise from a safety standpoint)*

**Suggested scenarios** (these scenarios are to be done with two or three person teams):

1. Passive victim that needs assistance *(no resistance).*
2. Passive victim that can’t understand the language.
3. Unconscious victim.
4. Conscious victim who needs help but refuses the assistance *(fear, panic).*
5. Blind/deaf/burned, victim.
6. Hostile, drunk victim.
7. Serious back, leg or both injuries.
8. Multiple victims *(possibly some conscious some unconscious).*
9. Classic victim in imminent danger of drowning *(this is good to use this example in concert with another victim that is not in immediate danger of drowning)*.
10. Couples fighting during rescue.
11. Victim that is capable of self rescue.
12. Victim suffering from hypothermia.

**Guidelines:**

This exercise **REQUIRES** two instructors or an instructor and a competent volunteer in the water acting as the victim.

One instructor **MUST** always be in the boat positioned to take control or shutdown the boat if safety concerns arise. This would typically mean the instructor is connected to the kill switch in addition to the student. A student causing any injury or harm to the victim as a result of deficient boat operation **WILL** fail the course.

In the spirit of extra safety precaution, we will teach the students to turn the boat engine/s completely off when the actual victim rescue begins. We should advise the students that in an actual rescue situation you would in most cases place the engines in neutral but you might not actually turn the engine(s) off. (Heavy seas, strong current, near a dangerous obstruction etc.)

All scenarios should be realistic.

Within a group, start with simple rescue then advance to more difficult problems as you work with different teams.

Make sure that students assess possible injuries that are not readily apparent.

Students should show proper use of VHF channel 16 to notify CG or other authorities of the emergency or other radio equipment that is available.

In some scenarios the victim(s) may have such serious injuries that the proper solution is for the rescue team to stand by with the victim until professional assistance can arrive. The location of the hypothetical scenario would be the determining factor (e.g. is assistance available).

# MOCC Teaching Aid – Policy Exercise

This outlines a non-PowerPoint-delivery option for covering FWS policy in the MOCC.

**Preparation:**

If the FWS policy in the student manual is outdated, print out unmarked copies of the policy for the number of students in the class.

Using the topic allocation (below), circle and highlight the item(s) each student is to cover.

Plan to pass out the copies in order, so the first student covers item 1 (the only item circled on the policy they receive), the second student, item 2, the third item 3A&B, etc).

Fifteen items numbers are allocated for a class of 15. If the class is smaller than 15, have some students cover more than one item (takes more time), or have the instructor do it.

If the student manual is newer, and doesn’t have an outdated policy, then number use the master policy to number the policy in the student manuals, etc.

**Topic Allocation:**

|  |
| --- |
| 1. 1.6.I. – Project Leader & Supervisor responsibilities (pg 4)
2. 1.7.D. – Additional training wording (pg 6)
3. 1.8.F.&G. – Additional equipment examples (pg 8)
4. 1.6.J (2-5) – Motorboat Operator responsibilities (pg 4)
5. A-1.5.D. B-1.9.A. – Kill switch defined, and requirement for <26’ (pg 2 & pg 8)
6. 1.9.B. – Kill switch > 26’ (pg 8)
7. 1.9.C. – Kill switch policy for OB-tiller (pg 8)
8. 1.11.A. (1-8) – Float Plan (communications means is missing) (pg 8)
9. 1.8.A.(1)(a-b) – PFDs (pg 6)
10. 1.8.A. (2)(a) – Auto-inflating PFDs (pg 6)
11. 1.8.B. – Fire protection (pg 7)
12. 1.5.A. (1-4) – Anti-exposure gear definitions (pg 1)
13. 1.8.C. – Temperature thresholds and PFDs (pg 7)
14. 1.8.D.(1) – Immersion suits (pg 7)
15. 1.13. – Accident Reporting (pg 9)
 |

**The Exercise:**

Let students know there are two policies (DOI and FWS) in the back of the student manual.

Point them to the DOI policy, and let them know it covers mainly the training requirements, but point out other items too (e.g., PFD color requirements).

If the policy in the manual is outdated, have students rip it out (have fun with it and put a waste basket in the front of the class and have the students throw the wadded up paper in it), and pass out the new FWS policy (again, in order).

Let them know they will teach each other by giving a summary for an item (or items) circled on their copy of the policy. Give an example of how to do it, using an item in the DOI policy, or one from the FWS policy you haven’t assigned to a student.

Give students about 5-minutes to review their topic for take home point(s).

Go around the room with students giving a summary of policy items, and the lead instructor reiterating take home points.

# MOCC Teaching Aid – Boat Orientation Field

The purpose of this session is to familiarize the students with the vessels used in the course, and make sure all have input as to whether or not vessels are adequately equipped, and seaworthy.

**Materials**

Federal Required Equipment pamphlets and boat inspection sheets.

**Typical format (30-45 minutes)**

* Boats are arranged for inspection, and students broken into groups, each group with one inspection sheet (attached). In some courses the lead will also have groups fill out a pre-departure checklist or float plan in addition to the inspection sheet, or substitute the inspection sheet with a more comprehensive sheet.
* Groups are assigned a boat to start with, asked to fill out the inspection sheet, and evaluate the vessel (and others if time allows) based on what they learned in class (e.g., boat orientation and required equipment lectures).
* The instructor assigned to the talk brings the groups together and asks a representative from each group to review their findings for the boat they started with. After a group representative presents their findings for a boat (and other groups give input if they too evaluated the boat), the instructor who will be teaching in that boat points out the features students will need to know for operation (e.g., blower, trim, and/or kill switch locations, throttle/propulsion control attributes, specific do’s/don’ts or cautions for the vessel).
* At the end of the boat orientation field session, the instructor assigned to the talk should ask if any student believes any of the boats should not be used for the training.
* Students should conduct vessel checks each day before boats depart for rotations.

**Options**

Consider purposely leaving required equipment off the boat so students can discover deficiencies.

MOCC BOAT INSPECTION EXERCISE

|  |  |
| --- | --- |
| Boat 1 | Boat 2 |
| Make | Make |
| Length | Length |
| Capacity | Capacity |
| Class | Class |
| Hull type | Hull type |
| Propulsion | Propulsion |
| Construction | Construction |
| Tank (installed or portable) Fuel level | Tank (installed or portable) Fuel level |
| Equipment deficiencies | Equipment deficiencies |
|  |  |
|  |  |
|  |  |
|  |  |
| Boat 3 | Boat 4 |
| Make | Make |
| Length | Length |
| Capacity | Capacity |
| Class | Class |
| Hull type | Hull type |
| Propulsion | Propulsion |
| Construction | Construction |
| Tank (installed or portable) Fuel level | Tank (installed or portable) Fuel level |
| Equipment deficiencies | Equipment deficiencies |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| **Boating Safety Float Plan (sample)** |
| **Date(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Departure Time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Return Time:\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Vessel:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(Name / State #’s or Documentation #’s / Length and Type / Color Description)**Departing From:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Launch/Recovery Site:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Transit Area:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vehicle Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **Mooring Location:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vehicle License #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **Area(s) of Research:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(Latitude & Longitude and /or Name with Physical Description)**If operator has not returned or made contact as arranged please call the following emergency number:****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (List the local USCG or Rescue Authority for your area of research) |
| **Operator and Crew Information** |
| **1) Operator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phone #:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **Additional Persons On Board:****(Name / Affiliation / Phone# )****2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****4)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****5)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Weather Conditions & Forecast** |
|  **Inland Offshore****What are the forecasted conditions?****Water Surface:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Water Current:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Wind: \_\_\_\_\_\_\_\_\_\_\_\_\_ / \_\_\_\_\_\_\_\_\_\_\_\_\_\_** **(velocity) (direction)** |  **Day Night**(Nav Lights & Rescue Lights Required)**Visibility:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(Distance NM) **(Clear / Fog / Haze / Rain)****Sunrise:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sunset:\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **High Tides** | **Low Tides** |
| Height \_\_\_\_\_\_\_Time\_\_\_\_\_\_\_\_\_Height \_\_\_\_\_\_\_Time\_\_\_\_\_\_\_\_\_ | Height \_\_\_\_\_\_\_ Time\_\_\_\_\_\_\_\_Height \_\_\_\_\_\_\_ Time\_\_\_\_\_\_\_\_ |
| **Mission Description** | **Checklist** |
| **Specific Type of Operations:** | * #\_\_\_\_\_\_**PFD’s**
* **VDS- Flares & Non- Pyro**
* **Radio**
* **E.P.I.R.B.**
* **Cell #\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **Anchor**
* **Bilge, Oil, antifreeze, fuel**
* **Maintenance log**
 | * **First Aid Kit**
* **O2 Kit if Scuba**
* **Flash Light**
* **Food**
* **Water**
* **Paddles**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
 |

# MOCC Teaching Aid – Trailer Parking and Backing

**Equipment -**  Two truck/trailer combinations, traffic cones.

**Set up -** Have two courses set up, one straight and one in an arc or another challenge.

**Talking points**

 **Information to give students**

* + Put steering hand on the bottom of the wheel.
	+ Use side mirrors (don’t look over shoulder) while backing.
	+ Don’t put the tailgate down on pickups.
	+ Honk horn before backing if not 100% sure there’s not anyone behind you (or between your truck and boat).
	+ Don’t use your seatbelt when backing a boat down a ramp.
	+ Open windows and turn off the radio.
	+ Spotters – use one if you need it. If you need it, tell the spotter what you need (examples signal and position).
	+ When setting up for backing up, if possible, make the inside of the arc on the driver side.
	+ Stay close to a guidance feature (e.g., edge of ramp, seam in concrete). It will help keep you in line.
	+ Make your own guidance feature (e.g., spray paint, place rocks).

 **Tips for instructors**

* Have students work from simple to complex.
* Practice without boundaries (e.g., in a large parking lot), then in straight course, in arc, down the ramp.
* If student is having trouble over-steering in the arc, have them watch how much they have to turn the wheel going forward. Sometimes seeing that makes them realize how simple backing up can be.
* The fastest way to learn is to continue to move while backing (versus, stopping, turning the wheel, moving, and repeating that over and over). Have students “snake” the truck trailer at a pace that allows them to see the trailer move as soon as they move the wheel.
* Challenged students – let them know that the second field day is often vastly easier than the first. It’s common for someone who really struggles the first field day to do very well on the second.
* If time, allow students to back up to, and hook up, a detached trailer. Walk them through the techniques (e.g., multiple walk-back checks, putting a coin on the ground below the driver as a distance aid to determine distance from the ball to trailer.

# MOCC Teaching Aid – Towing

The towing talk is typically given on land, near a boat on a trailer, using a flip chart, and boat models (toys, cut-outs). The talk takes about 15-25 minutes. Towing examples are shown using the boat models laid out on the ground. An alongside tow can be rigged by instructors for students to see.

**Talking points**

* Towing – Responsibility:
	+ Duties related to marine casualty – 46 U.S.C. 2303
	+ Duty to provide assistance at sea – 46 U.S.C. 2304
* When to tow:
	+ If immediate threat to life or property exists.
	+ If a safe tow is possible
* When NOT to tow:
	+ When agency policy does not allow
	+ If disable vessel is sinking, burning, or a danger to towing vessel.
	+ If it is unsafe to tow.
	+ If tow is only for personal convenience.
* Alternatives to towing:
	+ Anchor
	+ Call for commercial tow
	+ Standby and relay information (e.g., to USCG)
* Factors to consider when deciding whether or not tow:
	+ Draft of both vessels relative to water depth.
	+ Size and weight of vessel being towed.
	+ Skill level of both crews, and need for putting a crewmember on disabled vessel.
	+ Availability and condition of attachment points.
	+ Numbers and condition of crew available.
* Other options:
	+ Rescue passengers if condition is life threatening.
	+ Protect life first, property second.
* Towing Equipment:
	+ Towline – 75 ft of ½ or ¾ inch double-braided nylon.
	+ Hooks or carabiners – ensure breaking strength greater than line.
	+ Bridles – rig these ahead of time; use same type of line as for towline.
	+ Mooring lines, fenders, boat hook, lights, knife, ax.
* Approaches
	+ Varies with conditions and their effect on the disabled water craft. Conditions/tow = Calm/Parallel; Moderate/45 degree; Heavy/Crossing-the-T; Special circumstances (large disabled vessel)/backing down.
* Tow types:
	+ Single-line straight: Single attachment points to both vessels. Attach in line with center of boats. Concentrates stress on single contact.
	+ Single-line V: Double attachment to towing vessel. Easy to adjust.
	+ Multiple-line Y-Bridle: Good when the towing vessel has an outboard engine. Arms of Y should be 3 X’s the width of the towing boat.
	+ Multiple-line Along side: Excellent maneuverability. Need multiple fenders and contact points. One line usually takes most of the load.
* Other talking points:
	+ Make sure all have PFDs on.
	+ Assess risk (before communication with disabled vessel occupants and after).
	+ Circle disabled vessel while assessing and planning.
	+ Need for planning and communication/signals (within and between boats).
	+ Advantage of having the towed vessel steer.
	+ Use of tow bits and cleats (1/2 turn for light load; round turn for heavier load; don’t finish with cleat hitch).
	+ Alongside line-tightening technique using forward and reverse power.
	+ Additional hazards – Vessel at anchor or aground.

# MOCC Teaching Aid – Teaching in Boats

**Talking points**

 **Pre-departure topics**

* Orientation of vessel.
* New terminology (e.g., helm before throttle, helm commands, knots/hitches used).
* Operator and crew responsibilities.
* Kill switch (attached to operator and instructor).
* No use of hands (use fenders, boat hook) to stop vessel impact with dock or other boats.
* Stress operating at a speed that allows separation of throttle and helm changes, and operating mainly on momentum while in neutral (prop drive, & OB jet), or “rocking the gate” (IB jets with dual controls). The instructor should always be prepared and have enough time to put out a walking fender as needed.

 **Underway**

* Operator needs to have a plan and communicate it before leaving the dock.
* Give student time to get used to handling the vessel without a specific task to complete.
* Have students work from simple to complex.
* Ask the group if they have seen/done the task before, and if not, spend a short time to set an example. It’s good to show students what you want them to do as long as you know that you can perform the task. It isn’t good to demonstrate inability.
* For challenged students, let them know that the second field day is often vastly easier than the first. It’s common for someone who struggles the first field day to do well on the second.
* Make sure all students get familiar and are comfortable with finding the gears (for example reverse on the tiller). Especially make sure the know how to find neutral. On jumpy shifters, suggest using two hands initially.
* When working students at the helm, consider putting weakest (least experienced) person second, and the best (most experienced) last.
* It’s often good to have more experienced students start the rotations, first they set an example and also they will need less time to complete the skills, thereby giving less experienced students more helm time. Plus the instructor can focus on those student’s needs knowing that the other students are done (though all get helm time).
* Consider rotating students often with nervous, low experienced teams. This can reduce the build up on a single individual, and puts the pressure to perform a task equally on the group.
* Before the student starts a task, ask if they would like dialogue (tips/ instruction) from the instructor, or silence while in the middle of the task. Be aware that for some, a silent instructor puts more pressure on.
* Often a calm voice (….. “Neutral. Now reverse”) will reduce/mitigate most collisions, and keep the student from going into the “red”. Ramming a dock/ another boat/ fixed object is a humbling learning moment for the student and the instructor should do his/ her best to make it a positive and constructive moment. Avoid criticism at the time.
* On day two, if the students are getting some tasks but not others, focus the boat time on their weakest tasks.
* In general accidental scrapes, bumps, dings while docking and mild rev’s of the throttle (especially on tiller boats) happen a lot; are best to acknowledge but “focus” on more serious issues that arise.
* For circle and docking, set students up for success by emphasizing taking into account wind current direction.

# MOCC Teaching Aid – Anchoring & Beaching (v7-10)

This demonstration usually takes about 15-20 minutes, and is done in a parking lot where you can stretch out the ground tackle. The MOICC manual has very thorough talking points on Anchoring and Beaching, so be sure to refer to the manual also.

**Equipment Needed**

* 2 or 3 different anchors or as many different examples you can find from the boats used in the class.
* Chain and appropriate hardware necessary to attach the chain to the anchor.
* Anchor line, it is best to have ½” nylon available as the example and other types of anchor lines that may be available for the course.

**Talking Points**

* Terminology (e.g., “setting” the anchor; using a bit or cleat).
* Types of anchors and bottom substrates – Their design and uses based on substrate type:
	+ Mushroom/mud; Danforth/multipurpose – sand mud rock grass; Plow/rubble; Grapnel/rocks; Kedge/multipurpose
* Bottom types and where to and not to anchor – Damaging resources.
* Wind and current and effects on boat swing.
* Chain and line – Function and types. Determining chain length (equal to the length of boat is one standard. 6-8 ft is specified in the MOCC manual).
* Stowing methods (anchor bags). Accessibility. Ready for emergency use.
* Hardware – shackles and mousing.
* Anchoring points – Primary off the bow. Emphasize to never solely anchor off stern.
* Choosing rode based on conditions.
* Using a bit or cleat.

**Setting steps:**

1. Finalize plan

Location

Roles and responsibilities

Decide on communication between operator and crew (rate of set, amount of line out, direction line). Consider use of hand signals, marking line-length segments.

Other factors: water depth.

1. Prep equipment
2. Head into wind or current
3. Lower (care not to foul)
4. Drift or power back
5. Set.

Safety – Line handling

Safety – Never throw an anchor

Drive home the importance of a knife (knives) on board boats, and emergency release plans.

**Retrieval steps:**

Releasing options – Moving up on the anchor, and using engine power versus hand. Safest method is dependent on size of anchor and amount of rode.

**Other points on anchoring:**

* Light to use at night.
* Anchoring to mooring systems.
* Anchoring using buoy retrieval devices.

**Beaching:**

* Boat design/material (suitability)
* Weight distribution
* Crew assignments
* Resource damage risks
* Water depth
* Substrate type
* Shore type, steepness
* Tide/flow considerations
* Holding position using engine thrust once contact is made
* Exiting the beach - Reverse the process
* Using too much stern propulsion (eroding ramp/shore, cavitation)
* Pointers – Be wise about possible injuries and pushing-off boats
* Other: Policy on beaching in surf zones