

DETAILED TEACHING SYLLABUS

Drill Instructor/Survival/Fire/Damage Control

LEARNING/PERFORMANCE OBJECTIVES	IMO REFER ENCE	REFERENCE TEXTS	TEACHING AID
1 Introduction – Preparation for Emergency			
1.1 Instructor/student introductions A. Students/instructor introduce themselves, discuss relevant maritime experience.			
1.2 Emergencies A. Types 1. Immediate onset. a. Happen suddenly with little or no warning. b. Ex: Collision, capsizing, person overboard, explosions. 2. Delayed onset a. Begin slowly and develop into life threatening situations. b. Ex: Mechanical failure or overloading leaking vessel. c. Ego can be a factor in delay. B. Emotional factors in emergencies. 1. Fear a. A normal reaction in emergencies b. Can be useful in keeping us alert and aware. 2. Panic a. Prevents clear thinking. b. Wastes energy. c. Is an obstacle to setting priorities. 3. Depression a. Recognize it as a problem. b. Destroys the will to survive. 4. Ways to reduce or eliminate panic, fear and depression. a. Accept the fact that it can happen to you; make contingency plans, file float plans, check weather. b. Obtain training. It gives you procedures to follow which increase confidence and reduces panic. c. Recognize your ability to be creative, innovative and resourceful in a survival situation. d. Develop a positive attitude. Think like a survivor, not a victim. Do something to improve you situation. 1.3 Practice and Planning – can increase survival rates by decreasing panic. A. USCG regulations require you to plan for emergencies and practice responses through:		1	

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<ol style="list-style-type: none"> 1. Orientation of all crew members. [46CFR28.270 (e)(f)] 2. Emergency Instructions [46CFR28.265] <ol style="list-style-type: none"> a. Vital information for crew. b. Procedures for handling emergency situations. 3. Station bills [46CFR28.265] <ol style="list-style-type: none"> a. Your emergency plan b. Who, what, where in emergencies. 4. Drills [46CFR28.270 (a)(b)] <ol style="list-style-type: none"> a. Practice monthly drills that follow your procedures and plans. b. Build crew expertise to respond as a team in an emergency. 5. As this class progresses, you will build your knowledge and skills of procedures and develop your emergency plans for the practice drills. <p>Shipboard emergency planning - the Safety Orientation [46 CFR 28.270 (e,f)]</p> <ol style="list-style-type: none"> A. familiarize crew with vessel layout, rules, safety policies B. instruct crew on what kind lifesaving equipment is carried on board, where it is kept, and how and when it is used <ol style="list-style-type: none"> 1) portable fire extinguishers 2) portable pumps 3) SCBAs 4) Distress signals 5) Liferafts 6) Immersion suits/PFDs 7) Man-overboard recovery gear 8) First aid/trauma kits 9) Emergency gear lockers C. instruct crew on vessel emergency systems, how they operate, when to operate them and by whose order <ol style="list-style-type: none"> 1) installed fire suppression system 2) fire pump/fire main system 3) bilge system 4) emergency fuel shut-offs 5) emergency power supplies 6) emergency/damage control equipment 7) systems unique to the vessel (e.g. foam 		<p>44</p> <p>45</p> <p>47</p> <p>48</p>	

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<p style="text-align: center;">fire fighting system)</p> <p>1.4 Summary</p> <p>A. Types of emergencies</p> <ol style="list-style-type: none"> 1. Immediate onset 2. Delayed onset <p>B. Think like a survivor, not a victim: Do something to improve your situation.</p> <p>C. USCG Regulations</p> <ol style="list-style-type: none"> 1. The development and use of crew orientation, emergency instructions, and station bills help you think through and plan for emergencies. 2. Practice through drills will help you to act positively in an emergency situation. 3. Act; don't react. 			
<p>2 Use & maintenance of Immersion Suits & other PFDs</p>			
<p>2.1 Survival Equipment</p> <p>A. Types of Personal Flotation Devices (PFDs)</p> <ol style="list-style-type: none"> 1. Type I <ol style="list-style-type: none"> a. Flotation primarily in the chest area. b. Provides maximum buoyancy (22# minimum) c. Tends to turn most unconscious victims face up in water unless worn over anti-exposure coveralls or an immersion suit. d. Poor thermal protection. 2. Type II <ol style="list-style-type: none"> a. Horse collar shaped device. b. Minimum buoyancy 15.5# c. Tends to turn some unconscious victims face up in water. d. Poor thermal protection 3. Type III <ol style="list-style-type: none"> a. Includes vests, float coats and coveralls. b. Same buoyancy as type II (15.5# minimum) c. Little or no ability to turn unconscious victim face up in water. d. Variety of styles, colors and sizes. e. Fair thermal protection; however, cooling rate can double in rough water over calm. f. Anti-exposure coveralls meet Type III only if worn. 		19	

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<ul style="list-style-type: none"> g. Fair to good thermal protections. Cooling rate increases in rough seas. 4. Type IV <ul style="list-style-type: none"> a. A throwable device. b. Designed for rescue. <ul style="list-style-type: none"> 1. Ring buoys, buoyant cushions. 2. Buoyant cushions should be worn on front of body. c. Minimum of 16.5# of buoyancy. d. Never take the place of Type I or Type II. e. Should have a floating line attached for throwing or retrieving. 5. Type V <ul style="list-style-type: none"> a. Any USCG approved PFD for restricted use (e.g. anti-exposure coveralls) 6. Type V Hybrid <ul style="list-style-type: none"> a. Combines inherent buoyancy with a bladder inflated by mouth or CO₂ cartridge. b. Comfortable and easily worn during fishing. c. Can be used in place of some types of PFDs as indicated on label of the type V. d. Basic method for inflation must be oral. e. Not inflated provides 7.5# of buoyancy intended to keep an adult afloat until the PFD can be inflated to 15.5 or 22#. 7. Immersion Suits <ul style="list-style-type: none"> a. Also called survival or exposure suits, but don't guarantee survival. b. Provide excellent buoyancy (min. 22#) c. Designed to be worn when abandoning ship. d. Offers the best hypothermia protection. e. Should be stored in an accessible location. f. Must have proper fit (size, face seal, mobility) 8. Entering the water in a PFD <ul style="list-style-type: none"> a. Don PFD. b. Enter the water as slowly as possible, feet first. c. With one hand hold nose and cover mouth. d. With the other arm cross over the first arm and grab the opposite shoulder of the PFD. 			

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<p>NOTE: This method helps to avoid cold water shock and prevents the PFD from coming up over the head.</p> <ol style="list-style-type: none"> 9. Entering the water in an immersion suit. <ol style="list-style-type: none"> a. Don suit completely with face flap closed. b. Best spot to embark is on lee side as close to the water as possible; specific location will be determined by the type of vessel, nature of the casualty, obstructions, etc. c. Face bow or stern, sideways to the boat. d. Arm nearest boat protects the head and holds top of hood in place. e. The other hand holds the suit away from face (insert thumb or finger) to let air escape, and covers nose and mouth. f. CAUTION!! Do not inflate air bladder before jumping into water (may cause neck injury or tear away). g. Check water for debris or people. h. Slip slowly into the water if possible; if not jump feet first with legs crossed. i. Once in the water, inflate air bladder. 10. Marking 11. Prospective buyers should read the information pamphlet generally accompanying the PFD to insure that the PFD meets their needs and requirements. <p>B. Care and Maintenance – periodic inspection a MUST.</p> <ol style="list-style-type: none"> 1. Kapok vests and seat cushions should be checked for leaks in the sealed plastic flotation pouches. 2. Immersion suits <ol style="list-style-type: none"> a. Store unzipped b. Lubricate zippers regularly c. Inflate bladders and check for leaks. d. Check for holes at seams and stress points e. Inspect monthly. 3. Types I, II, and V PFDs can be damaged by sitting on them. 4. Approved PFD light with up-to-date power supply should be attached to the shoulder of all PFDs. (Required on ocean waters) <ol style="list-style-type: none"> a. Attaching whistles to PFDs is 			

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<p>recommended.</p> <p>5. Inflatable PFDs:</p> <ol style="list-style-type: none"> a. Take special care of inflation mechanisms. b. Follow manufacturer’s instructions. <p>c. Other Considerations</p> <ol style="list-style-type: none"> 1. Federal requirements: <ol style="list-style-type: none"> a. Determine the PFDs required for your vessel and area of operation. b. All PFDs must carry USCG approval, be serviceable and an appropriate size for the wearer. c. All wearable PFDs and immersion suits must be readily accessible. d. Throwable devices must be immediately accessible. 2. Personal considerations <ol style="list-style-type: none"> a. Cost – wide range b. Color – bright colors facilitate rescue. c. Life style – will it be worn? d. Maximize safety – PFDs can be made safer by attaching signals, etc. e. Area of operation <ol style="list-style-type: none"> i. Close to town ii. Near shore iii. Offshore iv. Water temperature, seasonal operations <p>2.2 PFD Signaling Equipment</p> <p>A. Whistles – 3 to 5 times louder than the human voice.</p> <p>B. Strobe and other lights.</p> <ol style="list-style-type: none"> 1. Strobe and “steady” lights <ol style="list-style-type: none"> a. Update batteries annually. b. Check bulb regularly. 2. Chemical light sticks: <ol style="list-style-type: none"> a. Dim in cold water. b. Green and blue light sticks cannot be seen by night vision goggles. <p>C. Retro-reflective Tape</p> <ol style="list-style-type: none"> a. Extremely effective b. Required on all PFDs & Immersion Suits <p>2.3 SUMMARY</p> <ol style="list-style-type: none"> I. Find the PFD that meets your needs and wear it. <ol style="list-style-type: none"> A. Consider these qualities when choosing a PFD: <ol style="list-style-type: none"> 1. Thermal protection 2. Federal requirements 		<p>5</p> <p>4</p>	

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3. Life style B. The best PFD is the one that will be worn.			
3 LAUNCHING & RECOVERY OF SURVIVAL CRAFT			
3.1 USCG Requirements A. Whether or not your are required to carry survival craft and what type is determined by: 1. How vessel is registered – documented or state numbered 2. Area of operation 3. Number of persons on board 4. The mean temperature of the water (NVIC 7-91 – Cold Water Areas) B. Refer to Federal Requirements for Commercial Fishing Industry Vessels to determine what survival craft your vessel is required to have on board. 3.2 Types of Survival Craft A. Inflatable liferaft with SOLAS A or B pack. SOLAS refers to international standards for “Safety of Life At Sea” 1. Provides shelter and buoyancy. 2. Inflatable floor provides insulation from cold water; and canopy protects you from the elements and conserves heat. 3. Ballast system to improve stability and prevent capsizing. 4. Automatically or manually inflated via CO ₂ system. 5. Must be equipped with float free mechanism to self deploy and inflate in the event of sudden capsizing. 6. The emergency equipment pack included with the raft increases your inventory and ability to carry out the 7 steps. a. SOLAS A has the most equipment including food and water. B. SOLAS B has limited supplies, no food or water. 7. 6-25 person capacity. 8. Stored in rigid fiberglass canister and cradle aboard deck. 9. Require annual servicing at a Coast Guard approved, factory authorized facility B. Coastal Inflatable liferaft		25	

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<ol style="list-style-type: none"> 1. Provided shelter and buoyancy. 2. Single canopy; inflatable floor optional. 3. Ballast system to improve stability. 4. Inflated via CO₂ system. 5. Hydrostatic release for automatic launching is optional. 6. Emergency equipment pack more limited than SOLAS A or B, no food or water. 7. 4-8 person capacity. 8. Can be deck-mounted in a rigid, fiberglass canister, or stored in fabric valise for stowage. 9. Requires annual servicing at a Coast Guard approved, factory authorized facility. <p>C. Inflatable buoyant apparatus.</p> <ol style="list-style-type: none"> 1. Provides buoyancy and keeps people out of the water. 2. Basically a large life ring with a floor. Not a liferaft but a means to keep afloat. 3. No ballast chamber or canopy. 4. Inflated via CO₂ system; hydrostatic release optional. 5. Emergency equipment pack similar to coastal pack. 6. 4 to 75 person capacity. 7. Available in rigid canister deck mount or valise for stowage. 8. Requires annual servicing at a Coast Guard approved, factory authorized facility. <p>D. Life float</p> <ol style="list-style-type: none"> 1. Provides buoyancy. 2. Rectangular ring made of rigid buoyant materials. 3. Drop net floor, no ballast system or canopy. 4. Ready to go; does not depend on self inflation mechanism. Float free. 5. Capacity 2-22 persons. 6. Not designed to get people out of the water. 7. Minimal emergency equipment pack optional. 			
<p>3.3 Launching Liferafts</p> <p>A. Liferaft Deployment and Proper use</p>			

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<ol style="list-style-type: none"> 1. Train the crew in proper procedure during orientation. 2. Practice during monthly drills. <p>B. Deployment Procedure</p> <ol style="list-style-type: none"> 1. Begins with proper stowage. <ol style="list-style-type: none"> a. Accessible to crew but located to float free if the vessel should sink suddenly. b. No overhead obstructions. c. Away from heat sources that can damage the gasket on the canister and allow deterioration of the raft inside. d. Not at deck level to be exposed to boarding seas. e. Mounted with float free mechanism (hydrostatic release or float free rack) to permit self deployment and inflation. f. Painter secured to deck or to hydrostatic release depending on type of float free arrangement. Painter has a weak link designed to break and release the inflated raft from a sinking vessel. 2. Proper Launching – before the boat sinks <ol style="list-style-type: none"> a. Make sure painter is attached to vessel. On installations with older style stainless steel hydrostatic releases, secure the painter to the cleat installed adjacent to the raft cradle. b. Release hydrostatic release. <ol style="list-style-type: none"> 1. Undo pelican hook on disposable, Hammar-type releases. 2. Hit button on older style stainless steel releases. c. CARRY, do not roll, canister to lee side (unless boat on fire) <ol style="list-style-type: none"> 1. Designated embarkation station. 2. Away from obstructions. d. Make sure water is clear of debris and people. e. Painter secured to vessel, toss canister into water. f. Pull painter until liferaft inflates (up to 250 ft.) 			

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<p>g. Hissing sound ok, over inflation valves are working.</p> <p>h. May inflate upside down.</p> <p>C. Boarding Procedures</p> <ol style="list-style-type: none"> 1. Try to enter liferaft dry. 2. Avoid jumping on canopy. 3. Beware of sharp objects on your person or in the water. 4. From water: <ol style="list-style-type: none"> a. Without SOLAS entry ramp: <ol style="list-style-type: none"> 1. Use buoyancy of immersion suit/PFD to spring up. 2. Legs together, dolphin kick. 3. Grab top tube, then straps inside raft to pull in. 4. Get help from people inside the raft. b. With SOLAS ramp, board ramp and enter raft. 5. Righting the liferaft. <ol style="list-style-type: none"> a. Find side with CO₂ cylinder. b. Grab righting strap in open hand (don't wrap around hand or arm). c. Stand on the cylinder and lean back. d. Land in water on back. e. If the raft lands on you, don't panic; create an air pocket by pushing up on the raft floor and follow the righting strap to the outside of raft. <p>D. Liferaft Care and Maintenance</p> <ol style="list-style-type: none"> 1. Life expectancy depends on care. 2. Select your raft with care and note features of different brands. 3. Maintenance: <ol style="list-style-type: none"> a. Repack at a Coast Guard approved service facility that is also authorized by the manufacturer of your particular raft. <ol style="list-style-type: none"> 1. Regulations permit new rafts to go two years from date of manufacture before servicing; most manufacturers recommend annual service. 2. A yearly repack will help increase your raft's life expectancy and ensure it will work properly in an emergency. Rafts may "work" the canister causing chafing, water may 			

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<p>enter the canister and damage the raft, especially if it freezes. Repacking annually will allow the raft to dry out thoroughly and be refolded to distribute the wear points. The repacker will also inspect the raft and equipment for damage and check that supplies are in date.</p> <p>b. Nothing should be placed or set on the canister. Weight can damage the container or flex it, destroying the weathertight seal.</p> <p>c. Do not inflate before sending in for repack:</p> <ol style="list-style-type: none"> 1. CO₂ can damage hoses and weaken fabric. 2. Adds to the cost of repack. <p>d. Insure painter line is secured to deck or hydrostatic release, depending upon type of float free arrangement. If no hydrostatic release is used the painter must be secured to the vessel and be equipped with a "weak link."</p> <p>e. Hydrostatic release properly installed on raft in float free rack.</p> <p>f. No tie down lines attached to raft.</p> <p>3.4 Liferaft Survival Pack</p> <p>A. Acquaint crew with contents.</p> <p>B. SOLAS A pack contents</p> <p>C. SOLAS B pack contents</p> <p>D. Coastal pack</p> <p>E. You can have your pack customized beyond requirements during repack.</p> <ol style="list-style-type: none"> 1. Personal medications, spare eyeglasses, EPIRB (S or B), water purifiers. 2. Limited space is available. <p>F. Liferaft signaling equipment</p> <ol style="list-style-type: none"> 1. Mirrors <ol style="list-style-type: none"> a. Visible up to 50 miles by aircraft on a clear day. b. Still useful if overcast, even at night if used with strobe. 2. Handheld VHF radio <ol style="list-style-type: none"> a. Place in waterproof bag. b. Waterproof radio may be packed with your liferaft. <p>3.5 Recovery of Survival Craft and Survivors</p>			

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<p>A. Preparation of rescue vessel:</p> <ol style="list-style-type: none"> 1. Vessel positioning 2. Crew Preparation: <ol style="list-style-type: none"> a. Crew don PFDs. b. Secure raft with survivors to rescue vessel. 3. Prepare means of getting survivors on board i.e., scramble nets, rescue slings and/or cranes and hydraulics. 4. If rescue crew needs to enter water, don immersion suits and secure to vessel with tether line. 5. Prepare to treat survivors. <p>B. Precautions:</p> <ol style="list-style-type: none"> 1. Treat victims gently and assist as much as possible, monitor closely for at least 24 hours if hypothermic. 2. Always have control of the victim: PFD, tether line, lifting device. 3. Don't expect victims to assist in any way. 4. Insure that rescuers do not become victims. <p>3.6 Summary</p> <p>A. Know what type of survival craft is required for your vessel.</p> <p>B. Train your crew in proper deployment and practice monthly during drills.</p> <p>C. You're still not out of danger once in the liferaft.</p> <p>D. Life expectancy of your survival craft depends upon care. Repack annually at an authorized dealer.</p> <p>E. Acquaint your crew with emergency equipment pack contents.</p> <p>F. In recovering survival craft, don't let rescuers become victims. Treat survivors gently; monitor closely.</p>			
<p>4 Radio Distress Comms & Visual Distress Signals</p>			
<p>4.1 Elements of an Effective Signal</p> <p>A. Must attract attention.</p> <ol style="list-style-type: none"> 1. Bigger 2. Brighter 3. Different <p>B. Must give a message that you need help.</p> <p>4.2 Radio Distress Signals</p> <p>A. General Considerations</p>			

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<ol style="list-style-type: none"> 1. All personnel, especially those on watch, should know proper radio distress call procedures. 2. Radio equipment should always be able to reach SAR (Search and Rescue) resources: <ol style="list-style-type: none"> a. Radio should have appropriate signal strength. b. Radio must have an alternate power supply. [CFR28.245(i)] <p>B. Radio Types and Emergency Channels</p> <ol style="list-style-type: none"> 1. VHF – Channel 16. Range up to 40 miles. Handheld, 5-10 miles. Operates line of sight. 2. CB – depends on local SAR. Operates line of sight. 3. SSB – Channel 2182 (or 4125 in western US) 4. Cellular phone – dial *CG (in some areas) <ol style="list-style-type: none"> a. Not universal coverage b. Other vessels can't hear you. c. Cannot "direction find" on cellular phone. <p>4.3 Types of Emergency Broadcasts</p> <p>A. SECURITE – lowest urgency; calls attention to weather, navigation hazards.</p> <p>B. PAN – calling station has an urgent message to transmit.</p> <p>C. MAYDAY – highest urgency; immediate life threatening danger.</p> <ol style="list-style-type: none"> 1. MAYDAY, MAYDAY, MAYDAY 2. Vessel's name/call sign three times 3. Location: latitude/longitude and LORAN preferred. <ol style="list-style-type: none"> a. If geographic reference, use names on charts so rescuers can locate you. 4. Nature of the distress (fire, grounding, medical emergency, etc.) 5. Number of persons on board. 6. Amount and type of survival gear on board (immersion suits, EPIRBs, liferaft, etc.) 7. Vessel description (length, type, color). 8. Listen for response, If none, repeat the message until it is acknowledged or you are forced to abandon ship. 9. If abandoning ship, state "abandoning 			

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<p>vessel" and last known position.</p> <p>D. Receiving MAYDAY (if unanswered by USCG)</p> <ol style="list-style-type: none"> 1. You must answer and log details 2. Advise vessel in distress what assistance you can offer. 3. Contact the Coast Guard to ensure they received the call. <p>E. MAYDAY Relay</p> <ol style="list-style-type: none"> 1. Acquire information: <ol style="list-style-type: none"> a. Name and call sign of vessel in distress b. Location. c. Nature of problem. d. Number of persons on board. e. Survival equipment available. f. Description of vessel. g. Name, address, phone of vessel's owner. h. Secondary frequencies (i.e., channel 21, 22, HF 6 MHz) 2. Transmit MAYDAY relay: <ol style="list-style-type: none"> a. MAYDAY RELAY, MAYDAY RELAY, MAYDAY RELAY b. Your vessel name/call sign. c. Name/call sign of vessel in distress and position. d. Nature of the problem. e. Degree of assistance needed. f. Listen for acknowledgement. g. Transmit additional information. <p>F. PRACTICE MAYDAYS in class.</p> <p>4.4 PYROTECHNICS (Flares)</p> <p>A. Types</p> <ol style="list-style-type: none"> 1. Meteors: <ol style="list-style-type: none"> a. Best at night. b. Red means emergency. c. Fast burn time; less than 10 seconds. 2. Parachute flares: <ol style="list-style-type: none"> a. Best at night. b. 45-60 second burn time. c. Up to 1000 ft. height. 3. Hand-held flares: <ol style="list-style-type: none"> a. Longer burn time, 1-2 minutes. b. Best at night. 4. Smoke: <ol style="list-style-type: none"> a. Best in daytime. b. Most effective in little/no wind. 		6	

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<p>c. Effective 1-4 minutes.</p> <p>5. Dye:</p> <ol style="list-style-type: none"> a. Best in daytime. b. Most effective in calm seas. <p>B. Safety</p> <ol style="list-style-type: none"> 1. Treat like a firearm 2. Hand helds: <ol style="list-style-type: none"> a. Can produce hot, dripping slag. b. Use gloves if possible. 3. Meteors: <ol style="list-style-type: none"> a. Hold at an angle 60-80 degrees from horizon, above head. b. Wind to your back or side. 4. Know how to use beforehand. <ol style="list-style-type: none"> a. Find out what's packed in your raft. b. Purchase the same pyrotechnics for use on board. 5. Turn face away before firing. 6. Do not fire at aircraft. <p>C. Other Factors:</p> <ol style="list-style-type: none"> 1. Keep flare in current date. 2. Fire one flare first, conserve others. 3. Use when rescuers are in sight. 4. Fire in front of aircraft or vessel. <p>4.5 General Signal Types</p> <p>A. Passive signals – work without you.</p> <ol style="list-style-type: none"> 1. EPIRBS, lights, wreckage. 2. Use continuously. <p>B. Active signals – only work with you.</p> <ol style="list-style-type: none"> 1. Flares, whistles, mirrors <ol style="list-style-type: none"> a. Generally use only when rescuers are in sight. 2. Radios. <p>4.6 General Rules for Signal Use</p> <p>A. Stay alert; maintain watches.</p> <p>B. Always have active signals on hand and ready.</p> <p>C. Protect signals from accidental loss.</p> <p>D. Emergency signals often used in sets of three; attracts more attention</p> <p>4.7 Summary</p> <p>A. Elements of a signal:</p> <ol style="list-style-type: none"> 1. Attract attention. 2. Send a message. <p>B. MAYDAY distress call must include:</p> <ol style="list-style-type: none"> 1. Vessel name/call sign. 2. Location 3. Nature of distress 4. Number POB 		<p>7</p> <p>8</p>	

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<p>5. Vessel description.</p> <p>C. Pyrotechnics.</p> <ol style="list-style-type: none"> 1. Handle like a firearm. 2. Become familiar with what you have on board. 3. Use when rescuers in sight. <p>D. You can't be rescued if no one can see or understand you.</p>			
5 Use & Maintenance of EPIRBS			
<p>5.1 Emergency Position Indicating Radio Beacons (EPIRB)</p> <p>A. All commercial fishing vessels 36 feet or more in length operating beyond three miles from the coastline are required to carry a 406 MHz Category 1 EPIRB</p> <p>B. Function of the EPIRB is to communicate your position accurately and quickly to SAR rescues</p> <ol style="list-style-type: none"> 1. Broadcasts signal to a satellite, similar to an aircraft ELT. <p>C. Features of Category 1, 406 EPIRBS:</p> <ol style="list-style-type: none"> 1. Broadcasts on 121.5 and 406 MHz. <ol style="list-style-type: none"> a. 121.5 is monitored by passing aircraft and COSPAS/SARSAT orbiting satellite system. b. 406 MHz is currently reserved for marine use only 2. Self-activating and float free. 3. Signal identifies boat and owner (if registration sent in.) <ol style="list-style-type: none"> a. Federal 4. Signal location accuracy to within two miles within minutes of detection by satellite. 5. Transmits for 48 hours continuously. <p>D. Other types of EPIRBS available have varying capabilities and applications</p> <ol style="list-style-type: none"> 1. There are still many Class A and B EPIRBS in use even though USCG required them to be replaced by the 406 by August, 1991. 2. Limitations of Class A and B EPIRBS: <ol style="list-style-type: none"> a. Majority were not manufactured or maintained to adequate specification prior to October, 1988, resulting in high incidence of false alarm and failures. b. Over 40,000 satellite distress transmissions are detected 		10	

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<p>annually in North American, 98% are false alerts. No means of determining which are real before responding. Can result in delayed response.</p> <p>c. Search area 20-45 times greater than that of 406 EPIRB.</p> <p>E. Using the Category 1, 406:</p> <ol style="list-style-type: none"> 1. Install properly & register. 2. Test monthly, following manufacturer's instructions. (99.5 FM test only 121.5 signal) 3. Once turned on, leave on, if used in an emergency. 4. Keep with you when leaving the vessel. 5. Keep antennae vertical, out of the water. 6. Do not allow antennae to touch solid objects – this causes grounding. 7. Activate EPIRB when you issue your FIRST MAYDAY broadcast. 8. Include EPIRB use in station bill assignments. <p>F. Maintenance</p> <ol style="list-style-type: none"> 1. Send in your EPIRB registration card. 2. Mount correctly; place in "arm" position. 3. Avoid overhands and obstructions; mount in float free location. 4. Test once a month and log. 5. Check during and after rough passages. 6. Instruct all crew in operations; include in orientation. 7. Replace hydrostatic release every two years. 8. Replace battery every 2-5 years, according to manufacturer's specifications. <p>G. Demonstrate and TEST EPIRBS IN CLASS. If a working 406 is unavailable, testing can be demonstrated with a hand-held Mini B class EPIRB and help to acquaint students with other types. Test ONLY during the first 5 minutes of each hour and only for 2 second sweeps.</p> <p>Summary</p> <ol style="list-style-type: none"> A. Must be installed properly. B. Must be tested monthly. C. Should be included in drills. 		<p>12</p> <p>13 14</p>	

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D. Must send in your 406 registration card!			
6 Firefighting in Different Locations on Board the Vessel			
<p>6.1 USCG Requirements</p> <p>A. Using pamphlet, <i>Federal Requirements for Commercial Fishing Industry Vessels</i>, locate the section on firefighting equipment and identify requirements for your own vessel.</p> <ol style="list-style-type: none"> 1. USCG has their own rating system for fire extinguishing appliances. <ol style="list-style-type: none"> a. Uses Roman numerals to indicate sizes of portable and semi-portable extinguishers, I being smallest, V being largest. b. A,B,C, refer to class or type of fire. B-III indicates a medium size extinguisher for use on Type B fires (flammable liquids and gases). <p>6.2 Classes of Fire (based upon type of fuels)</p> <ol style="list-style-type: none"> A. Class A – wood, paper, rubber, plastics. Usually leave ash. B. Class B – flammable liquids and gases. C. Class C – combination fire involving electricity. D. Class D – combustible metals and some chemical compounds. E. To remember: A (ash), B (boils), C (current), D (different). <p>6.3 Extinguishing Agents</p> <p>A. Break the fire tetrahedron by removing heat, oxygen, or fuels and disrupting the chain reaction.</p> <p>B. Water – removes heat. Class A/B fires.</p> <ol style="list-style-type: none"> 1. Turns to steam at 212 degrees and expands to 1700 times its original volume. 2. Use fog spray for protection, heat absorption and ventilation. 3. Disadvantages: <ol style="list-style-type: none"> a. Mass and weight can adversely affect vessel stability. b. Corrosive. 		<p>3-Fire</p> <p>33</p> <p>32</p> <p>4-Fire</p> <p>35</p> <p>5-Fire</p> <p>12-Fire</p> <p>34</p>	

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<ul style="list-style-type: none"> c. Salt and fresh water conduct electricity. C. Foam – removes heat and oxygen. Class A/B. <ul style="list-style-type: none"> 1. Forms a blanket of water and chemical mixture which interrupt oxygen supply and cools the fire. 2. Disadvantages: <ul style="list-style-type: none"> a. Conducts electricity. b. Contains water; can be corrosive. c. Need to keep foam barrier intact. D. Carbon Dioxide (CO₂) – removes oxygen. Class B/C fires. <ul style="list-style-type: none"> 1. Does not conduct electricity. 2. Leaves no residue; no weight. 3. Non-toxic; heavier than air. 4. Disadvantages: <ul style="list-style-type: none"> a. CO₂ displaces oxygen; in a confined space, operator must guard against suffocation. b. Temperature, 108 degrees below zero, Fahrenheit. Can cause frostbite. c. High reflash potential, especially if used outside. d. Agent must be contained – dispersed by wind/ventilation. E. Dry Chemical – interrupts chain reaction; Class A/B/C or B/C depending on chemical used. <ul style="list-style-type: none"> 1. Several types available. 2. Does not conduct electricity. 3. Very effective on Class B gasoline fires. 4. Breaks the chain reaction with little or no cooling; reflash is possible if surrounding surfaces are hot. 5. Disadvantages: <ul style="list-style-type: none"> a. Corrosive. b. Lots of residue; clean up. c. Non-toxic but irritant; can cause alkaline burns. F. Halon – interrupts the chain reaction. 		6-Fire	

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<p>Class A/B/C fires.</p> <ol style="list-style-type: none"> 1. Twice as effective as CO₂. 2. Noncorrosive, nonconductor. 3. No residue. Safe for electronics. 4. Disadvantages: <ol style="list-style-type: none"> a. May become toxic when heated; avoid inhalation, Can displace oxygen and lead to suffocation. b. Destroys ozone; may limit product availability. Replacements are being developed, availability is limited. No longer produced by manufacturers. <p>G. Dry Powders – Class D fires only. Specialty item; must use specific powder for specific metals.</p> <p>6.4 Extinguishing Appliances</p> <p>A. Fixed fire extinguishing systems</p> <ol style="list-style-type: none"> 1. Designed for engine rooms and high risk enclosed spaces. 2. Halon or CO₂. 3. MUST be evacuated before activating; can suffocate occupants. 4. Should have alarm and time delay on automatic activation device. 5. Manual activation device should be located outside the protected area. <p>B. Semi-portable</p> <ol style="list-style-type: none"> 1. Fixed cylinders. 2. Hose reel to deliver extinguishing agent or cylinder on a wheeled cart. <p>C. Portable Extinguishers</p> <ol style="list-style-type: none"> 1. Up to 55 pounds total weight. 2. Designed for small fires; last 5-40 seconds depending on size. 3. Stored pressure type – agent and pressure stored in the same cylinder; most have pressure gauges and must be weighed annually. 4. Cartridge type – agent contained in main cylinder, expelling gas in separate cartridge that must be punctured to release. 5. Inspect regularly for signs of corrosion, proper location, full charge and condition of hose. 		<p>14-Fire</p> <p>15-Fire</p> <p>16-Fire</p> <p>10-Fire</p>	

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<p>E. Identify a Case Study of at least 3 lessons learned in a casualty report.</p> <p>Additional objectives F/Vs over 79 feet, if applicable per 46 CFR Part 28:</p> <ol style="list-style-type: none"> 1. Extinguish fire with applicable extinguishing appliances and agents where allowed by law and environmental conditions 2. Extinguish simulated fire using appropriate extinguishing agent for class of fire. 3. Don a fireman's suit and SCBA correctly within four minutes. (NFPA standard is two minutes for suit & SCBA for firefighter 1 level) 4. Enter a enclosed space wearing SCBA and extinguish simulated fire 5. Perform a rescue in a space wearing SCBA 6. Identify six steps in the maintenance of a SCBA. 7. Identify six steps in the proper donning of an SCBA 			
7 Minimizing the Effects of Flooding			
<p>7.1 High-Water Alarms</p> <ol style="list-style-type: none"> 1. Functional high water or slack tank alarms in all compartments and enclosed spaces, particularly lazarette. 2. Alarm should be both visual and audible. 3. Tested regularly. <p>7.2 Dewatering Systems</p> <p>A. For each compartment</p> <ol style="list-style-type: none"> 1. Each suction line equipped with a stop valve at the manifold. 2. Each suction line equipped with a strainer. 3. Each suction line equipped with an accessible check valve. <p>B. Pumping/dewatering station</p> <ol style="list-style-type: none"> 1. Simple in design. 2. Known to all on board. 3. Tested regularly. 4. Back up pumps. <p>C. Know how to operate emergency dewatering pumps.</p> <ol style="list-style-type: none"> 1. CG-P1 and CG-P5 are pumps in most common use. 		<p>43</p> <p>41</p>	

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<ul style="list-style-type: none"> a. Similar in function. b. P5 is larger capacity. <ul style="list-style-type: none"> 2. Follow the checklist of instruction on placard with pump. <ul style="list-style-type: none"> 3. If a demonstration is not possible: <ul style="list-style-type: none"> a. Use videotape on the subject to demonstrate. b. Distribute instruction placards to class to use during discussion or video demonstration. Items to note during viewing: o-ring suction; rubber sleeve discharge; don't over choke; prime pump; caution using inside (carbon monoxide fumes). <p>7.3 Damage Control</p> <ul style="list-style-type: none"> A. Develop and maintain a damage control kit suitable for vessel <ul style="list-style-type: none"> 1. Should contain: hose clamps, canvas, rubber sheeting, oakum, soft wood plugs, wedges, and a mallet. 2. Other material routinely carried on board may also be useful for controlling flooding. B. Know location to all through-hull penetrations. C. A piping diagram (particularly of all water systems) will be very useful in an emergency. D. With adequate warning of high-water alarm it is possible to locate source of leak and repair damage with items in DC kit or other material. <ul style="list-style-type: none"> 1. Soft wood plugs can be used to secure a failed through-hull fitting. 2. Wedges can be used in conjunction with other material (canvas) to make a temporary repair in hull. 3. Hose clamps and rubber gasket material can be used to make temporary repair to ruptured pipe or hose line. 4. Pieces of plywood or similar material can be used to cover blown-out windows or port-lights. E. Have a plan. Be creative. Use your imagination! You can save your vessel. <p>7.4 Reduce Risks in Day to Day Operations</p> <ul style="list-style-type: none"> A. Maintain watertight subdivision <ul style="list-style-type: none"> 1. Be careful of bulkhead penetrations (i.e., wiring and piping); result in non- 		<p>37</p> <p>38</p> <p>39</p>	

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<p>included for:</p> <ol style="list-style-type: none"> 1. Unintentional flooding 2. Crossing hazardous bars and rough weather at sea. 3. On all documented vessels must be readily available. <p>B. Review sample emergency instructions for flooding, rough weather, hazardous crossing</p> <ol style="list-style-type: none"> 1. FLOODING: Notify pilothouse to sound alarm and issue MAYDAY. <ol style="list-style-type: none"> a. Continuous ringing of the general alarm. b. ROUGH WEATHER/HAZARDOUS CROSSING: notify entire crew. 2. Close watertight doors, hatches and airports to prevent taking on water and prevent further flooding. 3. Keep bilges dry to prevent loss of stability. Use power bilge pumps, hand pumps and buckets to dewater. 4. Align fire pumps to use as bilge pumps, if possible. 5. Check all intake and discharge lines which penetrate the hull for leakage. All crewmembers should know the location and operation of all through-hull penetrations and shut-offs or sea cocks. 6. Personnel should remain stationary and evenly distributed. 7. Personnel should don PFDs and/or immersion suits as instructed by master of the vessel. <p>C. Station bill must include crew assignments for unintentional flooding.</p> <ol style="list-style-type: none"> 1. Have students complete the station bill for "class crews" for practice drill. 2. If time allows, ask students to modify flooding emergency instructions for their own vessels and complete a station bill. <p>7.6 Summary</p> <ol style="list-style-type: none"> A. Make sure you have an operational high-water, slack tank alarm system. B. Know how to use vessel installed dewatering system and Coast Guard emergency pumps. C. Understand importance of damage control. D. Know how to reduce risks in day to day operations. 			

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8 Recovering an Individual From the Water			
<p>8.1 Person in Water/Recovery of Survivors</p> <p>A. Preparedness: discuss with crew types of situations which could lead to PIW on your vessel.</p> <ol style="list-style-type: none"> 1. Discuss ways to minimize risks. 2. Discuss ways to maximize chances of rescue: <ol style="list-style-type: none"> a. Wearing a PFD. b. Wearing a personal marker light. c. Retro-reflective tape on outer garments. d. Wearing a knife. <p>B. Station Bill Assignments</p> <ol style="list-style-type: none"> 1. Know your assignment. 2. Remember that since one of the persons on the station bill is probably the victim, you will need to make adjustments. <p>C. Initial Actions</p> <ol style="list-style-type: none"> 1. Throw markers and/or life ring <ol style="list-style-type: none"> a. Markers should be available and ready for immediate use close to locations where crews regularly work. b. At least one life ring should be equipped with a marker light. <p>D. Sound the alarm</p> <ol style="list-style-type: none"> 1. Make sure all crew on board know what has happened; set up communications relay with wheelhouse. Mark position electronically on navigation equipment. <p>E. Keep the victim in sight</p> <ol style="list-style-type: none"> 1. Person pointing out victim should be in a position where s/he can be seen by captain. <p>F. Return to the scene</p> <ol style="list-style-type: none"> 1. Maneuver the vessel to the victim's location and stop alongside. 2. If not immediately located, notify Coast Guard and other vessels in the area. <p>G. Recovery</p> <ol style="list-style-type: none"> 1. Have a rescue sling ready to lift the victim from the water; be sure all crew can operate it. 2. If using a pot hauler or block, be sure all crew can operate it. 		29	

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<p>3. Ready a standby swimmer, wearing an immersion suit with tether, to be prepared to enter the water to assist the victim upon orders from captain or designate remaining onboard.</p> <p>4. PRACTICE! Bringing a victim on board is a difficult and tricky maneuver, usually not appreciated until you have tried it. Give consideration to your vessel's design and abilities for recovering victims.</p> <p>H. Treat victim</p> <ol style="list-style-type: none"> 1. Horizontal lift if possible. 2. Handle gently; notify CG. 3. Use TPA for rewarming 4. Depending on condition; treat victim and monitor condition (closely for at least 24 hours.) <p>8.2 Summary</p> <p>A. Essential Actions for PIW</p> <ol style="list-style-type: none"> 1. Throw markers, life ring 2. Sound Alarm 3. Keep victim in sight 4. Return to scene 5. Recover 6. Treat 		55	
<p>9 Use, Testing & Maintenance of General Alarm and Other Alarms</p>			
<p>9.1 General Alarms</p> <p>A. A means of notifying all individuals on board of an emergency situation.</p> <ol style="list-style-type: none"> 1. Must be heard or seen in all accommodation or working spaces on board the vessel. <ol style="list-style-type: none"> a. In work areas where background noise makes a general alarm difficult to hear, a flashing red light must be installed. 2. Must be checked before each voyage and once a week while underway. 3. Must be distinct from other alarms. 4. Other means of alerting all on board (loud hailer, P.A.) may be used in lieu of a general alarm system: <ol style="list-style-type: none"> a. If it meets #1 and 2 and; b. If it can be activated from the operating station. 		9	

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<p>B. Activating the general alarm.</p> <ol style="list-style-type: none"> 1. Importance of general alarm (Aleutian Enterprise capsized). 2. Required to have a flashing light in high noise areas. MUST BE HEARD OR SEEN BY ALL. 3. Standard alarm signals identify type of emergency by using ship's whistle and or general alarm. <ol style="list-style-type: none"> a. Fire and emergency – continuous blast of whistle for a period of not less than 10 seconds supplemented by continuous ringing of general alarm for not less than 10 seconds. b. Abandon ship – more than 6 short blasts followed by 1 long blast on whistle supplemented by same signal on general alarm. c. Person overboard – 3 long blasts repeated at least 4 times d. Or as designated by master and practiced by crew 4. General alarm is the signal to all on board to report to assigned crew muster stations for indicated situation. <p>9.2 Summary</p> <p>A. General alarm:</p> <ol style="list-style-type: none"> 1. Needs to be heard or seen in all spaces 2. Must be checked before each voyage and once a week. 3. Inoperative alarms must be reported to the vessel operator or owner. 		4	
<p>10 Notification Procedures for Inoperative Alarm and Fire Detection Systems</p>			
<p>10.1 Reporting Inoperative Alarms</p> <p>A. Inoperative alarms must be immediately reported to the vessel master, person-in charge or owner if available.</p> <p>B. Anyone discovering an inoperative alarm is responsible for reporting it.</p>			
<p>11 Abandon Ship Preparations & Procedures</p>			
<p>11.1 Abandoning the Vessel</p> <p>A. When it becomes more dangerous to stay aboard the vessel than to enter the water or survival craft</p>			

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<p>B. At whose instruction C. Where 1. Muster Point 2. Survival craft embarkation location(s)</p> <p>11.2 Abandon Ship Checklist</p> <p>A. Be sure all persons are accounted for B. Send final MAYDAY 1. State that you are abandoning the vessel 2. Give last known position 3. Identify whether you are going into the water or into a liferaft C. Take with you 1. Vessel log 2. Extra signals a. EPIRB b. Flares c. Others (mirror, flashlight, handheld VHF, etc.) 3. Water a. May also bring food with high water content 4. Abandon ship bag 5. Personal health considerations 6. Additional survival gear D. Keep raft tethered to vessel as long as safe & possible</p> <p>11.3 Survival Kits –It’s not one unless it’s with you.</p> <p>A. Considerations 1. Most persons find themselves in survival situations with: a. The clothing they are wearing b. What’s in their pockets B. Abandon Ship Kit 1. May not “make it out” with you in an emergency but if time allows, can make survival easier. 2. Store near exit. 3. Should be watertight and float. 4. Contains extra flares, water, mini-B EPIRB, log book, etc. C. Personal Survival Kit 1. Must be small enough so it is always with you. 2. Contents depend upon the individual, environment and activity. 3. Consider putting a kit in with survival suit. 4. Meets four general requirements</p>		3	

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<ul style="list-style-type: none"> a. Shelter (building aides such as string). b. Signals (mirror, space blanket). c. Personal health considerations (medication). d. Fire starter (steel wool, fire sticks, waterproof matches). <p>11.4 Summary</p> <ul style="list-style-type: none"> A. When & Where B. Abandon Ship Checklist C. Survival Kits <ul style="list-style-type: none"> 1. Abandon ship kit can make survival easier – customize. 2. Store near exit. 3. Personal survival kits should be with you at all times, meet your personal needs as well as shelter, signals & fire starter. 			
12 Orientation, Station Bills and Drills			
<p>12.1 Vessel Safety Orientation</p> <ul style="list-style-type: none"> A. General Points <ul style="list-style-type: none"> 1. Give all newcomers to your vessel a thorough safety orientation before getting underway. 2. The master must insure that a safety orientation is given to each individual on board who has not received instruction or participated in drills. 3. The safety orientation must explain the emergency instructions and drill evolutions. B. Other points to cover: <ul style="list-style-type: none"> 1. Dangers of entrapment, special precautions. 2. EPIRB location and use. 3. Radio location, use, and distress frequencies. 4. Hazards such as hatches, winches, lines. 5. Importance of reporting all injuries and malfunctions. C. Log all orientations conducted. <p>12.2 Emergency Instructions</p> <ul style="list-style-type: none"> A. Documented vessels operating beyond the boundary line or with more than 16 persons on board must post emergency instructions in locations accessible to crew: [46 CFR 28.265]. <ul style="list-style-type: none"> 1. Vessels operating with less than 4 individuals on board may keep 			

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<p>instructions readily available as an alternative to posting.</p> <p>2. <u>On any vessel</u>, the instructions marked with an asterisk (*) below, may be kept readily available as an alternative to posting.</p> <p>B. Emergency instructions must identify at least the following information as appropriate for the vessel:</p> <ol style="list-style-type: none"> 1. Survival craft embarkation stations and the craft to which each individual is assigned. 2. Essential action that must be taken in an emergency by individual (station bill). 3. Fire and emergency, abandon ship and MOB signals. 4. The location and proper donning of immersion suits. 5. Detailed procedures for making a distress call. 6*. Procedures for rough weather at sea, crossing hazardous bars, flooding, and anchoring. 7*. Procedures for person overboard. 8*. Procedures for fighting fire. <p>C. Recommendations regarding emergency instructions.</p> <ol style="list-style-type: none"> 1. Instructions should be on heavy or waterproof paper. 2. Crew should sign a statement affirming their knowledge of the contents of the instruction book. 3. Should be reviewed/revised periodically to reflect changes in crew or results of drill debriefings. 4. Review emergency instructions and station bills developed during class. <p>12.3 Drills</p> <p>A. At least once a month, the master must ensure that drills are conducted and instructions given to all onboard.</p> <ol style="list-style-type: none"> 1. The person conducting the drills need not be the master or a member of the crew. 2. Log all drills. <p>B. Drills and instruction are to include:</p> <ol style="list-style-type: none"> 1. Abandoning the vessel. 2. Fighting fire in different locations 			

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<p>c. Familiarize student with valve inspection and operation.</p> <p>4. Proper swimming techniques</p> <ol style="list-style-type: none"> a. On back safest and driest. b. Most propulsion with arms. c. Must always protect airway, especially in rough seas. d. Tandem swimming: <ol style="list-style-type: none"> i. Lay with head on buddy's torso and body between his or her legs. ii. Energy effective and helps keep people together. <p>5. Proper exit – remind students that immersion suits will float even if full of water although exit from water is more difficult.</p> <p>F. Practice</p> <ol style="list-style-type: none"> 1. Inspection <ol style="list-style-type: none"> a. Have students inspect their own suits. <ol style="list-style-type: none"> i. Seams ii. Reflective tape iii. Bladder b. Lubricate zippers with products recommended by manufacturer. c. Provide toggles for zippers if necessary. 2. Donning Suits <ol style="list-style-type: none"> a. Students don suits correctly. b. Help each other. 3. Entry <ol style="list-style-type: none"> a. Students enter from the side of the pool. b. Enter water one at a time from low diveboard. c. Watch for panic – remind students buoyancy rings can come up over face; students may surface feet first. 4. Flotation, inflation, swimming, and exit <ol style="list-style-type: none"> a. Have students practice different swimming positions. b. Students may need to take turns using suits. <p>II. Emergency/Improvised Flotation</p> <p>A. Purpose</p> <ol style="list-style-type: none"> 1. People who fall into the water in heavy clothes do not have to drown. Sufficient air trapped in clothing can provide buoyancy. 2. Demonstrate the proper technique for floating in heavy clothing. <p>B. Demonstrate</p>			

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<ol style="list-style-type: none"> 1. Flotation in heavy clothing <ol style="list-style-type: none"> a. Have assistant don as many layers of clothing as possible. b. Enter backwards with knees/feet slightly bent upward to trap air. c. Float on back motionless, or with slow, sculling motion. Person must remain calm to avoid letting out trapped air. d. Swim slowly to the side of the pool or emergency flotation – use head up, underwater stroke with modified kick to conserve heat and energy. e. Point out the heaviness of wet clothes by weighing assistant before and after getting wet. <p>III. Cold water survival skills</p> <ol style="list-style-type: none"> A. Demonstrate Exercise #1 <ol style="list-style-type: none"> 1. Don PFD. 2. Always enter the water feet first. 3. Enter the water as slowly as possible to avoid cold water shock. Jumps here are to simulate falls. <ol style="list-style-type: none"> a. With one hand, hold nose and cover mouth. b. Hold the PFD in place by crossing the other arm over to their opposite shoulder of PFD. 4. Assume HELP position. <ol style="list-style-type: none"> a. Slightly on back. b. Hold arms tightly against sides of chest to protect armpits. c. Bend knees; pull up legs to protect groin. d. Reminder: this can only be done with a PFD. e. Hold HELP position for at least one minute. f. After one minute, have students spread arms and legs out to feel the difference in temperature. 5. Assume huddle position. <ol style="list-style-type: none"> a. Small groups should form tight huddles so bodies work together to protect high heat loss areas. b. Use instructor aides for demonstration. c. Reminder: small children, injured people/those without PFD can huddle in an inner circle. d. After huddling for one minute, have 		<p>22</p> <p>15</p> <p>18</p> <p>16</p>	

DETAILED TEACHING SYLLABUS

Drill Instructor/Survival/Fire/Damage Control

LEARNING/PERFORMANCE OBJECTIVES	IMO REFER ENCE	REFERENCE TEXTS	TEACHING AID
<p>students let go and feel the difference in temperature.</p> <p>6. Survival swimming</p> <ol style="list-style-type: none"> a. On back, head up, arms pressed to sides. b. Swim with modified kicks, flicking action of hands. c. Swimming increases heat loss by 30%. d. Swimming short distances may be necessary to reach assistance. <p>IV. Liferafts and buoyant apparatus</p> <p>A. Begin with students already in immersion suits.</p> <ol style="list-style-type: none"> 1. Assign a group size that meets the specifications of the raft you are using. <p>B. Liferaft righting</p> <ol style="list-style-type: none"> 1. Must be done from the CO₂ canister side of raft. 2. Grab righting strap with open hand. 3. Climb strap and arch backwards, pulling raft back. 4. Land on your back and follow the strap to outside of raft. If raft lands on top of you, push up on floor to make an air pocket. 5. Use the wind and seas to your advantage with righting a raft. <p>C. Liferaft boarding</p> <ol style="list-style-type: none"> 1. With SOLAS ramp <ol style="list-style-type: none"> a. Climb onto ramp b. Pull yourself into raft with inside straps. c. Get assistance from those inside raft/provide assistance to others. 2. Without a ramp <ol style="list-style-type: none"> a. Grab hold of buoyance tube. b. Bob up and down and use waves to heave your upper body on top of the buoyancy tube. c. Grab the straps inside of raft and pull/kick yourself in. d. Get assistance from those inside raft/provide assistance to others. <p>D. Life in the raft</p> <ol style="list-style-type: none"> 1. Inflate the floor if possible. 2. Find safety knife. 3. Close doorways and viewing ports. 4. Locate lights and survival pack. 5. Stay in enclosed raft for 5 minutes. 6. Find quoit and discuss use. 7. Students outside the raft are usually more 		<p>26</p> <p>30</p> <p>27</p>	

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than happy to provide rough seas for liferaft occupants. 8. Remember the 7 steps of survival. Go through them in the raft.		2	