



# Motorized Watercraft Rescue Technician (2021)

## Course Plan

### Course Details

- Description:** This course provides the knowledge and skills to prepare an emergency responder to conduct rescue operations using a motorized watercraft in a safe and effective manner in accordance with AHJ policies and procedures. Topics include PPE; hydrology; incident management; self-rescue and survival swimming skills; communication; navigation; assembling and configuring watercraft; maintenance; trailering; hazard mitigation; launching, docking, operating, anchoring, and recovering watercraft; victim search and rescue; crew overboard events; and towing. This course incorporates awareness, operations, and technician training based on NFPA 1006 (2021).
- Designed For:** Public safety members with river and flood rescue responsibilities.
- Prerequisites:** Water Rescue Technician (2021) (SFT) **or** River and Flood Rescue Technician (2017) (SFT)  
California Safe Boaters Safety Course (CBT – CA Boating and Waterways)  
Urban Search and Rescue Boat Operator (CBT – FEMA)
- Standard:** Attend and participate in all course sections  
Successful completion of all skills identified on the Training Record
- Hours:** 40 hours  
(13.5 lecture / 26.5 application)
- Max Class Size:** 24
- Instructor Level:** SFT Registered Motorized Watercraft Rescue Technician Instructor
- Instructor/Student Ratio:** 1:24 (lecture)  
1:8 (application)
- Restrictions:** All instructors counted toward student ratios, including application components, must be SFT Registered Motorized Watercraft Rescue Technician Instructors.  
  
SFT recommends that students complete the requirements of their AHJ's swim test prior to course participation.

**SFT Designation:** FSTEP

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## Required Resources

### Instructor Resources

To teach this course, instructors need:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (current edition)
- NFPA 2500: Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services (current edition)
- FIRECOPE ICS 162 Technical Search and Rescue Incident Operational System Description
- ICS 420-1 – Field Operations Guide (FEMA, current edition)
- Emergency Response Guidebook (DOT, current edition)
- Full personal protective equipment per AHJ requirements (including Type 5 PFD, dry suit or wetsuit, thermal protection, helmet, gloves, close-toed footwear, whistle (pealess), knife, head lamp, strobe light)

Recommended resources:

- *Water Rescue: Principles and Practice to NFPA 1006 and 1670: Surface, Swiftwater, Dive, Ice, Surf, and Flood* (Treinish, Steve; Jones & Bartlett; 3<sup>rd</sup> edition, 2021)
- *Swiftwater Rescue* (Slim Ray; CFS Press; expanded edition, 2013)
- *River Rescue: A Manual for Whitewater Safety* (Bechdel, Ray, & AtLee; CFS Press, 4<sup>th</sup> edition, 2009)
- *The Complete Whitewater Rafter* (Bennett, Jeff; International Marine/Ragged Mountain Press; 1<sup>st</sup> edition, 1996)

### Online Instructor Resources

The following instructor resources are available online at <https://osfm.fire.ca.gov/what-we-do/state-fire-training/fire-service-training-and-education-program>

- None

### Student Resources

To participate in this course, students need:

- Any textbook required by the instructor
- Full personal protective equipment per AHJ requirements (including Type 5 PFD, dry suit or wetsuit, thermal protection, helmet, gloves, close-toed footwear, whistle (pealess), knife, head lamp, strobe light)

### Facilities, Equipment, and Personnel

#### Facilities

The following facilities are required to deliver this course:

- Standard learning environment or facility, which may include:
  - Writing board or paper easel chart

- Markers, erasers
- Amplification devices
- Projector and screen
- Laptop or tablet with presentation or other viewing software
- Internet access with appropriate broadband capabilities
- A Motorized Watercraft Rescue Technician training site with the NFPA 1006 required facilities, structures, work areas, materials, props, tools, and equipment of adequate size, type, and quantity to fully and safely support the cognitive and psychomotor training required to deliver the curriculum
  - Minimum requirement is a waterway with Class 2 water features

### Equipment

Student safety is of paramount importance when conducting the type of high-risk training associated with this Watercraft Rescue Technician course.

- The equipment listed below is the minimum for the delivery of this course.
- The student is responsible for providing their PPE and ensuring that all PPE meets AHJ and site requirements.
- For all tools and equipment, ensure that you have the power source, operating supplies (blades, fuel, etc.), cleaning supplies, and appropriate PPE.

The following equipment is required to deliver this course:

Quantity Per 4-student Boat Team	Equipment
1	Inflatable rescue boat (IRB) (one boat per four students maximum)
1	Outboard motor with prop guards for IRB (25hp minimum to 40hp maximum 40hp with fuel cells and fuel lines)
4	Paddles
1	Tow bridle (bow)
1	Tow bridle (stern)
Determined by AHJ	Flip lines
2	Throw bags
1	Waterproof hand light
1	VHF portable marine radio
1 of each color	Navigation lights (red, green, white – snap light or battery)
Determined by scenario	Straps to secure equipment to boats
Determined by scenario	Equipment bags to secure equipment to boats
Per Course	Cache List
1	Backboard (floating – recommended)
1	BLS/First-Aid kit (per AHJ)
1	Jon boat

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1	Outboard motor for Jon boat (15hp minimum to 30 hp maximum)
8	Buoys (minimum – with adequate line and anchors for water depth)
<b>Per Course</b>	
<b>Optional</b>	
Determined by scenario	IRB (in case of damage during class)
Determined by scenario	Outboard motor (in case of damage during class)
Determined by scenario	Water rescue manikins
Determined by scenario	Compasses
Determined by scenario	GPS units
Determined by scenario	Rescue tubes/cans

The provider or agency assumes all responsibility, liability, and maintenance for the engineering design, strength, stability, and adequacy of all props. The provider or agency further assumes all responsibility, liability, and maintenance for all tools, equipment, and supplies used at the site for the delivery of a Watercraft Rescue Technician class.

### Personnel

The following personnel are required to deliver this course:

- Any instructor counted toward student ratios must be an SFT Registered Motorized Watercraft Rescue Technician (2021) Instructor.

## Time Table

Segment	Lecture	Application	Unit Total
<b>Unit 1: Introduction</b>			
Topic 1-1: Orientation and Administration	0.5	0.0	
<b>Unit 1 Totals</b>	<b>0.5</b>	<b>0.0</b>	<b>0.5</b>
<b>Unit 2: Water Rescue Review</b>			
Topic 2-1: Selecting and Using Personal Protective Equipment	0.25	0.50	
Topic 2-2: Describing Dynamic Hydrology and Identifying Travel Paths	0.50	0.0	
Topic 2-3: Managing a Water Rescue Incident	0.50	2.5	
Topic 2-4: Performing Self-Rescue and Survival Swimming Skills	0.50	1.25	
<b>Unit 2 Totals</b>	<b>1.75</b>	<b>4.25</b>	<b>6.0</b>
<b>Unit 3: Communications and Navigation</b>			
Topic 3-1: Communicating Between Watercraft and Rescuers	0.25	0.25	
Topic 3-2: Interpreting Navigational Aids and Devices	0.25	0.0	
Topic 3-3: Plotting a Course	0.25	0.75	
<b>Unit 3 Totals</b>	<b>0.75</b>	<b>1.0</b>	<b>1.75</b>
<b>Unit 4: Watercraft Components and Terminology</b>			
Topic 4-1: Identifying Types of Watercraft	0.50	0.25	
Topic 4-2: Assembling and Configuring Watercraft	0.75	1.0	
Topic 4-3: Performing Motor Maintenance	1.0	2.0	
Topic 4-4: Trailering a Watercraft	0.25	1.0	
Topic 4-5: Conducting Watercraft Pre- and Post-Operational Checks	1.0	2.0	
Topic 4-6: Shutting Down a Watercraft	1.0	0.0	
<b>Unit 4 Totals</b>	<b>4.5</b>	<b>6.25</b>	<b>10.75</b>
<b>Unit 5: Initial Incident Actions</b>			
Topic 5-1: Sizing Up a Watercraft Rescue Incident	0.50	0.50	
Topic 5-2: Recognizing Incident Hazards and Initiating Isolation Procedures	0.25	0.50	
Topic 5-3: Identifying When to Contact Local and Federal Authorities	0.25	0.0	
Topic 5-4: Recognizing the Need for Technical Rescue Resources	0.25	0.0	
Topic 5-5: Initiating a Discipline-Specific Search	0.50	2.0	



Segment	Lecture	Application	Unit Total
Topic 5-6: Supporting an Operations- or Technician-level Incident	0.25	1.0	
Topic 5-7: Performing Ground Support Operations for Helicopter Activities	0.25	0.0	
Topic 5-8: Terminating an Incident	0.25	0.50	
<b>Unit 5 Totals</b>	<b>2.5</b>	<b>4.5</b>	<b>7.0</b>
<b>Unit 6: Motorized Watercraft Operations</b>			
Topic 6-1: Establishing Motorized Watercraft Stability	0.50	0.0	
Topic 6-2: Launching, Docking, and Recovering a Motorized Watercraft	0.50	2.0	
Topic 6-3: Operating a Motorized Watercraft	1.0	4.5	
Topic 6-4: Anchoring a Motorized Watercraft	0.50	0.50	
Topic 6-5: Performing Motorized Watercraft-Based Victim Rescue	0.50	2.5	
Topic 6-6: Operating at a Crew Overboard Event	0.25	0.0	
Topic 6-7: Towing a Rescue Watercraft	0.25	1.0	
<b>Unit 6 Totals</b>	<b>3.5</b>	<b>10.5</b>	<b>14.0</b>
<b>Formative Assessments</b>			
Determined by AHJ or educational institution	0.0	0.0	0.0
<b>Summative Assessment</b>			
Determined by AHJ or educational institution	0.0	0.0	0.0
<b>Course Totals</b>			
	<b>13.5</b>	<b>26.5</b>	<b>40.0</b>

### Time Table Key

1. The Time Table documents the amount of time required to deliver the content included in the course plan.
2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.
3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor’s responsibility to add this time based on the course delivery schedule.
4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.

5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

## Unit 1: Introduction

### Topic 1-1: Orientation and Administration

#### Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, skills exercises, resources, evaluation methods, and participation requirements in the course syllabus.

#### Enabling Learning Objectives

1. Identify facility requirements
  - Restroom locations
  - Food locations
  - Smoking locations
  - Emergency procedures
2. Identify classroom requirements
  - Start and end times
  - Breaks
  - Electronic device policies
  - Special needs and accommodations
  - Other requirements as applicable
3. Review course syllabus
  - Course objectives
  - Calendar of events
  - Course requirements
  - Student evaluation process
  - Assignments
  - Activities
  - Required student resources
  - Class participation requirements

#### Discussion Questions

1. Determined by instructor

#### Application

1. Have students complete all required registration forms.

## Unit 2: Water Rescue Review

### Topic 2-1: Selecting and Using Personal Protective Equipment

#### Terminal Learning Objective

Select and use hazard-specific PPE, given a watercraft rescue incident/scenario, PPE, including personal flotation devices (PFDs), helmets, and exposure garments that are consistent with the needs of the incident and type of watercraft, so that PPE is used in accordance with AHJ policies relative to the specific incident/scenario; the wearer is protected from the effects of accidental immersion, exposure to the elements, and injury from unanticipated movement of the watercraft; PPE emergency escape procedures are followed; and distress signals are communicated.

#### Enabling Learning Objectives

1. Describe hazards present on and near water and aboard watercraft used by AHJ (including those presented by weather, current, water conditions) and their capacities
2. Describe types and uses of and selection criteria for PPE
  - Personal flotation device (PFD)
    - Type III (USCG)
    - Type V (USCG)
  - Dry suit/wetsuit
  - Thermal protection
  - Helmet
  - Gloves
  - Close-toed footwear
  - Whistle (pealess)
  - Knife
  - Headlamp
  - Strobe light
3. Describe capabilities and limitations of hazard-specific PPE and personal flotation devices
4. Identify manufacturer's recommendations for PPE
5. Describe pre-operational checklists for PPE
6. Describe how to don and doff PPE
  - AHJ protocols for equipment positioning
7. Describe distress signals
8. Describe personal escape techniques
  - Applications
  - Capabilities
  - Equipment and procedures for signaling distress
9. Describe how to care for and maintain PPE
10. Inspect PPE
11. Use pre-operation checklists

12. Select personal flotation devices, water rescue helmets, and personal protective clothing and equipment
13. Locate, identify, don, and doff PPE (including water rescue helmets and water insulating garments)
14. Communicate distress signals
15. Use emergency escape procedures

**Discussion Questions**

1. What types of PPE are appropriate for different water environments?
2. How do you care for and maintain PPE?
3. What is the most important piece of PPE for motorized watercraft rescue operations?

**Application**

1. Inspect PPE
2. Locate, identify, don, and doff PPE

**Instructor Notes**

1. ELO 1 is covered in much more detail in Topic 5-2: Recognizing Incident Hazards and Initiating Isolation Procedures. The goal here is to tie PPE use to hazards that rescuers may encounter.

**CTS Guide:** CTS 1-3, CTS 2-7

## Topic 2-2: Describing Dynamic Hydrology and Identifying Travel Paths

### Terminal Learning Objective

At the end of this topic a student, given a dynamic water environment, will be able to describe dynamic hydrology as it relates to rivers, channels, and floods so that hydrology impacts are avoided or mitigated during water rescue operations.

### Enabling Learning Objectives

1. Describe the forces of dynamic water
2. Describe how to calculate current speed
3. Describe how to calculate water volume (cubic feet of water per second) in a river/channel
4. Describe river orientation and where to place personnel
  - Upstream
  - Downstream
  - River right
  - River left
5. Describe features created by moving water and how they impact water rescue operations
  - Laminar flow
  - Helical flow
  - Eddies
  - Eddy lines
  - Strainers/sieves
    - Natural
    - Manmade
  - Pillows
  - Hole/hydraulic
    - Smiling (closed)
    - Frowning (open)
  - Standing waves (haystacks)
  - Aerated water
  - Current vectors
  - Manmade features
    - Low-head dams
    - Drainage culverts
      - Trapezoid
      - Rectangle
    - Hydroelectric facilities
6. Identify areas and features that are safe zones in dynamic water environments
7. Identify river classifications
  - Class 1 through 6
  - Change based on conditions
8. Describe effects of hydrodynamic forces on watercraft, rescuers, and victims

9. Describe criteria for selecting victim retrieval locations based on water environment and conditions
10. Describe techniques used to navigate dynamic water and identify travel paths and hazards

**Discussion Questions**

1. How does cubic feet per second (cfs) impact water hydrology?
2. How do water speed and volume impact watercraft rescue operations?
3. Where are safe zones typically found in dynamic water?

**Application**

1. Determined by instructor

**Instructor Notes**

1. For any topic taught in a classroom, supplement with images and videos as visual aids.

**CTS Guide Reference:** CTS 1-9

## Topic 2-3: Managing a Water Rescue Incident

### Terminal Learning Objective

At the end of this topic a student, given water rescue scenarios and AHJ policies, procedures, and standards, will be able to manage a water rescue incident in accordance with local, state, and federal standards, policies, and procedures.

### Enabling Learning Objectives

1. Describe water rescue scope of practice and standards
  - NFPA 1006 (current edition)
    - Surface water
    - Swiftwater
    - Floodwater
  - NFPA 2500 (current edition)
  - FIRESCOPE 162, Chapter 12 (current edition)
  - AHJ policies, procedures, and standards
2. Describe policies/procedures for rescue team activation
  - Local
  - State
  - Federal
3. Describe legal considerations and practices
  - Training and certification requirements
  - Negligence
  - Abandonment
4. Describe the discipline-specific components of the Incident Command System
  - Upstream spotter
  - Downstream safety
  - Rigging team (if needed)
  - Rescue team lead
  - Rescuer/rescue team
  - Receiving team
5. Describe rescue priorities
  - Low risk to high risk
    - Talk
    - Reach
    - Throw
    - Boat (row)
    - Swim (go)
    - Tethered swimmer (tow)
    - Helicopter (helo)
  - Rescue vs. recovery
  - Incident within an incident
  - Safety priorities
    - Rescuer (self)



- Rescue team
- Victim(s)
- 6. Describe how to recognize the need for technical rescue resources
  - Identify need
  - Identify available resources
    - AHJ resources
    - Local/regional resources
    - State resources
      - FIRESCOPE/Cal OES
    - Federal resources
      - FEMA USAR
  - Initiate the response system
    - Apply operational protocols
    - Select and use planning forms
    - Request support operations and resources
  - Secure and render scene safe until additional resources arrive
    - Implement safety measures
  - Incorporate awareness-level personnel into the operational plan

**Discussion Questions**

1. What type of waterways are present in your AHJ?
2. What type of water rescue incidents are common to your AHJ?
3. What are your legal responsibilities regarding water rescue?
4. What are some key water rescue ICS positions?

**Application**

1. Manage a simulated rescue incident from initiation through demobilization and termination

**Instructor Notes**

1. Refer students to the course's training action plan (TAP) throughout the course.
2. Refer to FIRESCOPE ICS 162.

**CTS Guide Reference:** CTS 2-19

## **Topic 2-4: Performing Self-Rescue and Survival Swimming Skills**

### **Terminal Learning Objective**

At the end of this topic a student, given a variety of water environments, will be able to perform self-rescue and survival swimming skills so that flotation is maintained, body heat is conserved, and egress is accomplished.

### **Enabling Learning Objectives**

1. Describe effects of hypothermia and cold-water immersion
2. Describe crew and passenger accountability
3. Describe survival scenarios and skills
  - Crew overboard
  - Dewatering emergency
  - Contact with watercraft propulsion elements
  - Uncontrolled falls
  - Entanglement
  - Hypothermia
  - Individual day and night emergency signaling requirements
4. Assess hydrology and hazards of environment prior to entering water
5. Identify travel paths and hazards
6. Float and move through water to reach a point of egress or await rescue while conserving body heat

### **Discussion Questions**

1. What safety concerns must be identified prior to getting in the water?
2. How can currents help or hinder a swimmer's efforts?

### **Application**

1. Perform self-rescue and survival swimming skills

### **Instructor Notes**

1. Familiarize yourself with the environment and its hazards before putting students in the water.

**CTS Guide Reference:** CTS 2-6

## Unit 3: Communications and Navigation

### Topic 3-1: Communicating Between Watercraft and Rescuers

#### Terminal Learning Objective

At the end of this topic a student, given communication tools and equipment, will be able to communicate between the watercraft and other rescuers in the water, on the shore, in other watercraft, and in aircraft so that routine mission-related information and emergency messages are communicated to the intended recipient.

#### Enabling Learning Objectives

1. Describe methods of communication available to rescuer
  - Hand signals
  - Whistle commands
  - Flares
  - Emergency position-indicating radio beacon (EPIRB)
  - Personnel-locating beacon (PLB)
  - Radios
    - Marine band
      - Channel 16
    - AHJ-specific
2. Describe equipment limitations based on weather conditions, visibility, and distance from intended recipient
3. Describe communication procedures specific to USCG
  - Pan-pan
  - Sécurité
  - Mayday
4. Select and utilize available communication tools such as radios, hand signals, lights, audible signals, and loud hailers for the specific environment to communicate information

#### Discussion Questions

1. What type of radios do you use during watercraft rescue?
2. What common radio frequencies do you use in your AHJ?
3. What are the differences between pan-pan, sécurité, and mayday?

#### Application

1. Communicate using verbal commands
2. Communicate using hand signals
3. Communicate using whistle blasts
4. Communicate using radios

#### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-3

## Topic 3-2: Interpreting Navigational Aids and Devices

### Terminal Learning Objective

At the end of this topic a student, given marine lights, structures, and markings on land, other vessels, or on the water, will be able to interpret navigational aids and devices so that nautical landmarks and other vessels are identified, intended course is selected, and collisions are avoided.

### Enabling Learning Objectives

1. Describe navigation rules and regulations that govern vessel operation in navigable waters
  - Applicable regions and waterways
  - Governing bodies
    - USCG
    - CA Department of Boating and Waterways
      - California Harbors and Navigation Code
  - Enforcement agencies
2. Describe how to use physical and app-based navigation devices
  - Compass
  - Chart plotters
  - GPS
  - Nav lights
  - Radar
  - Forward-looking infrared radar (FLIR)
3. Identify types of visual aids and navigation markers
  - Buoys
  - Signs
  - Markers
4. Describe how to interpret visual aids and navigation markers
  - Shapes, numbers, and colors
  - Location
  - Meaning
5. Describe how to use navigational aids to:
  - Maneuver into and out of protected channels
  - Identify hazards
6. Describe how to determine right of way for various types of vessels
  - Navigation rules and regulations that govern vessel operation in navigable waters
7. Describe how directional aids assist in navigation and determining right of way
8. Interpret markers, lights, and signals to determine a course that will avoid other vessels

### Discussion Questions

1. What devices does your AHJ use for watercraft navigation?
2. What are common navigation markers in your service area?
3. How is right of way on navigable waterways determined in the United States?
4. How do you determine right of way for various types of vessels?

**Application**

1. Determined by instructor

**Instructor Notes**

1. If using a GPS, ensure all students are using the same format and datum.

**CTS Guide Reference:** CTS 2-5, CTS 3-11

### **Topic 3-3: Plotting a Course**

#### **Terminal Learning Objective**

At the end of this topic a student, given navigational tools and charts, will be able to plot a course so that that heading, speed, and course are determined and wind, weather, current, and water conditions are taken into account.

#### **Enabling Learning Objectives**

1. Describe how to operate conventional and electronic navigation tools used by the agency
2. Describe how to plot a course
  - Identify start and end points
  - Identify obstacles
  - Identify heading and distance
3. Determine location, heading, and speed to achieve the desired outcome

#### **Discussion Question**

1. Determined by instructor

#### **Application**

1. Plot a course
2. Select heading and speed to follow an intended course

#### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 3-3

## Unit 4: Watercraft Components and Terminology

### Topic 4-1: Identifying Types of Watercraft

#### Terminal Learning Objective

At the end of this topic a student, given a list of watercraft used by the organization, will be able to identify types of watercraft so that their limitations, capabilities, load ratings, performance criteria, and considerations for their deployment and recovery in the intended environment are identified.

#### Enabling Learning Objectives

1. Identify types of watercraft used by organization
  - Motorized
  - Non-motorized
  - Personal rescue watercraft
2. Identify hull design and watercraft components
  - Bow, stern, port, and starboard
  - Gunwale tubes and valves, as applicable
  - Transom
  - Drain plugs or scuppers
  - Hydrodynamics
3. Identify propulsion (motor) components
  - Kill switch with lanyard
  - Motor latches
  - Fuel lines
  - Fuel tanks
  - Prop guards
  - Warning systems
4. Describe factors that help determine watercraft selection and use
  - Capacity plate
    - Max allowable weight on vessel (people, motor, and gear)
    - Max allowable persons on vessel
    - Max allowable horsepower
  - Qualities and attributes of each craft
    - Draft
    - Size
    - Weight
    - Deployment method
  - Intended environment
    - Wind
    - Current
    - Weather conditions
  - Capabilities and limitations
  - Mission scope and tactical objectives

5. Describe common types of rescue watercraft

- Inflatable rescue boat (IRB) (motorized)
  - Design
  - Construction materials
  - Capability
  - Inflation
  - Rigging
  - Components (D-rings, valves, handles, drain plug, scuppers, etc.)
  - Attachments (flip lines, painter/bow line, drift sock, motor, prop guards, tow bridles, etc.)
  - Maintenance and repair
  - Operational safety
- Rigid boat (motorized)
  - Design
  - Construction materials
  - Capability
  - Rigging
  - Components (D-rings, handles, pump, etc.)
  - Attachments (painter/bow line, motor, prop guards, tow bridles, etc.)
  - Maintenance and repair
  - Operational safety
- Raft (non-motorized)
  - Design
  - Construction materials
  - Capability
  - Inflation
  - Rigging
  - Components (D-rings, valves, handles, thwarts, etc.)
  - Attachments (oar frame, flip lines, painter/bow line, drift sock, etc.)
  - Maintenance and repair
  - Operational safety
- Personal rescue watercraft (PWRC)
  - Design
  - Construction materials
  - Capability
  - Rigging
  - Components (D-rings, handles, pump, motor, etc.)
  - Attachments (tow bridles, etc.)
  - Maintenance and repair
  - Operational safety

6. Identify watercraft characteristics that affect its selection for use in a specific environment for a specific mission

- Draft



- Sail area
- Propulsion methods
- Size
- Weight
- Deployment method
- Configuration

**Discussion Questions**

1. What type of rescue watercraft are available in your AHJ?
2. How would you determine which boat to use for a rescue?
3. What are the differences between motorized inflatable rescue boats and jon boats?

**Application**

1. Given scenarios (videos or images), have students determine which type of watercraft to use and why.

**Instructor Notes**

1. Cover all three watercraft types (motorized, non-motorized, PRWC) at a high level. Cover the type specific to the course in detail.

**CTS Guide Reference:** CTS 2-1

## Topic 4-2: Assembling and Configuring Watercraft

### Terminal Learning Objective

At the end of this topic a student, given a watercraft available to the agency, will be able to configure a watercraft so that the location of access and egress points, propulsion system components, steering controls, communication equipment, emergency equipment, through hull and deck fittings, portals, and fittings necessary for water- and weathertight integrity are located.

### Enabling Learning Objectives

1. Describe how to assemble a watercraft
  - IRB/MIRB
    - Inflation
      - Manual
      - Mechanical
      - PSI
      - Pressure relief valves
      - Interconnecting valves
      - Environmental impact on inflation
    - Flooring
    - Motor mount
      - Transom brackets
      - Transom bolts
    - Fuel system (tank and lines)
    - Accessories (batteries, gear, etc.)
  - Jon boat
    - Motor mount
    - Fuel system
    - Accessories
  - Personal rescue watercraft
    - Accessories
2. Describe watercraft equipment and components and where to place it in the vessel
  - Paddles
  - Towing bridles
  - Compass
  - Righting line
  - Bow or painter line
  - Handheld lights
  - Anchor
  - Patch kit
  - Wheel kits
  - Rigging
3. Describe rescue equipment to carry on watercraft
  - Throw bag
  - Rescue tube or can

- Portable radio
  - GPS
  - Spare personal flotation devices (PFDs) for victims
  - Knife
  - First Aid/EMS
    - Waterproof container
    - Space blanket
  - Helmets
4. Describe location of emergency equipment and how to operate and deploy it
    - Signaling devices
    - Fire extinguishers
    - Distress beacons
    - Life rafts
    - PFDs
    - Exposure suits
  5. Describe how to configure a watercraft
  6. Identify fittings, portals, and other equipment

**Discussion Questions**

1. What are the differences between boat equipment and rescue equipment?
2. What rescue equipment do boats in your AHJ carry?
3. What steps do you take to keep your equipment dry?
4. What are the pros and cons of fuel tank placement?

**Application**

1. Assemble an inflatable rescue boat (IRB)
2. Configure a motorized watercraft to meet a mission objective

**Instructor Notes**

1. Refer to FIREScope ICS 162.
2. Cover all three watercraft types (motorized, non-motorized, PRWC) at a high level.  
Cover the type specific to the course in detail.

**CTS Guide Reference:** CTS 2-2, CTS 2-16

### **Topic 4-3: Performing Motor Maintenance**

#### **Terminal Learning Objective**

At the end of this topic a student, given a motorized river and flood rescue boat, will perform motor maintenance to ensure operational readiness.

#### **Enabling Learning Objectives**

1. Describe how water conditions impact motors
  - Salt
  - pH level
  - Turbidity
  - Harmful organisms
2. Identify equipment needed to perform motor maintenance
  - Tools
  - Reference materials
  - Fluids and replacement parts
  - Diagnostics equipment
3. Describe maintenance requirements for general use
  - New motor break in
  - Pre- and post-operation
  - Monthly
  - Annual
4. Describe how to service an outboard motor
  - Inspect fuel line and connectors
  - Check oil level
  - Spark plug inspection and indexing
  - Inspect propeller, castle nut, and pin
  - Inspect propeller guard (as applicable)
  - Use impeller intake flush device
  - Use bypass flush connection
  - Use fuel additives and nonethanol fuel diagnostics equipment
5. Identify equipment needed to dewater an outboard motor
  - Tools
  - Diagnostic equipment
  - Replacement parts
6. Describe how to dewater an outboard motor
  - Remove spark plugs noting index
  - Run diagnostics
  - Extract water per manufacturer specifications
  - Apply water-displacing lubricant to spark plug cylinders
  - Apply anti-seize to spark plugs
  - Reassemble
  - Restart

**Discussion Questions**

1. What are your AHJ's motor maintenance requirements?
2. What are the manufacturer's motor maintenance requirements for your motors?

**Application**

1. Perform pre- and post-op motor maintenance
2. Dewater a motor

**Instructor Notes**

1. All maintenance must comply with manufacture recommendations.

**CTS Guide Reference:** CTS 2-20

## **Topic 4-4: Trailering a Watercraft**

### **Terminal Learning Objective**

At the end of the topic a student, given a watercraft, tow vehicle, and trailer, will be able to trailer a watercraft so that watercraft is secure and ready for transport.

### **Enabling Learning Objectives**

1. Identify trailers components
  - Hitch types and sizes
  - Electrical connection
  - Tires, wheels, and hubs
  - Winch
  - Bunks and rollers
  - Tie downs
2. Describe safety considerations associated with trailering operations
  - Pre-trip inspection and set up
    - Connect and secure trailer and lights
    - Check tires, wheels, and hubs
    - Check bunks and rollers
    - Check winch
    - Secure watercraft and all equipment
  - Backers
  - Transit
  - Travel speed
3. Describe how to back up a trailered watercraft
4. Describe trailer positioning
  - Launch
  - Recovery
  - Boat ramp etiquette
5. Describe considerations for unimproved launches
6. Conduct a pre-trip trailer inspection
7. Load and secure a watercraft on a trailer
8. Launch a watercraft from a trailer
9. Recover a watercraft onto a trailer

### **Discussion Questions**

1. What are your AHJ's trailering policies?
2. What risks are involved with watercraft trailering and launching?

### **Application**

1. Conduct a pre-trip trailer inspection
2. Load and secure a motorized watercraft on a trailer
3. Launch a motorized watercraft from a trailer
4. Recover a motorized watercraft onto a trailer

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-21

## Topic 4-5: Conducting Watercraft Pre- and Post-Operational Checks

### Terminal Learning Objective

At the end of this topic a student, given a watercraft available to the agency, will be able to conduct watercraft pre- and post-operational checks so that operational checks are performed, systems are energized, propulsion systems are started, functional checks are conducted, and the watercraft is ready to be deployed or returned to ready state.

### Enabling Learning Objectives

1. Describe watercraft system operational procedures and readiness checks
  - Look for damage, leaks, broken or missing parts
  - Complete prior to and after operating the watercraft
2. Identify components to inspect
  - Watercraft structure
    - Proper inflation
    - Valves
    - Seams
    - Drain plugs and scuppers
    - Attachment points
  - Electrical systems
    - Ignition
    - Navigation systems
    - Lights
      - Navigational
      - Accessory
    - Auxiliary
  - Motor
    - Motor lanyard
    - Transom bolts
    - Oil level
    - Oil leaks
    - Hose connections
    - Fasteners
    - Fuel leaks
    - Lower end
      - Bell housing
      - Skeg
      - Gear case oil leaks
      - Intake grate (free of debris)
    - Prop and prop guard
      - Castle nut, cotter pin
    - Tiller arm and shifter
      - Kill switch lanyard
    - Motor lock mechanism
    - Fuel level



- Fuel line/connections
- Accessories
  - Rigging
  - Equipment
- 3. Check proper fluid levels, charges, connections, and lubrication of systems and connections

**Discussion Questions**

1. What are your agency's preventative maintenance service schedules?

**Application**

1. Conduct a pre-operation check
2. Conduct a post-operation check

**Instructor Notes**

1. Students will perform pre- and post-operational checks each day. Evaluation for the Training Record can occur during those daily routines.
2. Ensure that proper cooling systems are in place for all motor operations (in and out of water).

**CTS Guide Reference:** CTS 3-1

## **Topic 4-6: Shutting Down a Watercraft**

### **Terminal Learning Objective**

At the end of this topic a student, given a watercraft available to the agency, will be able to shut down a watercraft so that post-shutdown checks are conducted, and the craft is secured and protected from damage and tampering.

### **Enabling Learning Objectives**

1. Describe AHJ procedures for watercraft shutdown operations
2. Describe how to shut down a watercraft
  - Shut down propulsion and ancillary systems
  - Secure watercraft from unwanted movement, theft, and vandalism
    - Tie knots, bends, and hitches required to moor or secure craft for long-term storage
  - Connect and verify operation of shore support systems (AC power, etc.)
  - Activate or operate systems that control or maintain watercraft environment (climate control, bilge monitoring systems, etc.)
  - Use conveyances such as trailers, davits, or jet docks for storing or securing watercraft

### **Discussion Question**

1. Determined by instructor

### **Application**

1. Determined by instructor

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 3-12

## Unit 5: Initial Incident Actions

### Topic 5-1: Sizing Up a Watercraft Rescue Incident

#### Terminal Learning Objective

At the end of this topic a student, given a water incident, background information and applicable reference materials, will be able to size up a watercraft rescue incident so that the scope of the rescue is determined, the number of victims is identified, the last reported location of all the victims is established, witnesses and reporting parties are identified and interviewed, resource needs are assessed, primary search parameters are identified, and information required to develop an initial incident action plan is obtained.

#### Enabling Learning Objectives

1. Describe how to conduct a size up
  - Determine scope of the rescue
  - Define operational mode
  - Determine resource availability, capability, and response times
  - Determine types of rescues
  - Identify number of victims
  - Establish place last seen (PLS) and time last seen (TLS) of all the victims
  - Evaluate environmental conditions that influence victim location
  - Identify and interview witnesses and reporting parties
  - Assess resource needs
  - Identify primary search parameters
  - Identify factors influencing access and egress routes
  - Identify water volume and velocity and technical features of search area
  - Obtain information required to develop an initial incident action plan
2. Describe types of reference materials and their uses
3. Describe how to conduct a risk/benefit assessment
4. Describe information-gathering techniques and how that information is used in the size-up process
5. Describe elements of an incident action plan and related information
6. Describe how size up relates to the incident management system
7. Describe basic search criteria for watercraft rescue incidents
8. Read technical rescue reference materials
9. Gather information
10. Evaluate site conditions
11. Relay information
12. Use interview techniques
13. Manage witnesses
14. Use information-gathering sources

#### Discussion Questions

1. Determined by instructor

**Application**

1. Size up a motorized watercraft rescue incident

**Instructor Notes**

1. ELO 7 is covered in more detail in Topic 5-5: Initiating a Discipline-Specific Search. Cover content at an introductory level here.

**CTS Guide Reference:** CTS 1-5

## **Topic 5-2: Recognizing Incident Hazards and Initiating Isolation Procedures**

### **Terminal Learning Objective**

At the end of this topic a student, given scene control barriers, personal protective equipment (PPE), requisite equipment, and available specialized resources, will be able to recognize incident hazards and initiate isolation procedures so that all hazards are identified; resource application fits the operational requirements; hazard isolation is considered; risks to rescuers, bystanders, and victims are minimized; and rescue time constraints are taken into account.

### **Enabling Learning Objectives**

1. Describe hazards created by or associated with watercraft rescue, including risks to rescuers and victims
  - Water depth
  - Positive, neutral, and negative load hazards
  - Slips, falls, entrapment
  - Propulsion hazards (motors, propellers, paddles, etc.)
  - Ripping, wrapping, and flipping the watercraft
  - Non-locking carabiners
  - Rigging hazards
  - Environmental hazards
  - Chemical hazards
  - Biological hazards
  - Animals and insects
2. Describe resource capabilities and limitations
3. Describe equipment types and their use
4. Describe types of mitigation and isolation equipment and their use
  - Propellor guards
  - Kill switch
  - Proper PPE
  - First aid kit
  - Lighting
5. Describe operational requirement concerns
6. Describe types of technical references (apps)
7. Describe methods for controlling access to the scene
8. Initiate mitigation and isolation procedures
  - Identify incident hazards
  - Identify resource capabilities and limitations
  - Assess potential hazards to rescuers and bystanders
  - Place scene control barriers
  - Operate control and mitigation equipment

### **Discussion Questions**

1. When assessing a waterway, what are the most dangerous hazards?
2. What hazards are associated with working on and around watercraft?

**Application**

1. Conduct an incident hazard assessment and isolate hazards

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-6

## **Topic 5-3: Identifying When to Contact Local and Federal Authorities**

### **Terminal Learning Objective**

At the end of this topic a student, given conditions that require their involvement, will be able to identify conditions that require the notification of local and federal authorities so that the proper agency is notified and relevant information is communicated.

### **Enabling Learning Objectives**

1. Identify conditions that require notification of local and federal authorities
  - Conditions that require their involvement
  - Vessels in distress
  - Hazards to navigation
  - Release of hazardous or toxic substances
  - Changes to water flow
  - Dead victim
  - Conditions that affect health and safety of those in and around navigable waters
2. Identify organizations or authorities to contact
  - US Coast Guard
  - Law enforcement
  - Fish and Wildlife
  - Water control agencies
  - Utilities
  - Other
3. Describe laws, regulations, and standards that identify conditions that require notification of outside agencies
4. Describe methods of notification
5. Describe required other actions
6. Perform methods of notification

### **Discussion Question**

1. Under what circumstances would you need to communicate with local, state, or federal agencies or authorities?

### **Application**

1. Determined by instructor

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-4

## **Topic 5-4: Recognizing the Need for Technical Rescue Resources**

### **Terminal Learning Objective**

At the end of this topic a student, given AHJ guidelines, will be able to recognize the need for technical rescue resources at an operations- or technician-level incident so that the need for additional resources is identified, the response system is initiated, the scene is secured and rendered safe until additional resources arrive, and awareness-level personnel are incorporated into the operational plan.

### **Enabling Learning Objectives**

1. Describe types of incidents common to the AHJ
2. Describe how to recognize the need for technical rescue resources
  - Identify need
  - Identify available resources
    - AHJ resources
    - Local/regional resources
    - State resources
      - FIREScope/Cal OES
    - Federal resources
      - FEMA USAR
  - Initiate the response system
    - Apply operational protocols
    - Select and use planning forms
    - Request support operations and resources
  - Identify and evaluate various types of hazards within the AHJ
  - Secure and render scene safe until additional resources arrive
    - Implement safety measures
  - Incorporate awareness-level personnel into the operational plan

### **Discussion Question**

1. What technical rescue resources does your AHJ use for watercraft rescue?

### **Application**

1. Determined by instructor

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-7



## Topic 5-5: Initiating a Discipline-Specific Search

### Terminal Learning Objective

At the end of this topic a student, given hazard-specific PPE, equipment pertinent to the search mission, an incident location, and victim investigative information, will be able to initiate a discipline-specific search so that search parameters are established, the victim profile is established, the access and egress of all people either involved in the search or already within the search area are questioned and the information is updated and relayed to command; the personnel assignments match their expertise, all victims are located as quickly as possible, applicable technical rescue concerns are managed, risks to searchers are minimized, and all searchers are accounted for.

### Enabling Learning Objectives

1. Describe AHJ policies and procedures
2. Identify required resources for performing a search
  - Day vs. night
3. Describe how data collection and map applications can assist with victim searches
4. Describe search fundamentals
  - Location, Access, Stabilize, Transport (LAST)
  - Place Last Seen (PLS)
  - Time Last Seen (TLS)
  - Probability of Detection (POD)
5. Describe witness management
6. Identify different tools used for searches
7. Describe general water search categories
  - Aquatic Wide Area Search
  - River Search
  - Flood Basin Search
8. Describe search types
  - Reconnaissance
  - Hasty (rapid)
  - Primary
  - Secondary
    - Low
    - High
9. Describe how to operate in the site-specific environment
10. Describe how to transfer victims to responders
  - On shore
  - On a vessel
  - On a high-profile vehicle
11. Perform reconnaissance, hasty (rapid), primary, and secondary searches
12. Communicate actions to a shore-based incident commander
13. Coordinate multivessel rescue activities
14. Enter, maneuver in, and exit the search environment
15. Provide for and perform self-escape and self-rescue

**Discussion Questions**

1. What are the differences between types of searches?
2. What elements are required for an effective preplan?
3. What are specific safety considerations during incidents with multiple responding vessels?
4. What are specific safety considerations during night searches?
5. What are the most effective methods of communication between vessels?

**Application**

1. Perform reconnaissance, hasty (rapid), primary, and secondary searches
2. Perform a night search
3. Communicate search actions to a shore-based incident commander
4. Coordinate multivessel rescue activities
5. Enter, maneuver in, and exit the search environment
6. Provide for and perform self-escape and self-rescue

**Instructor Notes**

1. ELO 8: The search types are delineated in FIRESCOPE ICS 162.
2. Encourage students to use data collection and/or map applications during search drills.
3. At least one search during this class must be conducted at night.

**CTS Guide Reference:** CTS 2-1

## **Topic 5-6: Supporting an Operations- or Technician-level Incident**

### **Terminal Learning Objective**

At the end of this topic a student, given an incident, an assignment, an incident action plan, and resources from the tool cache, will be able to support an operations- or technician-level incident, so that the assignment is carried out, progress is reported to command, environmental concerns are managed, personnel rehabilitation is facilitated, and the incident action plan is supported.

### **Enabling Learning Objectives**

1. Describe AHJ operational protocols
2. Describe resource selection and use
3. Describe scene support requirements
4. Describe support procedures
  - Search patterns
  - Equipment setup
  - Communications
  - Upstream or downstream safety spotter
  - Personnel accountability
  - Tend to an in-water rescuer
  - Scene control and access
  - Liaison with victim, family, bystanders, agency, etc.
5. Identify how to avoid becoming a hazard or victim
6. Execute basic support skills

### **Discussion Question**

1. How can you support an operations- or technician-level incident?
2. In what ways can a rescuer become a hazard or victim?

### **Application**

1. Support an operations- or technician-level incident

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 1-8

## **Topic 5-7: Performing Ground Support Operations for Helicopter Activities**

### **Terminal Learning Objective**

At the end of this topic a student, given a rescue scenario/incident, helicopter, operational plans, PPE, requisite equipment, and available specialized resources, will be able to perform ground support operations for helicopter activities so that rescue personnel are aware of the operational characteristics of the aircraft and demonstrate operational proficiency in establishing and securing landing zones and communicating with aircraft personnel until the assignment is complete.

### **Enabling Learning Objectives**

1. Describe ground support operations relating to helicopter use and deployment
2. Describe operation plans for helicopter service activities
3. Describe type-specific PPE
4. Describe aircraft familiarization and hazard areas specific to helicopters
  - Aircraft personnel who provide instruction/authority
  - Proper way to approach and leave the area
  - Proper way to enter and exit aircraft
  - Working near/under rotor wash
  - Landing zone requirements
  - Crash survival principals
  - Ancillary aircraft rescue equipment
5. Describe scene control and landing zone requirements
6. Describe aircraft safety systems
7. Describe communication protocols
8. Provide ground support operations
9. Review standard operating procedures for helicopter operations
10. Use PPE
11. Establish and control landing zones
12. Communicate with aircrews

### **Discussion Question**

1. What hazards are associated with working around watercraft and helicopters?

### **Application**

1. Determined by instructor

### **Instructor Notes**

1. SFT strongly recommends working with aircraft during the course when possible.

**CTS Guide Reference:** CTS 1-2

## Topic 5-8: Terminating an Incident

### Terminal Learning Objective

At the end of this topic a student, given PPE specific to the incident, isolation barriers, and a tool cache, will be able to terminate an incident so that rescuers and bystanders are protected and accounted for during termination operations; the party responsible is notified of any modifications or damage created during the operational period; documentation of loss or material use is accounted for; scene documentation is performed; scene control is transferred to a responsible party; potential or existing hazards are communicated to that responsible party; debriefing, post-incident analysis, and critique are conducted; and command is terminated.

### Enabling Learning Objectives

1. Describe PPE characteristics
  - PPE requirements change in IDLH vs non-IDLH
  - Decontamination requirements
2. Identify hazard and risk identification
  - Reevaluate mitigated and ongoing hazards
  - Resources in transition
  - Complacency
  - Normalized deviance
  - Fatigue
3. Describe equipment/vessel removal procedures
  - When to leave in place
  - Systematic breakdown and removal
4. Describe isolation techniques
5. Identify statutory requirements
  - Determined by AHJ
6. Identify responsible parties
7. Describe accountability system use
  - PAR – personnel accountability report
8. Describe documentation and reporting methods
  - Determined by AHJ
9. Describe post-incident analysis techniques
  - Determined by AHJ
  - Critical incident stress debriefing
10. Select and use hazard-specific PPE
11. Decontaminate PPE
12. Use barrier protection techniques
13. Implement data collection and record-keeping/reporting protocols
14. Conduct post-incident analysis activities

### Discussion Question

1. What hazards and risks can arise during incident termination?
2. Who are some examples of responsible parties that may assume responsibility for the scene when the incident terminates?

3. What critical incident stress management resources are available to you?

**Application**

1. Terminate an incident

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-18

## Unit 6: Motorized Watercraft Operations

### Topic 6-1: Establishing Motorized Watercraft Stability

#### Terminal Learning Objective

At the end of this topic a student, given a motorized watercraft used by the AHJ, will be able to maintain watercraft stability so that the stability of the craft is not compromised, the possibility of a fall is minimized, and the rescuer is protected from harm.

#### Enabling Learning Objectives

1. Describe elements that affect motorized watercraft stability
  - Mass
  - Center of gravity
  - Inflation and profile
  - Weight distribution
  - Impact loads
  - Current
  - Wind and water conditions
2. Describe how to board a motorized watercraft
3. Describe how to exit a motorized watercraft
4. Board and exit a motorized watercraft in a manner that prevents injury and minimizes impact on watercraft stability

#### Discussion Question

1. How does weight distribution affect stability for different types of motorized watercraft?
2. How do weather and water conditions impact motorized watercraft inflation and stability?

#### Application

1. Determined by instructor

#### Instructor Notes

1. Students will board and exit motorized watercraft as part of the course, but this is not a testable skill on the Training Record.

**CTS Guide Reference:** CTS 1-4

## Topic 6-2: Launching, Docking, and Recovering a Motorized Watercraft

### Terminal Learning Objective

At the end of this topic a student, given a motorized watercraft, an operator, and watercraft crewmember(s), will be able to launch, dock, and recover a motorized watercraft from a pier, dock, slip, trailer, or other conveyance so that communication is maintained between operator and crew, current and wind are accounted for, mooring lines are rigged and managed, equipment is secured, damage to the dock, slips, and watercraft is prevented, and watercraft is positioned properly at the slip and secured from unintended movement.

### Enabling Learning Objectives

1. Describe considerations for specialized tools or conveyances used to launch and recover motorized watercraft
  - Trailers
  - Jet docks
  - Davits
2. Describe how environmental conditions affect motorized watercraft movement
  - Environmental conditions
    - Wind
    - Weather
    - Water
    - Tide
    - Attitude
      - Positive (against dominant force)
      - Negative (with dominant force)
  - Watercraft location
    - Leaving the dock/slip
    - After deployment
    - Approaching the dock/slip
    - After being secured
3. Describe how motorized watercraft type impacts launch operations
  - Rigid
  - Inflatable
4. Describe how to launch a motorized watercraft as a bowman
  - Prevent damage and minimize undesired movement of watercraft
    - Rig lines (launch)
    - Rig fenders (dock)
    - Tie knots, bends, and hitches
    - Secure equipment
  - Predict direction and speed of vessel based on watercraft operators' actions
  - Position bow in positive attitude for launch and docking
  - Maneuver and position watercraft using lines or other external systems
5. Describe how launch a motorized watercraft as an operator
  - Maneuver and position watercraft
  - Predict direction and speed of departure based on conditions



**Discussion Questions**

1. How do environmental conditions influence motorized watercraft launches?
2. What are the benefits of launching motorized watercraft in positive attitude?

**Application**

1. Launch a motorized watercraft in dynamic water
2. Dock a motorized watercraft in dynamic water
3. Recover a motorized watercraft from dynamic water

**Instructor Notes**

1. Students should practice launching, docking, and recovering in static water before launching, docking, and recovering in dynamic water for evaluation.

**CTS Guide Reference:** CTS 2-9, CTS 2-10, CTS 3-4, CTS 3-5

## Topic 6-3: Operating a Motorized Watercraft

### Terminal Learning Objective

At the end of this topic a student, given a motorized watercraft, navigation tools, and a plotted course, will be able to operate a motorized watercraft so that the course is followed, obstacles and other vessels are avoided, wind and currents accounted for, awareness of position is maintained, and the destination is reached.

### Enabling Learning Objectives

1. Describe crew positions
  - Operator
  - Bowman
  - Rescue swimmer(s)
2. Describe how to paddle and/or maneuver a motorized watercraft
3. Describe paddle commands and signals
  - Forward paddle
  - Back paddle
  - Left turn
  - Right turn
  - Stop
  - High side
  - Bump/brace
  - Pry stroke
  - Draw stroke
  - J stroke
4. Describe how to operate and manipulate a mechanized propulsion system
  - Shifter
    - Forward
    - Reverse
    - Neutral
  - Throttle
    - Speed control
    - Idle/start position
  - Start up
    - Lanyard
    - Battery switch
    - Water depth
    - Shifter in neutral
    - Throttle in idle/start position
    - Communication (“Clear”)
    - Coolant system (stream)
  - Tiller/steering
    - Range
    - Adjustments

- Motor trim
    - Manual
    - Hydraulic
  - Motor locks
    - Up
    - Down
5. Describe basic motorized watercraft handling techniques
- Orientation
    - Pitch
    - Camber
  - Posture
    - Planing
    - Plowing
    - Trolling
  - Control
    - Hovering
    - Backing
    - Ferrying
    - Pinning
  - Turns
    - Wide
    - J
    - Peel
    - Around objects
  - Approach
    - Stationary object
    - Person
  - Crew transfer while underway
6. Describe vessel-specific policies and procedures for operating a motorized watercraft
7. Describe effects of local water, wind, and weather conditions on motorized watercraft direction and speed
8. Describe how to mitigate safety issues and potential motorized watercraft-related emergencies
- Slip and fall
  - Person(s) overboard
  - Structural failure (puncture, leak, etc.)
  - Loss of power
  - Flip
  - Collision
  - Wrap (around an object)
9. Describe how to enter a motorized watercraft from water
- Self-rescue
  - Crew assist

10. Describe how to conduct dewatering operations
  - Purpose
    - Reduce or eliminate undesired water
    - Maintain vessel stability
    - Prevent watercraft damage
  - Watercraft-specific dewatering plan
  - Tools and equipment
    - Scuppers
    - Drains
    - Hand bilge pump
11. Right a flipped motorized watercraft
12. Paddle and/or maneuver a motorized watercraft
13. Use paddle commands and signals
14. Manipulate, start, and operate a motor
15. Perform motor-up operations
16. Approach a stationary object
17. Select heading and speed to follow an intended course
18. Operate onboard dewatering equipment

#### **Discussion Questions**

1. What are some methods for avoiding contact with the motorized watercraft's propulsion elements?
2. What are considerations for shallow-water operations?
3. What are considerations when in close proximity to other vessels, docks, piers, and bridges while avoiding associated hazards?
4. What would be an operational situation requiring the transfer of members or victims?

#### **Application**

1. Paddle and/or maneuver a motorized watercraft
2. Use paddle commands and signals
3. Manipulate, start, and operate a motor
4. Perform motor-up operations
5. Perform basic motorized watercraft handling techniques (wide turns, J turns, peel turns, turns around objects, approach a stationary object, pinning, ferrying, hovering, and backing, transfer crew while underway)
6. Unwrap a motorized watercraft from an obstacle (at least as a simulation)
7. Right a flipped IRB
8. Enter motorized watercraft from the water (self-rescue)
9. Enter motorized watercraft from the water (crew assist)
10. Dewater/drain a motorized watercraft
11. Paddle to a safe location after power loss

#### **Instructor Notes**

1. Students should practice operating in static water before operating in dynamic water for evaluation.

**CTS Guide Reference:** CTS 2-8, CTS 2-17, CTS 3-2

## **Topic 6-4: Anchoring a Motorized Watercraft**

### **Terminal Learning Objective**

At the end of this topic a student, given a motorized watercraft, an operator, watercraft crewmember(s), and anchoring equipment, will be able to anchor a motorized watercraft so that the anchor is deployed to prevent vessel movement; and anchor swing, weather, current and tide change are accounted for.

### **Enabling Learning Objectives**

1. Identify techniques for setting anchor
  - Shore-based
  - Water-based
2. Describe requirements for anchor size, line length for the vessel, and weather conditions
3. Describe the effects of watercraft movement while at anchor
  - Dominant force
  - Changing water conditions
4. Set an anchor to minimize the potential for drag
5. Pay out anchor line to ensure proper scope is achieved for weather and tide changes

### **Discussion Question**

1. What is your AHJ's anchor policy?
2. What complications can arise from setting an anchor in dynamic water?
3. What type of shore-based anchor does your AHJ use?

### **Application**

1. Tie-off a motorized watercraft to a shore-based conveyance or object

### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-11, CTS 3-6

## Topic 6-5: Performing Motorized Watercraft-Based Victim Rescue

### Terminal Learning Objective

At the end of this topic a student, given a motorized watercraft available to the agency, in-water rescuers, a watercraft operator, watercraft crewmember(s), a water rescue tool cache, a means of securement, and water rescue PPE, will be able to deploy and recover rescuers to perform motorized watercraft-based victim rescue so that rescuers are deployed and recovered at the designated location, the watercraft is not broached (flipped), control of the watercraft is maintained, risks to victim and rescuers are minimized; and rescuers and victim are removed from the hazard and protected from injury.

### Enabling Learning Objectives

1. Describe how motorized watercraft type impacts rescuer deployment and victim rescue
  - Rigid
  - Inflatable
2. Describe how to rig or configure motorized watercraft components and equipment
  - Search equipment
  - Rescue equipment
  - Transport equipment
  - Body recovery equipment
3. Describe how conditions affect rescuer deployment and victim rescue operations
  - Hazards
  - Water conditions
  - Watercraft posture and attitude
4. Describe communication processes
  - Crew to crew
  - Crew to victim
    - Maintain visibility between operator and victim (to avoid injury)
    - Give clear direction to the victim about next steps
5. Describe safety consideration during motorized watercraft entry or exit
  - Contact with watercraft propulsion elements
  - Uncontrolled falls
  - Entanglement
6. Describe how to rescue a victim from dynamic water using a motorized watercraft
  - Coordinate watercraft movement and location (operator and bowman)
  - Maneuver and control watercraft (operator)
  - Capture and control victim on operator side (operator and bowman)
    - Apply flotation
  - “Tiller away” from victim and execute 360-degree peel turn (operator)
  - Pull victim into watercraft (bowman)
  - Complete peel turn in positive attitude (operator)
7. Describe how to rescue a victim from a fixed object using a motorized watercraft
  - Coordinate watercraft movement and location (operator and bowman)
  - Maneuver and control watercraft (operator and bowman)

- Direct victim into watercraft (bowman/rescue swimmer)
  - Maneuver and control watercraft away from object (operator)
8. Describe how to rescue a victim using a throw bag from a motorized watercraft
- Coordinate watercraft movement and location (operator and bowman)
  - Maneuver and control watercraft (operator and bowman)
  - Set up throw bag and position in watercraft (rescue swimmer)
  - Communicate with in-water person:
    - Victim (rescue swimmer)
    - Rescue swimmer (bowman)
  - Deploy throw bags:
    - To solo victim (rescue swimmer)
    - To rescue swimmer (bowman)
  - Retrieve victim and/or rescuer swimmer with throw bags (rescue swimmer or bowman)
    - Rope management
    - Communications
  - Capture and control victim on operator side (operator and bowman)
    - Apply flotation
  - “Tiller away” from victim and execute 360-degree peel turn (operator)
  - Pull victim and/or rescuer into watercraft (bowman)
  - Complete peel turn in positive attitude (operator)
9. Describe how to deploy a rescue swimmer from a motorized watercraft
- Coordinate watercraft movement and location (operator and bowman)
  - Maneuver and control watercraft (operator and bowman)
  - Deploy rescue swimmer (rescue swimmer)
    - Free swim
      - Peel turn 180-degrees and maneuver down river (operator)
      - J turn (operator)
      - Set up to recover rescue swimmer and victim (operator)
    - Tethered swim
      - Hover in place and then back down (operator)
      - Manage line (operator and bowman)
      - Retrieve victim and/or rescuer swimmer with tether (rescue swimmer or bowman)
  - Capture and control victim on operator side (operator and bowman)
    - Apply flotation
  - “Tiller away” from victim and execute 360-degree peel turn (operator)
  - Pull victim and/or rescuer into watercraft (bowman)
  - Complete peel turn in positive attitude (operator)
10. Describe on-board victim care considerations
- Apply flotation (if victim does not have already)
  - Limit care to immediate life threatening injuries
  - Manually immobilize victim (avoid strapping to backboard or stokes basket)

11. Describe how a retrieve a victim into a motorized watercraft

- Victim with safety equipment
- Victim without safety equipment
- Parbuckling

**Discussion Question**

1. Why is it important to establish communications between the operator, crew, and rescuers? How can you maintain that communication during the operation?
2. Should you deploy rescuers into a positive or negative attitude?
3. What complications can arise when deploying rope/throw bags from a motorized watercraft?

**Application**

1. Rescue a victim from dynamic water using a motorized watercraft
2. Rescue a victim from a fixed object using a motorized watercraft
3. Rescue a victim using a throw bag from a motorized watercraft
4. Retrieve a non-responsive victim using a motorized watercraft
5. Deploy and recover a free-swimming rescue swimmer from a motorized watercraft
6. Deploy and recover a tethered swimmer from a motorized watercraft

**Instructor Notes**

1. Students should practice deploying rescuers and rescuing victims in static water before deploying rescuers and rescuing victims in dynamic water for evaluation.

**CTS Guide Reference:** CTS 2-13, CTS 2-14, CTS 3-8, CTS 3-9



## **Topic 6-6: Operating at a Crew Overboard Event**

### **Terminal Learning Objective**

At the end of this topic a student, given a motorized watercraft available to the agency, an operator, and watercraft crewmember(s), will be able to operate at a crew overboard (COB/MOB) event so that the incident is communicated to the operator, visual location of the subject is maintained, the location and marked, and recovery of the subject is accomplished.

### **Enabling Learning Objectives**

1. Describe motorized watercraft procedures for crew/man overboard
2. Describe effects of immersion and hypothermia
3. Describe communication methods for a COB event between operator and crew
4. Describe tactics for noting COB locations to assist with returning to event location
  - Object in water (surface marker)
  - Mark a waypoint
  - Landmark references
5. Describe how to support a COB event as a bowman
  - Deploy aid to the member
  - Note location of COB event
  - Perform operations specific to maneuvering watercraft and preparing to recover crewmember
  - Recover crewmember
6. Describe how to operate a motorized watercraft during a COB event
  - Maneuver watercraft back to COB location
  - Approach target area to recover crewmember

### **Discussion Question**

1. Determined by instructor

### **Application**

1. Determined by instructor

### **Instructor Notes**

1. Any skill associated with this topic is already embedded in Topic 6-5: Performing Motorized Watercraft-Based Victim Rescue.

**CTS Guide Reference:** CTS 2-12, CTS 3-7

## Topic 6-7: Towing a Rescue Watercraft

### Terminal Learning Objective

At the end of this topic a student, given a watercraft available to the agency, an operator, and watercraft crewmember(s), will be able to tow a rescue watercraft so that the relative size of both watercraft is considered; neither watercraft is broached (flipped); wind, weather, and water conditions are accounted for; lines are connected between the vessels; maneuverability and control are maintained; and both watercraft are protected from damage.

### Enabling Learning Objectives

1. Describe safety considerations for towing watercraft
  - Environmental conditions (wind, water, current, weather)
  - Size of towing watercraft versus size of watercraft to be towed
  - Towing equipment available
  - Connection points
2. Describe watercraft-specific procedures for taking another watercraft under tow
  - Rigging methods
  - Connection points
  - Chafe and impact protection
3. Describe towing methods
  - Stern tow
  - Side tow
4. Describe watercraft handling dynamics while towing
  - Control movement and direction of watercraft and watercraft under tow
  - Monitor position and condition of watercraft under tow
  - Communicate with watercraft operator to maneuver watercraft
  - Maintain situational awareness
5. Describe propulsion capacities and impact of wind, weather, and water conditions on combined mass and surface area of both watercraft
6. Demonstrate conducting a stern tow
7. Demonstrate conducting an alongside tow

### Discussion Questions

1. What are some safety considerations for towing watercraft?
2. How are emergency and non-emergency towing different?
3. How do you configure a towing bridle?
4. What is shock loading and how do you prevent it?

### Application

1. Conduct a stern tow from a motorized watercraft

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-15, CTS 3-10

## Drill Ground Activities and Evolutions

### Activities and Evolutions

The following components must be covered in the drill ground activities and/or evolutions but can be combined and completed in the order that best suits the props available and AHJ policies and procedures.

#### Drill ground activities must incorporate the following learning objectives:

- Size up a motorized watercraft rescue incident (Topic 5-1)
- Conduct an incident hazard assessment and isolate hazards (Topic 5-2)
- Support an operations- or technician-level incident (Topic 5-6)
- PPE
  - Inspect PPE (Topic 2-1)
  - Locate, identify, don, and doff PPE (Topic 2-1)
- Communication
  - Communicate using verbal commands (Topic 3-1)
  - Communicate using hand signals (Topic 3-1)
  - Communicate using whistle blasts (Topic 3-1)
  - Communicate using radios (Topic 3-1)
- Navigation
  - Plot a course (Topic 3-3)
  - Select heading and speed to follow an intended course (Topic 3-3)
- Terminate an incident (Topic 5-8)

#### Drill ground activities must address the following watercraft operations:

- Assembly and Configuration
  - Assemble an inflatable rescue boat (IRB) (Topic 4-2)
  - Configure a motorized watercraft to meet a mission objective (Topic 4-2)
- Maintenance and Readiness
  - Perform pre- and post-op motor maintenance (Topic 4-3) (motorized and PRWC)
  - Dewater a motor (Topic 4-3) (motorized and PRWC)
  - Conduct a pre-operation check (Topic 4-5)
  - Conduct a post-operation check (Topic 4-5)
- Trailing
  - Conduct a pre-trip trailer inspection (Topic 4-4)
  - Load and secure a motorized watercraft on a trailer (Topic 4-4)
  - Launch a motorized watercraft from a trailer (Topic 4-4)
  - Recover a motorized watercraft onto a trailer (Topic 4-4)
- Operating
  - Launch a motorized watercraft in dynamic water (Topic 6-2)
  - Dock a motorized watercraft in dynamic water (Topic 6-2)
  - Recover a motorized watercraft from dynamic water (Topic 6-2)
  - Paddle and/or maneuver a motorized watercraft (Topic 6-3)

- Use paddle commands and signals (Topic 6-3)
- Manipulate, start, and operate a motor (Topic 6-3)
- Perform motor-up operations (Topic 6-3)
- Perform basic motorized watercraft handling techniques (wide turns, J turns, peel turns, turns around objects, approach a stationary object, pinning, ferrying, hovering, and backing, transfer crew while underway) (Topic 6-3)
- Unwrap a motorized watercraft from an obstacle (at least as a simulation) (Topic 6-3)
- Right a flipped IRB (Topic 6-3)
- Enter motorized watercraft from the water (self-rescue) (Topic 6-3)
- Enter motorized watercraft from the water (crew assist) (Topic 6-3)
- Dewater/drain a motorized watercraft (Topic 6-3)
- Paddle to a safe location after power loss (Topic 6-3)
- Tie-off a motorized watercraft to a shore-based conveyance or object (Topic 6-4)

**Drill ground activities must incorporate the following rescue scenarios:**

- Manage a simulated rescue incident from initiation through demobilization and termination (Topic 2-3)
- Search
  - Perform reconnaissance, hasty (rapid), primary, and secondary searches (Topic 5-5)
  - Perform a night search (Topic 5-5)
  - Communicate search actions to a shore-based incident commander (Topic 5-5)
  - Coordinate multivessel rescue activities (Topic 5-5)
  - Enter, maneuver in, and exit the search environment (Topic 5-5)
  - Provide for and perform self-escape and self-rescue (Topic 5-5)
- Rescue
  - Rescue a victim from dynamic water using a motorized watercraft (Topic 6-5)
  - Rescue a victim from a fixed object using a motorized watercraft (Topic 6-5)
  - Rescue a victim using a throw bag from a motorized watercraft (Topic 6-5)
  - Retrieve a non-responsive victim using a motorized watercraft (Topic 6-5)
  - Perform self-rescue and survival swimming skills (Topic 2-4)
  - Deploy and recover a free-swimming rescue swimmer from a motorized watercraft (Topic 6-5)
  - Deploy and recover a tethered swimmer from a motorized watercraft (Topic 6-5)
  - Conduct a stern tow from a motorized watercraft (Topic 6-7)

## **Safety Notes**

### **Student Safety**

Before conducting any in-water training you, as the instructor, are responsible for ensuring the safety of everyone involved in the training exercise.

Never put students in a position where they must act as the sole rescuer of other students. Their presence in the class implies that their knowledge and skill levels are not sufficient to operate without direct supervision.

Always be in a position from which you can rescue students. Drills, simulations, or training areas where students cannot be rapidly rescued are not suitable and must be avoided.

### **Site Selection**

The body of water used for training should be no more complex than a Class III and should provide a means for safe and effective rescue of both students and instructors.

An ideal training area offers a variety of water features that provide opportunities to have students complete all skills.

Water depth and consistency should be suitable to perform all required tasks.

The bank of the body of water should provide a safe means of ingress and egress.

Be cautious when training in small waterways and creeks. These bodies of water don't usually carry heavy water flows and are often strainer choked and full of debris. Do a complete and comprehensive survey before training in these bodies of water.

Scrutinize irrigation canals and manmade dams. These structures often have debris such as rebar and rip rap in them that are hazardous to swimmers. They can also have rapidly changing water levels.

Low head dams are extremely hazardous and should never be used for training purposes. They offer no way out, and rescue is difficult at best. Training in and around them is inviting disaster.

### **Site Assessment and Safety**

Be thoroughly familiar with the training area to identify and mitigate all hazards.

- Arrive early at the training site to assess conditions.
- Scout the training area for strainers, sweepers, exposed rebar, or other debris that could snag a student.
- Assess the area for foot and body entrapment hazards such as underwater ledges and submerged debris and logs.

- Anticipate projected water levels and know if the waterway is influenced by dam release or prone to sudden changes due to hydroelectric activities or precipitation.
- The area may have a rapid current and with wave trains.
- Avoid areas with large holes or other dangerous currents.
- Monitor the weather for potential impact on water flows.
- Pre-plan the “no go” zone location.

## How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer courses and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

### Course Details

The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

### Required Resources

The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

### Unit

Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

### Topics

Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

### Terminal Learning Objective

A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

### Enabling Learning Objectives

The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

### Discussion Questions

The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

**Application**

The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

**Instructor Notes**

The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

**CTS Guide Reference**

The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

**Skill Sheet**

The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.