



**DEPARTMENT OF FORESTRY AND FIRE PROTECTION  
OFFICE OF THE STATE FIRE MARSHAL  
STATE FIRE TRAINING**

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**Date:** April 14, 2023

**To:** Statewide Training and Education Advisory Committee  
State Board of Fire Services

**From:** Chris Fowler, Deputy State Fire Marshal III, Supervisor, CAL FIRE  
Joe Bunn, Fire Service Training Specialist III, (Retired), CAL FIRE

**SUBJECT/AGENDA ACTION ITEM:**  
Machinery Rescue Technician (2021)

**Recommended Actions:**  
Motion to Approve

**Background Information:**

This is the second reading of the curriculum, with no stakeholder requests for edits following the January 2023 STEAC meeting.

SFT developed the Machinery Rescue Technician curriculum in alignment with National Fire Protection Association (NFPA) 1006: Standard for Technical Rescue Personnel Professional Qualifications, 2021 edition.

This curriculum was developed to ensure an effective and coordinated response to rescuing victims from simple and complex machinery.

**Analysis/Summary of Issue Standard:**

**CTS Guide**

- SFT developed a CTS guide for Machinery Technical Rescue to document how training standards align with NFPA 1006 (2021).

**Course Plan**

- SFT developed a course plan for fire fighters with three years' full-time or six years' part-time/volunteer experience and any emergency personnel who perform machinery rescue.
- This course incorporates cognitive and psychomotor training based on NFPA 1006 (2021).
- Prerequisites:
  - Vehicle Extrication **or** Common Passenger Vehicle Rescue (SFT)
  - Confined Space Rescue Awareness (CSTI, IAFF, or SFT)
- Course length is 24 hours (5.25 lecture / 18.75 application).
- Maximum class size set at 32.
- Instructor-to-student ratio set at
  - 1:32 for lecture (SFT Registered Machinery Rescue Technician Instructor)
  - 1:8 for application
- All instructors counted toward student ratios, including application components, must be SFT Registered Machinery Rescue Technician Instructors.

### **Instructor Task Book**

- SFT developed an Instructor Task Book to promote instructor quality and consistency.

### **Training Record**

- SFT developed a Training Record for students to use as verification of skills practiced and completed during the course.

### **New Instructor Registration**

To become a Registered Instructor for this curriculum, a candidate must:

- Be an OSFM Registered Instructor
- Complete the following coursework:
  - Machinery Rescue Technician (SFT)
- Complete the Machinery Rescue Technician (2021) Instructor Task Book
- Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California
- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Machinery Rescue Technician training
- Submit an SFT Instructor Registration Application and pay the registration fee

### **Existing Registered Instructors**

To become a Registered Instructor for this curriculum, a candidate who is already a registered instructor must:

- Be an OSFM Registered Instructor of:
  - Vehicle Extrication **or** Common Passenger Vehicle Rescue Technician, **and**
  - Structural Collapse Specialist 2: Technician (SFT); **or** Rescue Systems 1 (SFT – modules 2 and 4) **and** Rescue Systems 2 (SFT – all modules); **or** Rescue Systems 3 (SFT – all modules)

- Complete the following coursework:
  - Machinery Rescue Technician Instructor Roll Out (SFT)
- Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California

Existing instructors pursuing Machinery Rescue instructor registration must complete all requirements by December 31, 2023, or they will be required to meet the requirements for a new instructor.

### **Cadre Members**

To become a Registered Instructor for this curriculum after serving on the curriculum development cadre, a candidate must:

- Be an OSFM Registered Instructor
- Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California
- Submit an SFT Instructor Registration Application

Cadre members are not required to complete the instructor task book or complete the instructor roll out course.



# MACHINERY RESCUE TECHNICIAN (2021) Implementation Plan

Issued: **Month ##**, 2023

## OVERVIEW

This document is intended to provide information for all State Fire Training (SFT) stakeholders on the new Machinery Rescue Technician (2021) curriculum and certification requirements. Stakeholders are encouraged to study this information carefully and seek clarification from SFT if questions arise.

The Machinery Rescue Technician (2021) curriculum is presented as a Fire Service Training and Education Program (FSTEP) series. SFT developed a new curriculum training standard (CTS) guide, course plan, instructor task book, and student training record based on the current National Fire Protection Association (NFPA) Standard, NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021).

## IMPLEMENTATION

Candidates entering the SFT system should enroll in the new Machinery Rescue Technician (2021) course and comply with the new Machinery Rescue Technician requirements.

New Curriculum	Hours
Machinery Rescue Technician (2021)	24 hours

**Machinery Rescue Technician (2021) Curriculum..... June 1, 2023**

## INSTRUCTOR REQUIREMENTS

**Instructor Registration..... June 1, 2023**

Instructors for the Machinery Rescue Technician (2021) course must meet the SFT requirements for Registered Instructor. Instructors must have appropriate education and practical experience relating to the specific course content.

### New Instructor Registration

To become a Registered Instructor for this curriculum, a candidate must:

- Be an OSFM Registered Instructor
- Complete the following coursework:
  - Machinery Rescue Technician (SFT)
  - Complete the Machinery Rescue Technician (2021) Instructor Task Book
- Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California

- Provide a letter signed by their Fire Chief or authorized designee that verifies qualification to deliver Machinery Rescue Technician training
- Submit an SFT Instructor Registration Application and pay the registration fee

### **Existing Registered Instructors**

To become a Registered Instructor for this curriculum, a candidate who is already a Registered Instructor must:

- Be an OSFM Registered Instructor of:
  - Vehicle Extrication **or** Common Passenger Vehicle Rescue Technician, **and**
  - Structural Collapse Specialist 2: Technician (SFT); **or** Rescue Systems 1 (SFT – modules 2 and 4) and Rescue Systems 2 (SFT – all modules); **or** Rescue Systems 3 (SFT – all modules)
- Complete the following coursework:
  - Machinery Rescue Technician Instructor Roll Out (SFT)
- Have a minimum of three (3) years' full-time or six (6) years' part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California

Existing instructors pursuing Machinery Rescue instructor registration must complete all requirements by December 31, 2023, or they will be required to meet the requirements for a new instructor. Registered Instructors who meet the above requirements will be automatically updated – no action is required on their part.

### **POTENTIAL AGENCY IMPACTS**

Fire agencies desiring to use the Machinery Rescue Technician (2021) curriculum as a requirement for their recruitment/promotion activities need to review the Machinery Rescue Technician (2021) curriculum requirements to be sure that all agency training needs are met. After review, fire agencies should update their job specifications and recruitment documentation to reflect these new courses and certification requirements.

Accredited Regional Training Programs (ARTP), Accredited Local Academies (ALA), community colleges, and all other local delivery venues need to review the curriculum and seek approval from their curriculum committee / program sponsor, as appropriate. ARTPs should review the new Machinery Rescue Technician (2021) curriculum and discuss potential impacts with their advisory committees.



# Machinery Rescue Technician (2021)

## Course Plan

### Course Details

- Description:** This course provides the knowledge and skills to prepare an emergency responder to extricate victim(s) from machinery in a safe and effective manner in accordance with AHJ policies and procedures. Topics include sizing up an incident; establishing safety zones; mitigating hazards; stabilizing and creating access and egress openings for rescue; disentangling and removing victims; and terminating an incident. This course incorporates awareness, operations, and technician training based on NFPA 1006 (2021).
- Designed For:** Fire fighters with three years' full-time or six years' part-time/volunteer experience and any emergency personnel who perform machinery rescue.
- Prerequisites:** Vehicle Extrication **or** Common Passenger Vehicle Rescue (SFT)  
Confined Space Rescue Awareness (CSTI, IAFF, or SFT)
- Standard:** Attend and participate in all course sections  
Successful completion of all skills identified on the Training Record
- Hours:** 24 hours  
(5.25 lecture / 18.75 application)
- Max Class Size:** 32
- Instructor Level:** SFT Registered Machinery Rescue Technician Instructor
- Instructor/Student Ratio:** 1:32 (lecture)  
1:8 (skills/teaching demonstrations)
- Restrictions:** All instructors counted toward student ratios, including application components, must be SFT Registered Machinery Rescue Technician Instructors.
- SFT Designation:** FSTEP

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## Required Resources

### Instructor Resources

To teach this course, instructors need:

- NFPA 1006: Standard for Technical Rescue Personnel (2021) (physical or digital access to current edition)
- NFPA 2500: Standard for Operations and Training for Technical Search and Rescue Incidents and Life Safety Rope and Equipment for Emergency Services (2022) (physical or digital access to current edition)
- Full personal protective equipment per AHJ requirements (including hand, eye, and P-100 respiratory protection)

Recommended Video Resources from Fire Engineering:

- Man vs. Machinery Rescue: Hand Trapped in Press
  - <https://www.youtube.com/watch?v=8SJRGaB94uM>
- Tech Rescue: Hand in Meat Grinder
  - <https://www.youtube.com/watch?v=Nb2jV7oq7LM&list=PLq1zsBWIAGFi7ETyFHsjTmVgZ4HCdjONc>
- Man vs. Machinery: Finger Caught in Gas Tank
  - <https://www.youtube.com/watch?v=liwu5v8H7pY&list=PLq1zsBWIAGFii2gCHRO3RO5NVwtfoE3oy&index=2>
- Man vs. Machinery: Impalement
  - <https://www.youtube.com/watch?v=Tym5NMyDVnM&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=2>
- Patient Impaled on a Fence
  - <https://www.youtube.com/watch?v=5EZxfC8F6oc&list=PLq1zsBWIAGFii2gCHRO3RO5NVwtfoE3oy&index=10>
- Impalement Victim Stabilization with Webbing
  - <https://www.youtube.com/watch?v=n8XDCCD-Y6Ow>
- Portable Bandsaw Use for Impalement Rescue
  - [https://www.youtube.com/watch?v=BneGzS\\_hD7o](https://www.youtube.com/watch?v=BneGzS_hD7o)
- Man vs. Machinery: Ring Entrapment
  - <https://www.youtube.com/watch?v=6cGCSJKbqkl&list=PLq1zsBWIAGFii2gCHRO3RO5NVwtfoE3oy&index=5>
- Ring Removal Using Cutting Tools
  - [https://www.youtube.com/watch?v=l\\_OXbKug51U](https://www.youtube.com/watch?v=l_OXbKug51U)
- Tungsten Ring Removal
  - <https://www.youtube.com/watch?v=WhVGhtrOpWw&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=22>
- Non-invasive Ring Removal
  - <https://www.youtube.com/watch?v=picq6AfU0wQ&t=36s>

- Rescuing a Victim from Auger Entrapment
  - <https://www.youtube.com/watch?v=qLaVNdo9w2A>
- Tech Rescue: Auger Entrapment, Part 2
  - <https://www.youtube.com/watch?v=4cnmVXo7f9I&t=57s>
- Man vs. Machinery: Victim Stuck in Snow Blower
  - <https://www.youtube.com/watch?v=F8ALKT5VxUU&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=7>
- Patient Stuck in Swing
  - [https://www.youtube.com/watch?v=OaxD\\_RS6rOM&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=11](https://www.youtube.com/watch?v=OaxD_RS6rOM&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=11)
- Ladder Lever for Victim Removal
  - <https://www.youtube.com/watch?v=VzGNQTWGI1M>
- Man vs. Machinery: It's Not Always Technical
  - <https://www.youtube.com/watch?v=NcxFmexCvCg&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=4>
- Man vs. Machinery: The Quick Hit Bag
  - <https://www.youtube.com/watch?v=70s3KQpRPAQ&list=PLq1zsBWIAGFii2gCHRQ3RO5NVwtfoE3oy&index=6>

### Online Instructor Resources

The following instructor resources are available online at <https://osfm.fire.ca.gov/divisions/state-fire-training/fstep-curriculum/>

- None

### Student Resources

To participate in this course, students need:

- Full personal protective equipment per AHJ requirements (including hand, eye, and P-100 respiratory protection)

### 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 Machinery 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

**Equipment**

Student safety is of paramount importance when conducting the type of high-risk training associated with this Machinery Rescue Technician (2021) course.

- The equipment listed below is the minimum for the delivery of this course.
- The student is responsible for providing all 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 8-person Squad	Equipment
<b>Disassembling</b>	
At least 1	Prop (developed by AHJ to be disassembled by students – e.g., roller system, black box)
At least 1	Mechanic’s tool set (equipped per prop requirements)
TBD	Any additional tools/equipment required by AHJ prop
TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Cutting</b>	
At least 1	Prop (developed by AHJ to be cut by students – e.g., impalement)
At least 1	Must have at least one of the following cutting tools: <ul style="list-style-type: none"> <li>• Reciprocating saw</li> <li>• Portable band saw</li> <li>• Right angle grinder (electric/pneumatic)</li> <li>• Rotary tool (e.g., Dremel)</li> <li>• Rotary saw</li> </ul> <i>Multiple cutting tools encouraged</i> <i>Cutting tools must be appropriate to the prop</i>
TBD	Thermal protection for victim (thermal barriers, fire blankets, cooling, etc.)
TBD	Any additional tools/equipment required by AHJ prop
TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Burning</b>	

At least 1	Prop (item developed by the AHJ for metal burning – e.g., entrapment/impalement)
At least 1	<p>Burning Torch- Must have at least one of the following burning tools:</p> <ul style="list-style-type: none"> <li>• Oxygen/acetylene</li> <li>• Oxy-gasoline</li> <li>• Exothermic</li> <li>• Plasma</li> </ul> <p><i>Multiple torches encouraged</i></p>
TBD	Thermal protection for victim (thermal barriers, fire blankets, cooling, etc.)
TBD	Fire suppression equipment appropriate for prop
TBD	Any additional tools/equipment required by AHJ prop
TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Lifting</b>	
At least 1	Prop (item developed by the AHJ to be lifted and stabilized – e.g., crush)
At least 1	<p>Lifting device(s) – Must have at least one of the following lifting tools</p> <ul style="list-style-type: none"> <li>• Airbags</li> <li>• Jacks</li> <li>• Hoist (come-a-long, chain pull, Grip Hoist)</li> <li>• Hydraulic tools</li> </ul> <p><i>Multiple lifting tools encouraged</i> <i>Lifting tools must be appropriate to the prop</i></p>
TBD	Hand tools (pry bars, levers, etc.)
TBD	Any additional tools/equipment required by AHJ prop
TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Prying/Separating</b>	
At least 1	Prop (item developed by the AHJ to be lifted and stabilized – e.g., crush)
At least 1	<p>Must have at least one of the following prying/separating tools:</p> <ul style="list-style-type: none"> <li>• Airbags</li> <li>• Jacks</li> <li>• Hoist (come-a-long, chain pull, Grip Hoist)</li> <li>• Hydraulic tools</li> </ul> <p><i>Multiple prying/separating tools encouraged</i> <i>Prying/separating tools must be appropriate to the prop</i></p>
TBD	Hand tools (pry bars, levers, etc.)
TBD	Any additional tools/equipment required by AHJ prop

TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Breaking</b>	
At least 1	Prop (item developed by the AHJ for breaking – e.g., concrete, rivets, bolts, etc.)
At least 1	<p>Breaking tools - Must have at least one of the following:</p> <ul style="list-style-type: none"> <li>• Electric</li> <li>• Pneumatic</li> <li>• Hydraulic</li> </ul> <p><i>Multiple breaking tools encouraged</i>  <i>Breaking tools must be appropriate to the prop</i></p>
TBD	Hand tools
TBD	Any additional tools/equipment required by AHJ prop
TBD	Stabilization items to support prop requirements
TBD	Appropriate patient packaging and stabilization items
TBD	Lockout/tagout tools and equipment
<b>Stabilizing a Machine</b>	
<i>(The following equipment will be introduced in the tool lab and used as needed per AHJ's props)</i>	
TBD	Cribbing – dimensions based on AHJ/prop load requirements
TBD	Wedges/chocks
TBD	Struts – per AHJ prop requirements (e.g., hydraulic, pneumatic, mechanical)
TBD	Cables, chains, ropes, slings
TBD	Any additional tools/equipment required by AHJ prop
<b>Lockout/Tagout</b>	
<i>(The following equipment will be introduced in the tool lab and used as needed per AHJ's props)</i>	
TBD	Lockout/tagout kits
TBD	Any additional tools/equipment required by AHJ prop
<b>Stabilizing, Disentangling, Packaging, and Removing a Patient</b>	
<i>(The following equipment will be introduced in the tool lab and used as needed per AHJ's props)</i>	
TBD	AHJ/LEMSA patient packaging equipment (e.g., SpecPAK, LSP Half Back, KED, etc.)
TBD	AHJ/LEMSA appropriate medical equipment (e.g., tourniquet)
TBD	Any additional tools/equipment required by AHJ prop

<b>Additional Support Equipment</b>	<i>(The following equipment will be introduced in the tool lab and used as needed per AHJ's props)</i>
TBD	Caution tape
TBD	Constricting bands (dental floss, rubber bands, etc.)
TBD	Lubricant (dish soap, cooking oil, etc.)
TBD	Heat/cutting shields (e.g., modified spoon, 10" tape measure sections, Slim Jim)
TBD	Exam gloves
TBD	PPE (appropriate for each station) <ul style="list-style-type: none"> <li>• Gloves</li> <li>• Hearing protection</li> <li>• Eye protection</li> <li>• Flash protection</li> <li>• Fall protection</li> <li>• Helmet</li> </ul>

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 Machinery Rescue Technician class.

**Personnel**

The following personnel are required to deliver this course:

- Any instructor counted toward student ratios must be an SFT Registered Machinery 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: Introduction to Machinery Rescue</b>			
Topic 2-1: Introduction to Machinery Rescue	0.25	0.0	
Topic 2-2: Selecting and Using PPE	0.25	0.0	
Topic 2-3: Using Tools and Equipment	0.25	2.75	
<b>Unit 2 Totals</b>	<b>0.75</b>	<b>2.75</b>	<b>3.5</b>
<b>Unit 3: Incident Response</b>			
Topic 3-1: Planning for a Machinery Incident	0.25	0.0	
Topic 3-2: Sizing Up a Machinery Rescue Incident	0.25	0.0	
Topic 3-3: Utilizing a Subject Matter Expert	0.25	0.0	
Topic 3-4: Recognizing the Need for Technical Rescue Resources	0.25	0.0	
Topic 3-5: Supporting an Operations- or Technician-level Incident	0.25	0.0	
Topic 3-6: Recognizing and Isolating Incident Hazards	0.25	0.0	
Topic 3-7: Establishing Scene Safety Zones	0.25	0.0	
Topic 3-8: Isolating Energy Sources	0.25	0.0	
Topic 3-9: Establishing Fire Protection	0.25	0.0	
<b>Unit 3 Totals</b>	<b>2.25</b>	<b>0.0</b>	<b>2.25</b>
<b>Unit 4: Machinery Management</b>			
Topic 4-1: Stabilizing a Machine	0.25	4.0	
Topic 4-2: Controlling Fluid, Mechanical, and Energy Release Hazards	0.25	4.0	
Topic 4-3: Determining Access and Egress Points	0.25	0.0	
Topic 4-4: Creating Access and Egress Openings for Rescue	0.25	4.0	
<b>Unit 4 Totals</b>	<b>1.0</b>	<b>12.0</b>	<b>13.0</b>
<b>Unit 5: Victim Rescue</b>			
Topic 5-1: Disentangling a Victim	0.25	2.0	
Topic 5-2: Removing a Packaged Victim	0.25	2.0	
<b>Unit 5 Totals</b>	<b>0.5</b>	<b>4.0</b>	<b>4.5</b>
<b>Unit 6: Termination</b>			
Topic 6-1: Terminating an Incident	0.25	0.0	
<b>Unit 6 Totals</b>	<b>0.25</b>	<b>0.0</b>	<b>0.25</b>
<b>Formative Assessments</b>			
Determined by AHJ or educational institution	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Segment	Lecture	Application	Unit Total
<b>Summative Assessment</b>			
Determined by AHJ or educational institution	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Course Totals</b>	<b>5.25</b>	<b>18.75</b>	<b>24.0</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: Introduction to Machinery Rescue

### Topic 2-1: Introduction to Machinery Rescue

#### Terminal Learning Objective

At the end of this topic a student, given machinery common to the AHJ, will be able to identify machinery common to the AHJ and factors that determine incident complexity so that rescuers are prepared to respond to machinery rescue incidents.

#### Enabling Learning Objectives

1. Define a “machinery rescue” incident
  - Incidents involving personnel who have become trapped, entangled, or pinned in various types of machinery
2. Identify factors that determine incident complexity
  - Extent of anatomy involved
  - Complexity of machine
  - Complexity of extrication process
  - Risk to victim and rescuers
  - Tool or equipment required
  - Environmental hazards
3. Identify simple machinery common to the AHJ
  - NFPA 1006 (2021) - Machinery or equipment capable of simple disassembly or constructed of lightweight materials presenting simple hazards which are capable of being controlled by the rescuer
  - Simple machines can be large (a press) or small (meat grinder)
4. Identify complex machinery common to the AHJ
  - NFPA 1006 (2021) - Complex machines (or machinery systems) constructed of heavy materials, not capable of simple disassembly, and presenting multiple concurrent hazards (e.g., control of energy sources, hazardous materials, change in elevation, multiple rescue disciplines, etc.), complex victim entrapment, or partial or complete amputation, and requiring the direct technical assistance of special experts in the design, maintenance, or construction of the device or machine
  - Complex machines can be large (conveyer belt system) or small (paper shredder)
5. Describe machine components and construction
  - Structural components (frame, bearings, axles, etc.)
  - Mechanisms that control movement (gears, belts, chains, etc.)
  - Control components (buttons, switches, sensors, etc.)
  - Energy sources (mechanical, electrical, hydraulic, pneumatic)

#### Discussion Question

1. What types of simple machines are common in your AHJ?
2. What types of complex machines are common in your AHJ?
3. What factors determine incident complexity for a machinery rescue?

#### Application

1. Determined by instructor

**Instructor Notes**

1. For ELOs that references the AHJ, adjust the course content to reflect AHJ-specific policies, practices, equipment, operations, tactics, etc.

**CTS Guide Reference:** None

Draft

## Topic 2-2: Selecting and Using PPE

### Terminal Learning Objective

At the end of this topic a student, given a machinery rescue incident and AHJ policies and procedures, will be able to select and use personal protective equipment (PPE), so that PPE is appropriate to incident response needs and donned and worn correctly.

### Enabling Learning Objectives

1. Identify PPE used during machinery rescue incidents
2. Identify the protections provided by PPE during machinery rescue incidents
3. Identify the limitations of PPE during machinery rescue incidents
4. Identify when and how to don and doff PPE
  - Safety considerations
  - Manufacturer guidelines
  - AHJ policies and procedures
5. Don and doff PPE

### Discussion Question

1. What types of PPE does your AHJ have available for machinery rescue?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

### Instructor Notes

1. None

**CTS Guide Reference:** None

## Topic 2-3: Using Tools and Equipment

### Terminal Learning Objective

At the end of this topic a student, given various hand and power tools and equipment, will be able to select, safely transport, operate, and use them in accordance with manufacturer specifications and AHJ policies and procedures.

### Enabling Learning Objectives

1. Describe how to use machinery rescue tools and equipment
  - Stabilization
    - Wedges/chocks
    - Cribbing (6x6 or 4x4 – determined by load)
      - Box (crosstie)
      - Solid (crosstie platform)
      - Modified crosstie
    - Struts
    - Cables, chains, ropes, slings
  - Machine Management
    - Disassembling
    - Cutting
    - Burning
    - Lifting
    - Prying/separating
    - Breaking
  - Victim Rescue
    - Disentanglement
    - Stabilization
    - Packaging
    - Removal
2. Identify safety considerations for storing and transporting tools and equipment
3. Identify guidelines for cleaning, inspecting, and maintaining tools and equipment
  - Manufacturer guidelines
  - AHJ guidelines
  - Documentation and reporting requirements
4. Describe methods for cleaning tools and equipment
  - Equipment/tools to use
  - Solvents or solutions to use
5. Identify when and how to remove hand and power tools from service
  - Manufacturer guidelines
  - AHJ guidelines
  - Documentation and reporting requirements
6. Transport, operate, and maintain tools and equipment

### Discussion Question

1. What tools does your agency use for machinery rescue?
2. What are maintenance procedures for these tools?

3. Which tools are carried on different apparatus types in your AHJ?

**Application**

1. Students will practice this skill in a tool lab or skill station and must demonstrate using tools and equipment to disassemble, cut, burn, lift, pry, and break at least once for evaluation.

**Instructor Notes**

1. ELO 1 – Use the course equipment list as the minimum requirements and then include any other tools and equipment common to your AHJ.

**CTS Guide Reference:** None

## Unit 3: Incident Response

### Topic 3-1: Planning for a Machinery Incident

#### Terminal Learning Objective

At the end of this topic a student, given agency guidelines, planning forms, and operations-level machinery incident or simulations, will be able to pre-plan for a machinery incident, so that a standard approach is used during training and operational scenarios; initiation and ongoing size-ups are being completed; emergency situation hazards are identified; isolation methods and scene security measures are identified; machinery stabilization needs are evaluated; and resource needs are identified and documented for future use.

#### Enabling Learning Objectives

1. Describe operational protocols
2. Identify specific planning forms
3. Identify components to include in pre-planning activities
  - Machine components and construction
  - Tools and equipment
  - Subject matter experts
  - Technical rescue and support resources
  - Hazards
  - Energy sources
  - Stabilization
  - Access and egress
  - Disentanglement
  - Patient packaging
4. Apply operational protocols
5. Select specific planning forms based on the types of machinery

#### Discussion Question

1. Does your AHJ have pre-plans for machinery rescue incidents? If so, what type of incidents?
2. What should be included in an incident pre-plan?

#### Application

1. Determined by instructor

#### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-1, CTS 2-9, CTS 3-1

## Topic 3-2: Sizing Up a Machinery Rescue Incident

### Terminal Learning Objective

At the end of this topic a student, given background information and applicable reference materials, will be able to size up a machinery 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. Identify components to include in size-up activities
  - Machinery components and construction
  - Tools and equipment
  - Subject matter experts
  - Technical rescue and support resources
  - Hazards
  - Energy sources
  - Environmental conditions
  - Victim(s) location
  - Entrapment complexity
    - Digital entrapment
    - Entanglement
    - Crush
    - Impalement
    - Amputation
  - Risk/benefit analysis
    - Rescue vs. recovery
2. Describe types of reference materials and their uses
  - Occupancy pre-plan
  - AHJ standard operating procedures and guidelines
  - Subject matter expert
  - On-site manuals, guides, etc.
3. Describe availability and capability of the resources
4. Describe elements of an incident action plan and related information
  - Formal (ICS roles) vs. informal
  - Determined by incident complexity
5. Describe relationship of the size-up to the incident management system
6. Describe information gathering techniques and how that information is used in the size-up process
  - Pre-incident
  - En route
  - On scene
  - Evolving



7. Describe basic search criteria for machinery rescue incidents
8. Read technical reference materials
9. Gather information
10. Use interview techniques
11. Relay information
12. Use information-gathering sources

**Discussion Question**

1. What should be included in an initial size up?
2. What technical and support resources are available to your AHJ?

**Application**

1. Students will practice this skill at multiple skill stations and must describe it once for evaluation.

**Instructor Notes**

1. For ELOs that references the incident, adjust the course content to reflect the props and scenarios used in the AHJ/course.

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

### **Topic 3-3: Utilizing a Subject Matter Expert**

#### **Terminal Learning Objective**

At the end of this topic a student, given a machinery rescue event and an SME capable of supplying event- or system-specific technical guidance, will be able to utilize specific information from a subject matter expert (SME) so that the technical guidance supports decision making and operational considerations applied during the event.

#### **Enabling Learning Objectives**

1. Describe benefits of working with a SME
  - Provide direct knowledge of machinery, hazards, disassembly, etc.
  - Provide specialized tools and equipment
  - Place machine in “zero mechanical state”
  - Direct on-site operations
2. Describe operational protocols
3. Describe how to collect and interpret data
4. Conduct interviews
5. Take notes
6. Interpret diagrams/technical drawings

#### **Discussion Question**

1. What are some examples of subject matter experts?
2. How can subject matter experts contribute to rescue operations?
3. What questions might you ask a subject matter expert?

#### **Application**

1. Students will practice this skill at multiple skill stations and must describe it once for evaluation.

#### **Instructor Notes**

1. None

**CTS Guide Reference:** CTS 13-3

### **Topic 3-4: 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. Identify factors that determine technical resource needs
  - Incident complexity
  - Machine complexity
  - Victim status/needs
  - Capabilities of on-site resources
2. Describe operational protocols
  - Determined by incident and AHJ
3. Identify specific planning forms
4. Describe incident support operations and resources
  - Determined by incident and AHJ
5. Apply operational protocols
6. Select specific planning forms based on the types of incidents
7. Request support and resources
8. Implement required safety measures

#### **Discussion Question**

1. What medical support is available to your AHJ?
2. Who within your jurisdiction is qualified to amputate in the field?
3. What technical rescue resources are available within your AHJ?

#### **Application**

1. Students will practice this skill at multiple skill stations, but it will not be evaluated.

#### **Instructor Notes**

1. None

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

## Topic 3-5: 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. Identify support roles and responsibilities
  - Fire suppression
  - Establishing safety zones
  - Notifications
  - Resource requests
  - Logistical support
  - Emergency medical services
2. Describe AHJ operational protocols
3. Describe incident management  
Describe resource selection and use
4. Identify scene support requirements
5. Apply operational protocols
6. Function within an incident management system
7. Follow and implement an incident action plan
8. Report the task progress status to a supervisor or incident command

### Discussion Question

1. What are some of the roles and responsibilities of an awareness-level responder during an incident?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

### Instructor Notes

1. None

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

## Topic 3-6: Recognizing and Isolating Incident Hazards

### 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 types and nature of incident hazards
  - Physical/mechanical
  - Chemical
  - Biological
  - Safety
  - Environmental
  - Organizational
2. Describe common types of rescuer and victim risks
  - Moving machinery parts
  - Machine stability
  - Product exposure
  - Hazardous materials
  - Falls
  - Electrocutation
  - Stored energy release
  - Fire
  - Biohazards
  - Psychological impact
  - Injury
  - Death
3. Describe methods for controlling access to the scene
  - Flagging
  - Caution tape
  - Personnel (crew, law enforcement, etc.)
4. Describe equipment types and their use
  - Tools
  - Equipment
  - Visual identifiers
5. Describe isolation methods and implementation
  - Place in “zero mechanical” state
  - Lockout/tagout
  - Elevators in common hoist ways
    - Clear passengers from adjacent elevators

- Secure all elevators and prevent from movement
- 6. Describe operational requirement concerns
  - Responder safety
  - Patient safety
  - Public safety
- 7. Describe resource capabilities and limitation
- 8. Describe types of technical references
  - NFPA 1006 (current edition)
  - NFPA 2500 (current edition)
  - Safety Data Sheets (SDS)
- 9. Identify incident hazards
- 10. Assess potential hazards to rescuers and bystanders
- 11. Place scene control barrier
- 12. Operate control and mitigation equipment

**Discussion Question**

1. What machinery features create hazards for rescuers?
2. What risks might rescuers encounter when isolating or mitigating hazards?
3. Who is best qualified to isolate or mitigate hazards?

**Application**

1. Students will practice this skill at multiple skill stations and must describe it once for evaluation.

**Instructor Notes**

1. None

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

## Topic 3-7: Establishing Scene Safety Zones

### Terminal Learning Objective

At the end of this topic a student, given scene security barriers, incident location, incident information, and PPE, will be able to establish “scene” safety zones so that hot, warm, and cold safety zones are designated, zone perimeters are consistent with incident requirements; perimeter markings can be recognized and understood by others; zone boundaries are communicated to incident command; and only authorized personnel are allowed access to the rescue scene.

### Enabling Learning Objectives

1. Describe area control flow and concepts
  - Hot (exclusion/working area)
  - Warm (equipment cache, logistics, stand-by personnel)
  - Cold (support, IC, medical, etc.)
2. Identify types of control devices and tools
  - Caution tape
  - Personnel (crew, law enforcement, etc.)
  - Fencing, cones, etc.
3. Identify types of existing and potential hazards
  - Physical/mechanical
  - Chemical
  - Biological
  - Safety
  - Environmental
  - Organizational
4. Describe methods of hazard mitigation
  - Avoid
  - Eliminate
  - Isolate
  - Mitigate
5. Describe organizational standard operating procedures
  - Determined by incident and AHJ
6. Describe types of zones and staffing requirements
  - Determined by incident and AHJ
7. Apply hazard control concepts
8. Identify and mitigate existing or potential hazards
9. Apply zone identification and personal safety techniques

### Discussion Question

1. What agencies in your AHJ can help with scene control?
2. What determines whether an area is a hot, warm, or cold hazard zone?
3. What are some examples of (chemical, mechanical, environmental, etc.) hazards associated with machinery rescue?

**Application**

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

**Instructor Notes**

1. None

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

Draft



## Topic 3-8: Isolating Energy Sources

### Terminal Learning Objective

At the end of this topic a student, given machinery tool cache and PPE, will be able to isolate potentially harmful energy sources so that all hazards are identified; systems are managed; beneficial system use is evaluated; and hazards to rescue personnel and victims are minimized.

### Enabling Learning Objectives

1. Identify types of energy sources
  - Kinetic vs. potential
  - Electrical
  - Fuel
  - Chemical
  - Pneumatic systems
  - Hydraulic
  - Gravity
  - Mechanical
2. Describe specialized system features
3. Describe system isolation methods
  - Operate beneficial systems in support of tactical operations before isolating
    - Ventilation
    - Machinery movement and positioning controls
    - Other devices that enable more efficient operations
4. Describe tools for disabling hazards
  - Determined by AHJ
  - Determined by incident
5. Describe policies and procedures of the AHJ
6. Identify hazards
7. Operate beneficial systems in support of tactical objectives
8. Operate tools and devices for securing and disabling hazards

### Discussion Question

1. What are some common energy sources associated with machinery?
2. What systems should you address before isolating power?
3. What tools or equipment does your agency use to manage energy sources?
4. Who can assist with lockout/tagout procedures at an incident?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-5

## Topic 3-9: Establishing Fire Protection

### Terminal Learning Objective

At the end of this topic a student, given an extrication incident and fire control support, will be able to establish fire protection so that fire and explosion potential is managed and fire hazards and rescue objectives are communicated to the fire suppression crew.

### Enabling Learning Objectives

1. Identify types of fire and explosion hazards
  - Determined by incident
2. Describe IMS
3. Identify types of extinguishing devices
  - Water or foam
  - Extinguishers
4. Describe agency policies and procedures
  - Determined by incident and AHJ
5. Identify types of flammable and combustible substances
6. Identify types of ignition sources
7. Describe extinguishment or control options
8. Operate within the IMS
9. Use extinguishing devices
10. Apply fire control strategies
11. Manage initiation potential

### Discussion Question

1. What potential fire or explosion hazards might be present at a machinery rescue incident?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

### Instructor Notes

1. None

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

## Unit 4: Machinery Management

### Topic 4-1: Stabilizing a Machine

#### Terminal Learning Objective

At the end of this topic a student, given a machinery tool cache and PPE, will be able to stabilize a machine so that the machinery is prevented from moving during the rescue operations; entry, exit, and tools placement points are not compromised; anticipated rescue activities will not compromise machinery stability; selected stabilization points are structurally sound; stabilization equipment can be monitored; and the risk to rescuers is minimized.

#### Enabling Learning Objectives

1. Describe mechanism of machinery movement
  - Horizontal
  - Vertical
  - Roll
  - Pitch
  - Yaw
  - Additional considerations for multiple objects with potential to move in multiple directions
2. Describe types of machinery construction components as they apply to stabilization
3. Describe types and rated capacities of stabilization devices
  - Wedges/chocks
  - Machinery systems (power source, brakes, etc.)
  - Cribbing (6x6 or 4x4 – determined by load)
    - Box (crosstie)
    - Solid (crosstie platform)
    - Modified crosstie
  - Struts
  - Cables, chains, ropes, slings
4. Identify types of stabilization points
  - Single point vs. multi-point (based on access needs)
  - Machinery orientation (may already provide stabilization)
  - May need to stabilize multiple objects (may not all be machines)
5. Identify types of stabilization surfaces
  - Use what is available based on machinery position
  - Solid structural machinery surfaces
  - Improvised attachment points
  - Building surfaces (structural components)
6. Describe how to stabilize a machine
  - Determined by incident
7. Describe AHJ policies and procedures
8. Select, operate, and monitor stabilization devices

**Discussion Question**

1. How does stabilizing a small or simple machine differ from stabilizing a large or complex machine?
2. How does machinery location or position impact stabilization needs?
3. What tools and equipment does your agency use to stabilize machinery?
4. How could you create an anchor or stabilization point when a machine doesn't have one?

**Application**

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-4, CTS 3-2

## Topic 4-2: Controlling Fluid, Mechanical, and Energy Release Hazards

### Terminal Learning Objective

At the end of this topic a student, given an entrapment within machinery, will be able to control hazards presented by the release of fluids, mechanical release devices, and energy equipment so that mechanical processes are secured, energy equipment is stabilized, the position of machinery is determined to optimize the removal of victim(s), and chosen points do not compromise the removal of victim or rescuer.

### Enabling Learning Objectives

1. Identify types of energy equipment within a machine
  - Electrical
    - Batteries
    - Capacitors
    - Static
  - Hydraulic
  - Pneumatic
  - Mechanical
  - Thermal
2. Describe energy system isolation and release methods
  - Electrical
    - De-energize (“zero mechanical state”)
    - Disconnect
    - Remove
    - Discharge
    - Ground
  - Hydraulic
    - Contain
    - Confine
    - Divert
  - Pneumatic
    - Contain
    - Confine
    - Divert
  - Mechanical
    - Stop
    - Move (controlled environment)
    - Remove
  - Thermal
    - Cool (active and passive)
    - Remove
3. Describe the purpose of fluid release within a machine
4. Describe the purpose of mechanical release devices within a machine
5. Identify types of stabilization devices
6. Describe mechanism of machinery movement and travel

7. Identify types of stabilization points
8. Describe specialized system features
9. Describe tool selection and application
10. Describe special features of unique machinery systems
11. Identify common energy control devices and construction
12. Perform hazard control based on techniques selected
13. Apply tactics and strategy based on assignment
14. Select and operate tools and equipment specific to machinery rescue
15. Demonstrate safety procedures

**Discussion Question**

1. How does controlling or isolating hazards inside a machine differ from isolating hazards outside or around a machine?
2. What hazards might you encounter when working within a machine?
3. Can you think of a scenario when you would not want to de-energize an energy source?
4. What unique machinery energy sources are present in your AHJ?

**Application**

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

**Instructor Notes**

1. Many ELOs in this topic mirror the ELOs in Topic 4-1: Stabilizing a Machine. Topic 4-1 focuses on stabilizing the whole machine. Topic 4-2 should focus on stabilizing or isolating components, fluids, and energy within the machine.

**CTS Guide Reference:** CTS 2-11, CTS 2-12

## Topic 4-3: Determining Access and Egress Points

### Terminal Learning Objective

At the end of this topic a student, given the structural and damage characteristics and potential victim location(s), will be able to determine machinery access and egress points so that victim location(s) is identified; access and egress points for victims, rescuers, and equipment are designated; flows of personnel, victim(s), and equipment are identified; existing entry points are used; time constraints are factored; selected entry and egress points do not compromise stability; all machinery involved is stabilized and isolated; chosen points can be protected; equipment and victim stabilization are initiated; and AHJ safety and emergency procedures are enforced.

### Enabling Learning Objectives

1. Describe machinery construction/features
  - Simple
  - Complex
2. Describe access and egress points
  - Existing
  - Created
3. Describe mechanism of machinery movement and travel
  - Anticipate potential movement
  - Compensate for compromising structural integrity
4. Describe routes and hazards
  - Routes
    - Primary vs. alternates (if possible)
    - Access vs. egress
    - Rescuer route vs. victim route
  - Hazards
    - Physical (sharp objects)
    - Leaking contaminants
    - Biohazards
    - Psychological stress
    - Falling
    - Thermal
5. Describe operating systems related to determining access and egress
6. Describe AHJ standard operating procedures
7. Describe emergency evacuation and safety signals
8. Identify access and egress points and probable victim locations
9. Assess and evaluate impact of machine stability on the victim

### Discussion Question

1. How can you identify access and egress points?
2. What emergency and evacuation signals do you use in your agency?
3. When might you need to remove a victim through a different point than they entered?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for

evaluation.

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-6, CTS 2-10, CTS 3-3

Draft



## Topic 4-4: Creating Access and Egress Openings for Rescue

### Terminal Learning Objective

At the end of this topic a student, given a machinery tool cache, specialized tools and equipment, PPE, and an assignment, will be able to create access and egress openings for rescue from a machine so that they movement of rescuers and equipment compliments victim care and removal; the technique chosen is expedient; victim and rescuer protection is afforded; and stability is maintained.

### Enabling Learning Objectives

1. Identify access and egress equipment for:
  - Disassembling
  - Cutting
  - Burning
  - Lifting
  - Prying/separating
  - Breaking
2. Describe techniques and hazards for:
  - Disassembling
  - Cutting
  - Burning
  - Lifting
  - Prying/separating
  - Breaking
3. Describe agency policies and procedures
4. Describe emergency evacuation and safety signals
5. Select and operate tools and equipment
6. Apply tactics and strategy based on assignment
7. Perform hazard control based on techniques selected
8. Demonstrate safety procedures and emergency evacuation signals

### Discussion Question

1. How would you prioritize selecting access and egress points?
2. What hazards might occur because of creating access and egress points?
3. What factors would determine which technique to use for creating access and egress points?

### Application

1. Students will practice this skill at multiple skill stations and must perform each of the following techniques — disassembling, cutting, burning, lifting, prying/separating, and breaking — once for evaluation.

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-7, CTS 3-4

## Unit 5: Victim Rescue

### Topic 5-1: Disentangling a Victim

#### Terminal Learning Objective

At the end of this topic a student, given an extrication incident, a machinery tool cache, PPE, and specialized equipment, will be able to disentangle victims(s) so that undue victim injury is prevented; victim protection is provided; and stabilization is maintained.

#### Enabling Learning Objectives

1. Describe how recovery operations differ from rescue operations
2. Describe tool selection and application for:
  - Disassembling
  - Cutting
  - Burning
  - Lifting
  - Prying/separating
  - Breaking
3. Describe victim stabilization systems
  - Control victim movement during disentanglement
  - Administer medical stabilization per county (LEMSA) EMS policies and procedures
4. Describe protection methods
  - Eye protection
  - Respiratory protection
  - Hearing protection
  - Exposure protection
  - Debris protection
5. Describe dynamics of disentanglement
  - Basic laws of physics
  - Change in victim condition
  - Change in machinery condition
6. Describe how to disentangle victims from common rescue scenarios
  - Digital entrapment
  - Entanglement
    - Simple
    - Complex
  - Crush
  - Impalement
  - Amputation
    - As a tool for rescue vs. caused by incident
  - Recovery
    - Body
    - Body parts
7. Operate disentanglement tools

8. Initiate protective measures
9. Identify and eliminate points of entrapment
10. Maintain incident stability and scene safety

**Discussion Question**

1. How would you stabilize a victim during disentanglement?
2. What type of victim protection equipment does your agency use?
3. What are common entanglement points that may trap victims?

**Application**

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-8, CTS 3-5

## Topic 5-2: Removing a Packaged Victim

### Terminal Learning Objective

At the end of this topic a student, given a victim transfer device, a designated egress route, and PPE, will be able to remove a packaged victim to a designated safe area as a member of a team so that the team effort is coordinated, the designated egress route is used, the victim is removed without compromising victim packaging, undue injury is prevented, and stabilization is maintained.

### Enabling Learning Objectives

1. Describe patient handling techniques
  - Determined by county (LEMSA) EMS policies and procedures
  - Consider:
    - Mechanism of injury
    - Triage
    - Patient safety during extrication
    - Spinal precautions
    - Advanced EMS needs
    - Documentation
  - Goal is patient outcome (minimize harm to victim), not machine outcome
2. Describe types of immobilization, packaging, and transfer devices
  - Qualified medical personnel to address before victim removal
  - Determined by county (LEMSA) EMS policies and procedures
3. Describe types of immobilization techniques
  - Qualified medical personnel to address before victim removal
  - Determined by county (LEMSA) EMS policies and procedures
4. Describe uses of immobilization devices
5. Use immobilization, packaging, and transfer devices for specific situations
6. Use immobilization techniques
7. Apply medical protocols and safety features to immobilize, package, and transfer
8. Use all techniques for lifting the patient

### Discussion Question

1. What tools and equipment does your agency use to immobilize patients?
2. What rescuer actions might contribute to victim injuries?
3. Who is responsible for determining how a patient is handled, packaged, and transported?

### Application

1. Students will practice this skill at multiple skill stations and must perform it once for evaluation.

### Instructor Notes

1. None

**CTS Guide Reference:** CTS 2-14

## Unit 6: Termination

### Topic 6-1: Terminating an Incident

#### Terminal Learning Objective

At the end of this topic a student, given PPE specific to the incident, isolation barriers, and 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 modification 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 and post-incident analysis and critique are considered, 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 tool 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. Students will practice this skill at multiple skill stations and must describe it once for evaluation.

**Instructor Notes**

1. None

**CTS Guide Reference:** CTS 2-15

## Skill Stations

The following components must be covered in the skill stations but can be combined and completed in the order that best suits the props available and AHJ policies and procedures.

### Skill stations must address the following operations:

- Stabilize a whole machine
- Stabilize interior parts or pieces of a machine
- Disassembling
  - To create access/egress
  - To disentangle/extricate a victim
- Cutting
  - To create access/egress
  - To disentangle/extricate a victim
- Burning
  - To create access/egress
  - To disentangle/extricate a victim
- Lifting
  - To create access/egress
  - To disentangle/extricate a victim
- Prying/separating
  - To create access/egress
  - To disentangle/extricate a victim
- Breaking
  - To create access/egress
  - To disentangle/extricate a victim
- Stabilizing a victim
- Disentangling a victim
- Packaging a victim
- Removing a victim

### Skill stations must incorporate the following learning objectives:

- Sizing up
- Utilizing a subject matter expert
- Recognizing the need for technical rescue resources
- Supporting an operations- or technician-level Incident
- Recognizing and isolating incident hazards
- Establishing scene safety zones
- Isolating energy sources (lockout/tagout)
- Establishing fire protection

### Skills stations must incorporate use of the following tools and equipment:

- PPE unique to machinery rescue

- Stabilization
  - Wedges/chocks
  - Cribbing (6x6 and 4x4 – determined by load)
    - Box (crosstie)
    - Solid (crosstie platform)
    - Modified crosstie
  - Struts
  - Cables, chains, ropes, slings
- Machine Management
  - Disassembling
  - Cutting
  - Burning
  - Lifting
  - Prying/separating
  - Breaking
- Victim Rescue
  - Disentanglement
  - Stabilization
  - Packaging
  - Removal

**Skills stations must incorporate the following rescue scenarios:**

- Digital entrapment
- Entanglement – simple (more than a digit)
- Entanglement – complex
- Crush
- Impalement



## 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 course 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**

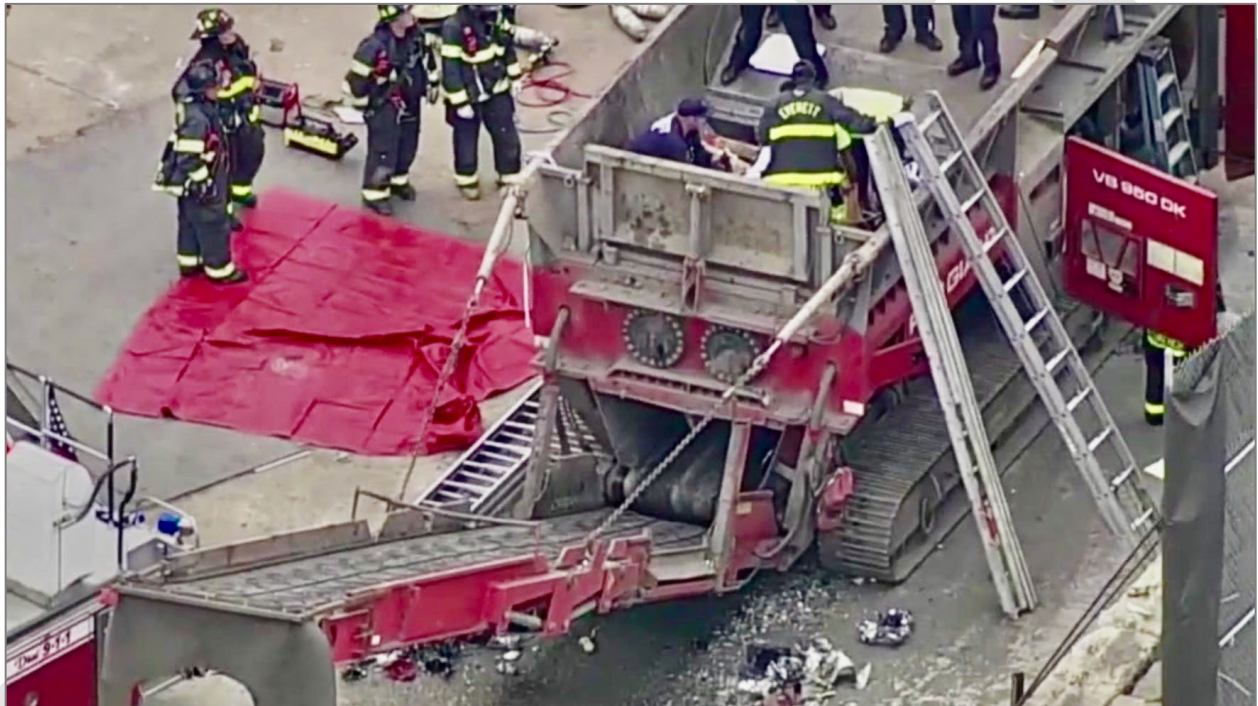
The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.

# Machinery Rescue Technician

(NFPA 1006: Machinery Rescue  
Awareness/Operations/Technician)

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## Instructor Task Book (2021)



California Department of Forestry and Fire Protection  
Office of the State Fire Marshal  
State Fire Training

## Overview

### Authority

This instructor task book includes the training standards set forth in:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)

Published: Month Year

Published by: State Fire Training, PO Box 944246, Sacramento, CA 94244-2460

Cover photo courtesy of the Everett Fire Department, Everett, MA, and WHDH TV 7 News, Boston, MA.

### Purpose

The State Fire Training instructor task book is a performance-based document. It lists the minimum requirements a candidate must meet in order to teach a specific State Fire Training course or course series.

### Assumptions

With the exception of Fire Fighter and Emergency Vehicle Technician (EVT) certifications, a candidate may begin the task book initiation process upon completion of all required education components (courses).

Each job performance requirement (JPR) shall be evaluated after the candidate initiates the task book.

State Fire Training task books do not count towards the NWCG task book limit. There is no limit to the number of State Fire Training task books a candidate may pursue at one time as long as the candidate meets the initiation requirements for each.

It is the candidate's responsibility to routinely check the State Fire Training website for updates to an initiated task book. All State Fire Training issued updates to an initiated task book are required for task book completion.

A candidate must complete a task book within three years of its initiation date. Otherwise, a candidate must initiate a new task book using the curriculum's current published version.

## Roles and Responsibilities

### Candidate

The candidate is the individual pursuing instructor registration.

#### Initiation

The candidate shall:

1. Complete the Initiation Requirements section.
  - Please print.
2. Complete a block on the Signature Verification page with a handwritten signature.

#### Completion

The candidate shall:

1. Complete all Job Performance Requirements.
  - Ensure that an evaluator initials, signs, and dates each task to verify completion.
2. Complete the Completion Requirements section.
3. Sign and date the Candidate verification section on the Review and Approval page with a handwritten signature.
4. Obtain their fire chief's handwritten (not stamped) signature on the Fire Chief verification section on the Review and Approval page.
5. Create and retain a physical or high-resolution digital copy of the completed task book.

#### Submission

The candidate shall:

1. Submit a copy (physical or digital) of the completed task book and any supporting documentation to State Fire Training.
  - See Submission and Review below.

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

### Evaluator

An evaluator is any individual who verifies that the candidate can satisfactorily execute a job performance requirement (JPR).

A qualified evaluator is a Registered Machinery Rescue Technician Instructor designated by the candidate's fire chief (or authorized designee). For instructor task books that do not require fire chief initiation, academy instructors serve as or designate evaluators.

An instructor task book may have more than one evaluator.

All evaluators shall:

1. Complete a block on the Signature Verification page with a handwritten signature.
2. Review and understand the candidate's instructor task book requirements and responsibilities.
3. Verify the candidate's successful completion of one or more job performance requirements through observation.
  - Do not evaluate any job performance requirement (JPR) until after the candidate initiates the task book.
  - Sign all appropriate lines in the instructor task book with a handwritten signature or approved digital signature (e.g., DocuSign or Adobe Sign; a scanned copy of a signature is not acceptable) to record demonstrated performance of tasks.

## Fire Chief

The fire chief is the individual who initiates (when applicable) and then reviews and confirms the completion of a candidate's instructor task book.

A fire chief may identify an authorized designee already on file with State Fire Training to fulfill any task book responsibilities assigned to the fire chief. (See *State Fire Training Procedures Manual*, 4.2.2: Authorized Signatories)

## Initiation

The fire chief shall:

1. Review and understand the candidate's instructor task book requirements and responsibilities.
2. Complete a block on the Signature Verification page with a handwritten signature.
3. Designate qualified evaluators.

## Completion

The fire chief shall:

1. Confirm that the candidate has obtained the appropriate signatures to verify successful completion of each job performance requirement.
  - Ensure that all job performance requirements were evaluated after the initiation date.
2. Confirm that the candidate meets the Completion Requirements.
3. Sign and date the Fire Chief verification statement under Review and Approval with a handwritten signature.
  - If signing as an authorized designee, verify that your signature is on file with State Fire Training.

## Submission and Review

A candidate should not submit a task book until they have completed all requirements and obtained all signatures. State Fire Training will reject and return an incomplete task book.

To submit a completed task book, please send the following items to the address below:

1. A copy of the completed task book (candidate may retain the original)
2. All supporting documentation
3. Payment

State Fire Training

Attn: Instructor Registration

PO Box 944246

Sacramento, CA 94244-2460

State Fire Training reviews all submitted task books.

- If the task book is complete, State Fire Training will authorize the task book and retain a digital copy of the authorized task book in the candidate's career file.
- If the task book is incomplete, State Fire Training will return the task book with a notification indicating what needs to be completed prior to resubmission.

Completion of this instructor task book is one step in the instructor registration process. Please refer to the *State Fire Training Procedures Manual* for the complete list of qualifications required to teach Machinery Rescue Technician (2021).

## Initiation Requirements

The following requirements must be completed prior to initiating this task book.

### Candidate Information

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

SFT ID Number: \_\_\_\_\_

Fire Agency: \_\_\_\_\_

Initiation Date: \_\_\_\_\_

### Prerequisites

The candidate meets the following prerequisites.

1. OSFM Instructor 1, Training Instructor I, or Fire Instructor I certification; **or** OSFM Registered Instructor
2. OSFM Fire Fighter 1 certification

*Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.*

### Education

That candidate has completed the following courses.

1. Machinery Rescue Technician (2021)

*Include documentation to verify education requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.*

### Fire Chief Approval

State Fire Training confirms that a fire chief's approval is not required to initiate this task book.



## Signature Verification

The following individuals have the authority to verify portions of this instructor task book using the signature recorded below.

Please print except for the Signature line where a handwritten signature is required. Add additional signature pages as needed.

**Name:** \_\_\_\_\_  
Job Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Signature: \_\_\_\_\_

**Name:** \_\_\_\_\_  
Job Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Signature: \_\_\_\_\_

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Signature: \_\_\_\_\_

**Name:** \_\_\_\_\_  
Job Title: \_\_\_\_\_  
Organization: \_\_\_\_\_  
Signature: \_\_\_\_\_

## Job Performance Requirements

### Job Performance Requirements

The candidate must complete each job performance requirement (JPR) in accordance with the standards of the authority having jurisdiction (AHJ) or the National Fire Protection Association (NFPA), whichever is more restrictive.

When California requirements exceed or require revision to the NFPA standard, the corresponding Office of the State Fire Marshal approved (OSFM) additions or revisions appear in italics.

All JPRs must be completed within a California fire agency or State Fire Training Accredited Regional Training Programs (ARTP).

Each JPR shall be evaluated after the candidate initiates the task book.

Each task must be performed twice.

- The two instances must occur during two different courses.
- The same evaluator cannot sign off on the same task twice.
- In the tables, E1 represents the candidate's first evaluation and E2 represents their second evaluation.

Examples of correct and incorrect evaluation:

**Correct:** Task completed during two separate courses and evaluated by two separate individuals.

1. Assemble a comprehensive burn plan ("burn book") that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	Course Code (E1)	Date (E1)	Initials (E1)	Course Code (E2)	Date (E2)	Initials (E2)
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
b. Identify components of a live fire burn plan ("burn book")	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	CWJ

**Incorrect:** Task completed twice during one course but evaluated by two separate individuals.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	Course Code (E1)	Date (E1)	Initials (E1)	Course Code (E2)	Date (E2)	Initials (E2)
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	AAA123	2/8/18	CWJ

**Incorrect:** Task completed during two separate courses but evaluated by the same individual.

1. Assemble a comprehensive burn plan (“burn book”) that contains all documentation necessary to conduct a live fire training evolution in accordance with NFPA standards and the policies and procedures of State Fire Training (SFT) and the authority having jurisdiction (AHJ).	Course Code (E1)	Date (E1)	Initials (E1)	Course Code (E2)	Date (E2)	Initials (E2)
a. Describe purpose of a live fire burn plan	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
b. Identify components of a live fire burn plan (“burn book”)	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS
c. Identify records-retention requirements for burn plans	AAA123	2/8/18	JAS	BBB123	5/15/18	JAS

## Machinery Rescue Technician Instructor

### Course Administration and Application

1. Course administration and orientation	Course Code (E1)	Date (E1)	Initials (E1)	Course Code (E2)	Date (E2)	Initials (E2)
a. Complete and submit course scheduling request						
b. Order student textbooks (if applicable)						
c. Identify facility requirements						
d. Confirm facilities set up and safety						
e. Identify classroom requirements						
f. Confirm equipment (based on number of students)						
g. Complete instructor assignments						
h. Organize skill stations (location, equipment, timing, complexity)						
i. Confirm prop set up and safety						
j. Complete class rosters						
k. Review course syllabus						

### Course Content

2. Introduction to Machinery Rescue (Unit 2)	Course Code (E1)	Date (E1)	Initials (E1)	Course Code (E2)	Date (E2)	Initials (E2)

a. Define a “machinery rescue” incident						
b. Identify simple machinery common to the AHJ						
c. Identify complex machinery common to the AHJ						
d. Describe machine components and construction						
e. Select and use PPE						
f. Select and use tools and equipment						
<b>3. Incident Response (Unit 3)</b>	<b>Course Code (E1)</b>	<b>Date (E1)</b>	<b>Initials (E1)</b>	<b>Course Code (E2)</b>	<b>Date (E2)</b>	<b>Initials (E2)</b>
a. Plan for a machinery rescue incident						
b. Size up a machinery rescue incident						
c. Utilize a subject matter expert						
d. Recognize the need for technical rescue resources						
e. Support an operations- or technician-level incident						
f. Recognize and isolate incident hazards						
g. Establish scene safety zones						
h. Isolate energy sources						
i. Establish fire protection						
<b>4. Machinery Management (Unit 4)</b>	<b>Course Code (E1)</b>	<b>Date (E1)</b>	<b>Initials (E1)</b>	<b>Course Code (E2)</b>	<b>Date (E2)</b>	<b>Initials (E2)</b>
a. Stabilize a piece of machinery using wedges/chocks						
b. Stabilize a piece of machinery using machinery systems (power source, breaks, etc.)						

c. Stabilize a piece of machinery using box (crosstie) cribbing						
d. Stabilize a piece of machinery using solid (crosstie platform) cribbing						
e. Stabilize a piece of machinery using modified crosstie cribbing						
f. Stabilize a piece of machinery using struts						
g. Stabilize a piece of machinery using cables, chains, ropes, slings						
h. Control fuel release within a piece of machinery						
i. Control mechanical release devices within a piece of machinery						
j. Isolate energy equipment with a piece of machinery						
k. Determine machinery access and egress points						
l. Create access and egress by disassembling						
m. Create access and egress by cutting						
n. Create access and egress by burning						
o. Create access and egress by lifting						
p. Create access and egress by prying						
q. Create access and egress by breaking						
<b>5. Victim Rescue</b>	<b>Course Code (E1)</b>	<b>Date (E1)</b>	<b>Initials (E1)</b>	<b>Course Code (E2)</b>	<b>Date (E2)</b>	<b>Initials (E2)</b>
a. Stabilize a victim (to prepare for rescue)						
b. Disentangle a victim by disassembling						
c. Disentangle a victim by cutting						

d. Disentangle a victim by burning						
e. Disentangle a victim by lifting						
f. Disentangle a victim by prying						
g. Disentangle a victim by breaking						
h. Package a victim for removal						
i. Remove a packaged victim						
<b>6. Termination</b>	<b>Course Code (E1)</b>	<b>Date (E1)</b>	<b>Initials (E1)</b>	<b>Course Code (E2)</b>	<b>Date (E2)</b>	<b>Initials (E2)</b>
a. Terminate an incident						

## Application

<b>7. Set up, demonstrate, and oversee skills stations and/or demonstrations</b>	<b>Course Code (E1)</b>	<b>Date (E1)</b>	<b>Initials (E1)</b>	<b>Course Code (E2)</b>	<b>Date (E2)</b>	<b>Initials (E2)</b>
a. Tool lab (hands-on practice) <ul style="list-style-type: none"> <li>• PPE unique to machinery rescue</li> <li>• Stabilization</li> <li>• Machine Management</li> <li>• Victim Rescue</li> </ul>						
b. Stabilize a whole machine						
c. Stabilize interior parts or pieces of a machine						
d. Disassembling a piece of machinery to create access/egress						
e. Disassembling a piece of machinery to disentangle/extricate a victim						

f. Cutting a piece of machinery to create access/egress						
g. Cutting a piece of machinery to disentangle/extricate a victim						
h. Burning a piece of machinery to create access/egress						
i. Burning a piece of machinery to disentangle/extricate a victim						
j. Lifting a piece of machinery to create access/egress						
k. Lifting a piece of machinery to disentangle/extricate a victim						
l. Prying a piece of machinery to create access/egress						
m. Prying a piece of machinery to disentangle/extricate a victim						
n. Breaking piece of machinery to create access/egress						
o. Breaking a piece of machinery to disentangle/extricate a victim						
p. Stabilizing a victim						
q. Disentangling a victim						
r. Packaging a victim						
s. Removing a victim						
t. Rescue scenario: Digital entrapment						
u. Rescue scenario: Simple entanglement (more than a digit)						
v. Rescue scenario: Complex entanglement						
w. Rescue scenario: Crush						
x. Rescue scenario: Impalement						



## Completion Requirements

The following requirements must be completed prior to submitting this task book.

### Experience

The candidate meets the following experience requirements.

- Have a minimum of three years' full-time or six years' volunteer or part-time paid suppression/rescue experience in a recognized fire agency in California

Agency	Experience	Start Date	End Date

*Include documentation to verify prerequisite requirements when you submit your instructor task book unless verification is already documented in your SFT User Portal.*

### Position

State Fire Training confirms that there are no position requirements for instructor registration.

### Updates

The candidate has completed and enclosed all updates to this instructor task book released by State Fire Training since its initial publication.

Number of enclosed updates: \_\_\_\_\_

### Completion Timeframe

A candidate must complete a task book within three years of its initiation date. Otherwise, a candidate must initiate a new task book using the curriculum's current published version.

Initiation Date (see Initiation Date under Initiation Requirements): \_\_\_\_\_

## Review and Approval

### Candidate

Candidate (please print): \_\_\_\_\_

I, the undersigned, am the person applying to teach Machinery Rescue Technician. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein is true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection or revocation.

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

### Fire Chief

Candidate's Fire Chief (please print): \_\_\_\_\_

I, the undersigned, am the person authorized to verify the candidate's qualifications to teach Machinery Rescue Technician. I hereby certify under penalty of perjury under the laws of the State of California, that the completion of all requirements documented herein are true in every respect. I understand that misstatements, omissions of material facts, or falsification of information or documents may be cause for rejection.

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



# Machinery Rescue Technician (2021) Training Record

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

**SFT ID Number:** \_\_\_\_\_

Unless otherwise specified by an asterisk (\*) indicating that each student must complete a skill individually, students will complete these skills as a member of a team.

	Required Skills	Course Plan Topic	Evaluator Initials
1.	Select and don appropriate PPE *	2-2	
2.	Use disassembly equipment *	2-3	
3.	Use cutting equipment *	2-3	
4.	Using burning equipment *	2-3	
5.	Using lifting equipment *	2-3	
6.	Use prying/separating equipment *	2-3	
7.	Use breaking equipment *	2-3	
8.	Size up a machinery rescue incident	3-2	
9.	Describe how to utilize a subject matter expert	3-3	
10.	Recognize the need for technical rescue resources	3-4	
11.	Support an operations- or technician-level incident	3-5	
12.	Recognize and isolate incident hazards	3-6	
13.	Establish scene safety zones	3-7	
14.	Isolate energy sources *	3-8	
15.	Establish fire protection	3-9	
16.	Stabilize a machine	4-1	
17.	Control fluid, mechanical, and energy release hazards	4-2	
18.	Determine access and egress points	4-3	
19.	Create access and egress openings by disassembling	4-4	
20.	Create access and egress openings by cutting	4-4	

21.	Create access and egress openings by burning	4-4	
22.	Create access and egress openings by lifting	4-4	
23.	Create access and egress openings by prying/separating	4-4	
24.	Create access and egress openings by breaking	4-4	
25.	Disentangle a victim from digital entrapment	5-1	
27.	Disentangle a victim from a simple entanglement (more than a digit)	5-1	
28.	Disentangle a victim from a complex entanglement	5-1	
29.	Disentangle a victim from a crush	5-1	
30.	Disentangle a victim from an impalement	5-1	
31.	Remove a packaged victim	5-2	
32.	Describe how to terminate an incident	6-1	

A candidate has successfully completed the skill when they perform it to the corresponding Terminal Learning Objective standard found in State Fire Training’s Machinery Rescue Technician (2021) course.

**SFT Course ID:** \_\_\_\_\_

**Course Delivery Date:** \_\_\_\_\_

**Instructor of Record:** \_\_\_\_\_

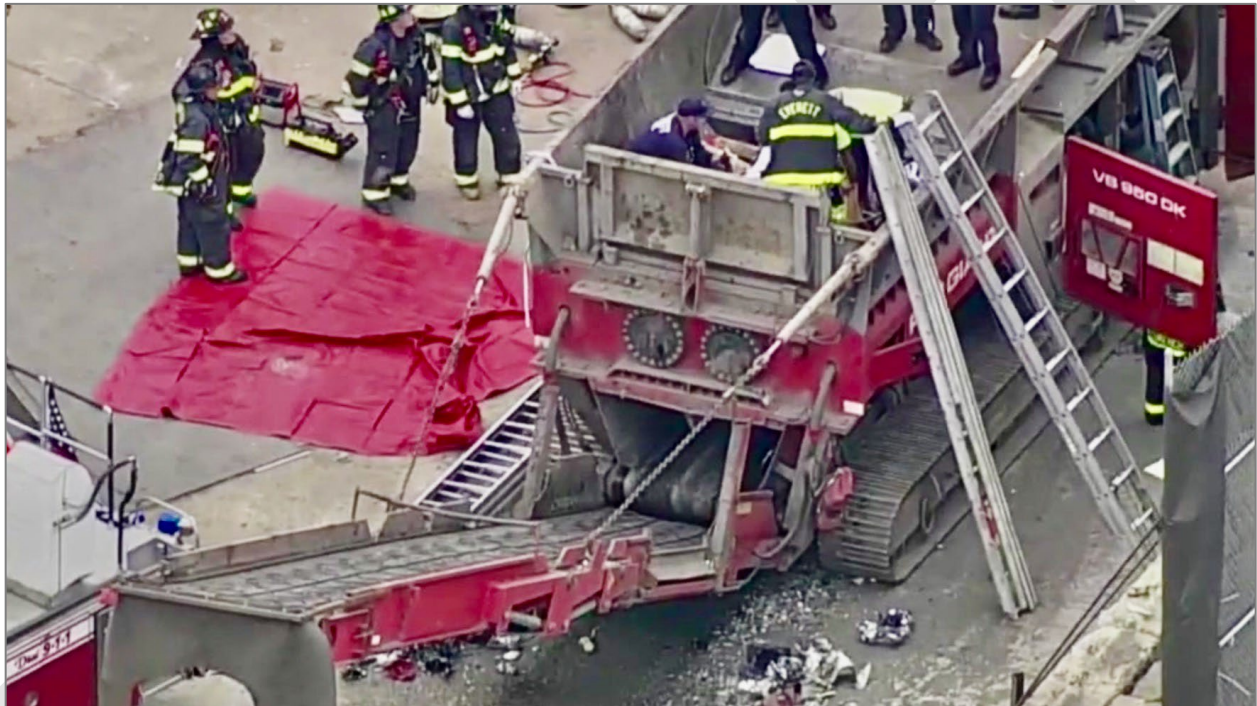
**Instructor SFT ID Number:** \_\_\_\_\_

# Machinery Rescue

(NFPA 1006: Machinery Rescue  
Awareness/Operations/Technician)

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## Curriculum Training Standards Guide (2021)



California Department of Forestry and Fire Protection  
Office of the State Fire Marshal  
State Fire Training

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# Machinery Rescue

## Curriculum Training Standards Guide (2021)

**Publication Date:** Month Year

This CTS guide utilizes the following NFPA standards to provide the qualifications for State Fire Training's Machinery Rescue (2021) curriculum:

- NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)

State Fire Training coordinated the development of this CTS guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) recommended this CTS guide for adoption by the Office of the State Fire Marshal (OSFM).

Cover photo courtesy of the Everett Fire Department, Everett, MA, and WHDH TV 7 News, Boston, MA.

Published by State Fire Training.

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## How to Read a CTS Guide

### Overview

A curriculum training standard (CTS) guide lists the requisite knowledge, skills, and job performance requirements an individual must complete to become certified in a specific job function.

It also documents and justifies the OSFM-approved revisions to the curriculum's NFPA standard and identifies where each curriculum training standard is taught (course plan), tested (skill sheets), and validated (task book).

Individuals aspiring to meet State Fire Training's curriculum training standards must do so in accordance with the codes, standards, regulations, policies, and standard operating procedures applicable within their own agency or jurisdiction.

### Format

Each curriculum training standard is comprised of eight sections.

#### Section Heading

Training standards are grouped by section headings that describe a general category. For example, the Fire Fighter 1 CTS guide includes the following section headings: NFPA Requirements, Fire Department Communications, Fireground Operations, and Preparedness and Maintenance.

#### Training Standard Title

The training standard title provides a general description of the performance requirement contained within the individual standard.

#### Authority

The CTS guide references each individual standard with one or more paragraphs of the corresponding National Fire Protection Association (NFPA) Professional Qualifications. This ensures that each fire service function within California's certification system meets or exceeds NFPA standards.

When California requirements exceed the NFPA standard, the CTS guide cites the Office of the State Fire Marshal as the authority and prints the corresponding information in *italics*.

#### Job Performance Requirements

This segment includes a written statement that describes a specific job-related task, the items an individual needs to complete the task, and measurable or observable outcomes.

**Requisite Knowledge**

This segment lists the knowledge that an individual must acquire to accomplish the job performance requirement.

**Requisite Skills**

This segment lists the skills that an individual must acquire to accomplish the job performance requirement.

**Content Modification**

This table documents and justifies any revisions to the NFPA standard that the development or validation cadres make during the development of a CTS guide.

**Cross Reference**

This table documents where each training standard is taught (course plan), tested (skill sheets), and validated (task book).

# Machinery Rescue

## Section 1: Awareness

### 1-1: Sizing Up a Machinery Rescue Incident

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.1.1

#### Job Performance Requirement

Size up a machinery rescue incident, given background information and applicable reference materials, 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.

#### Requisite Knowledge

1. *Describe* types of reference materials and their uses (T3-2)
2. *Describe* availability and capability of the resources (T3-2)
3. *Describe* elements of an incident action plan and related information (T3-2)
4. *Describe* relationship of the size-up to the incident management system (T3-2)
5. *Describe* information gathering techniques and how that information is used in the size-up process (T3-2)
6. *Describe* basic search criteria for machinery rescue incidents

#### Requisite Skills

1. Read technical reference materials
2. Gather information
3. Use interview techniques
4. Relay information
5. Use information-gathering sources

#### Content Modification

Block	Modification	Justification

**Cross Reference**

<b>Course Plan</b>	<b>Training Record</b>	<b>Task Book</b>
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-2</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 8</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 1-2: Recognizing and Isolating Incident Hazards

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.1.2

### Job Performance Requirement

Recognize incident hazards and initiate isolation procedures, given scene control barriers, personal protective equipment (PPE), requisite equipment, and available specialized resources, 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.

### Requisite Knowledge

1. *Describe* resource capabilities and limitations (3-6)
2. *Describe* types and nature of incident hazards (3-6)
3. *Describe* equipment types and their use (3-6)
4. *Describe* isolation terminology, methods, equipment, and implementation (3-6)
5. *Describe* operational requirement concerns (3-6)
6. *Describe* common types of rescuer and victim risks (3-6)
7. *Describe* risk/benefit analysis methods and practices (3-2)
8. *Describe* hazard recognition, isolation methods, and terminology (3-6)
9. *Describe* methods for controlling access to the scene (3-6)
10. *Describe* types of technical references (3-6)

### Requisite Skills

1. Identify resource capabilities and limitations
2. Identify incident hazards
3. Assess potential hazards to rescuers and bystanders
4. Place scene control barriers
5. Operate control and mitigation equipment

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-2 (RK7)</li><li>• Topic 3-6 (all others)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 12</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

### 1-3: Recognizing the Need for Technical Rescue Resources

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.1.3

#### Job Performance Requirement

Recognize the need for technical rescue resources at an operations- or technician-level incident, given AHJ guidelines, 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.

#### Requisite Knowledge

1. *Describe* operational protocols
2. *Identify* specific planning form
3. *Identify* types of incidents common to the AHJ
4. *Identify* hazards
5. *Describe* incident support operations and resource
6. *Describe* safety measures

#### Requisite Skills

1. Apply operational protocols
2. Select specific planning forms based on the types of incidents
3. Identify and evaluate various types of hazards within the AHJ
4. Request support and resources
5. Determine the required safety measures

#### Content Modification

Block	Modification	Justification

#### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-1 (RK3, RS3)</li><li>• Topic 3-4 (RK1, RK2, RK5, RS1, RS2, RS4, RS5)</li><li>• Topic 3-6 (RK4)</li><li>• Topic 3-7 (RK5)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 10</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 1-4: Supporting an Operations- or Technician-level Incident

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.1.4

### Job Performance Requirement

Support an operations- or technician-level incident, given an incident, an assignment, an incident action plan, and resources from the tool *cache*, 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.

### Requisite Knowledge

1. *Describe* AHJ operational protocols
2. *Identify* hazard recognition
3. *Describe* incident management
4. *Identify* PPE selection
5. *Describe* resource selection and use
6. *Identify* scene support requirements

### Requisite Skills

1. Apply operational protocols
2. Function within an incident management system
3. Follow and implement an incident action plan
4. Report the task progress status to a supervisor or incident command

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-2 (RK4)</li><li>• Topic 3-5 (RK1, RK3, RK5, RK6, RS1, RS2, RS3, RS4)</li><li>• Topic 3-6 (RK2)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 11</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## Section 2: Operations

### 2-1: Planning for a Small Machinery Incident

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.1

#### Job Performance Requirement

Preplan for a small machinery incident, given agency guidelines, planning forms, and operations-level machinery incident or simulations, so that a standard approach is used during training and operational scenarios; initiation and ongoing size-ups are being completed; emergency situation hazards are identified; isolation methods and scene security measures are identified; machinery stabilization needs are evaluated; and resource needs are identified and documented for future use.

#### Requisite Knowledge

1. *Describe* operational protocols
2. *Identify* specific planning forms
3. *Identify* types of machinery common to the AHJ boundaries
4. *Identify* machinery hazards
5. *Describe* incident support operations and resources
6. *Describe* machinery anatomy
7. *Describe* fire suppression and safety measures

#### Requisite Skills

1. Apply operational protocols
2. Select specific planning forms based on the types of machinery
3. Identify and evaluate various types of machinery within the AHJ boundaries
4. Request support and resources
5. Identify machinery anatomy
6. Determine the required fire suppression and safety measures

#### Content Modification

Block	Modification	Justification



### Cross Reference

Course Plan	Training Record	Task Book
<p>Machinery Rescue Technician (2021)</p> <ul style="list-style-type: none"><li>• Topic 2-1 (RK3, RK6, RS3, RS5)</li><li>• Topic 3-1 (RK1, RK2, RK5, RS1, RS2)</li><li>• Topic 3-4 (RS4)</li><li>• Topic 3-6 (RK4)</li><li>• Topic 3-9 (RK7, RS9)</li></ul>	N/A	<p>Machinery Rescue Technician (2021) Instructor Task Book</p> <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-2: Establishing Scene Safety Zones

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.2

### Job Performance Requirement

Establish “scene” safety zones, given scene security barriers, incident location, incident information, and PPE, so that hot, warm, and cold safety zones are designated, zone perimeters are consistent with incident requirements; perimeter markings can be recognized and understood by others; zone boundaries are communicated to incident command; and only authorized personnel are allowed access to the rescue scene.

### Requisite Knowledge

1. *Describe* use and selection of PPE
2. *Describe* traffic control flow and concepts
3. *Identify* types of control devices and tools
4. *Identify* types of existing and potential hazards
5. *Describe* methods of hazard mitigations
6. *Describe* organizational standard operating procedures
7. *Describe* types of zones and staffing requirements

### Requisite Skills

1. Select and use PPE
2. Apply hazard control concepts
3. Identify and mitigate existing or potential hazards
4. Apply zone identification and personal safety techniques

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-2 (RK1, RS1)</li><li>• Topic 3-7 (RK2, RK3, RK4, RK5, RK6, RK7, RS2, RS3, RS4)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 13</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-3: Establishing Fire Protection

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.3

### Job Performance Requirement

Establish fire protection, given an extrication incident and fire control support, so that fire and explosion potential is managed and fire hazards and rescue objectives are communicated to the fire suppression crew.

### Requisite Knowledge

1. *Identify* types of fire and explosion hazards
2. *Describe* IMS
3. *Identify* types of extinguishing devices
4. *Describe* agency policies and procedures
5. *Identify* types of flammable and combustible substances
6. *Identify* types of ignition sources
7. *Describe* extinguishment or control options

### Requisite Skills

1. Identify fire and explosion hazards
2. Operate within the IMS
3. Use extinguishing devices
4. Apply fire control strategies
5. Manage initiation potential

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-9</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 15</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-4: Stabilizing a Small or Simple Machine

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.4

### Job Performance Requirement

Stabilize a small or simple machine, given a machinery tool *cache* and PPE, so that the machinery is prevented from moving during the rescue operations; entry, exit, and tools placement points are not compromised; anticipated rescue activities will not compromise machinery stability; selected stabilization points are structurally sound; stabilization equipment can be monitored; and the risk to rescuers is minimized.

### Requisite Knowledge

1. *Describe* types and rated capacities of stabilization devices
2. *Describe* mechanism of small machinery movement
3. *Identify* types of stabilization points
4. *Identify* types of stabilization surfaces
5. *Describe* AHJ policies and procedures
6. *Describe* types of machinery construction components as they apply to stabilization

### Requisite Skills

1. Select, operate, and monitor stabilization devices

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 4-1</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 16</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

## 2-5: Isolating Energy Sources

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.5

### Job Performance Requirement

Isolate potentially harmful energy sources, given machinery tool *cache* and PPE, so that all hazards are identified; systems are managed; beneficial system use is evaluated; and hazards to rescue personnel and victims are minimized.

### Requisite Knowledge

1. *Identify* types and uses of PPE
2. *Identify* types of energy sources
3. *Describe* system isolation methods
4. *Describe* specialized system features
5. *Describe* tools for disabling hazards
6. *Describe* policies and procedures of the AHJ

### Requisite Skills

1. Select and use hazard-specific PPE
2. Identify hazards
3. Operate beneficial systems in support of tactical objectives
4. Operate tools and devices for securing and disabling hazards

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-2 (RK1, RS1)</li><li>• Topic 3-8 (RK2, RK3, RK4, RK5, RK6, RS2, RS3, RS4)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 14</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-6: Determining Small Machinery Access and Egress Points

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.6

### Job Performance Requirement

Determine small machinery access and egress points, given the structural and damage characteristics and potential victim location(s), so that victim location(s) is identified; access and egress points for victims, rescuers, and equipment are designated; flows of personnel, victim(s), and equipment are identified; existing entry points are used; time constraints are factored; selected entry and egress points do not compromise stability; chosen points can be protected; equipment and victim stabilization are initiated; and AHJ safety and emergency procedures are enforced.

### Requisite Knowledge

1. *Describe* small machinery construction/features (4-3)
2. *Describe* access and egress points, routes, and hazards (4-3)
3. *Describe* operating systems (4-3)
4. *Describe* AHJ standard operating procedures (4-3)
5. *Describe* emergency evacuation and safety signals (4-3)

### Requisite Skills

1. Identify access and egress points and probable victim locations (4-3)
2. Assess and evaluate impact of machine stability on the victim (4-3)

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 4-3</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 18</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

## 2-7: Creating Access and Egress Openings for Rescue from a Small or Simple Machine

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.7

### Job Performance Requirement

Create access and egress openings for rescue from a small or simple machine, given a machinery tool *cache*, specialized tools and equipment, PPE, and an assignment, so that the movement of rescuers and equipment complements victim care and removal; the technique chosen is expedient; victim and rescuer protection is afforded; and stability is maintained.

### Requisite Knowledge

1. *Describe* small machinery construction and features
2. *Identify* electrical, mechanical, hydraulic, pneumatic, and alternative access and egress equipment
3. *Describe* points and routes of ingress and egress
4. *Describe* techniques and hazards
5. *Describe* agency policies and procedures
6. *Describe* emergency evacuation and safety signals

### Requisite Skills

1. Identify common small machinery construction features
2. Select and operate tools and equipment
3. Apply tactics and strategy based on assignment
4. Apply victim care and stabilization devices
5. Perform hazard control based on techniques selected
6. Demonstrate safety procedures and emergency evacuation signals

### Content Modification

Block	Modification	Justification
JPR	Changed "kit" to "cache".	Agencies don't have designated machinery rescue "tool kits". They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-1 (RK1, RS1)</li><li>• Topic 4-3 (RK3)</li><li>• Topic 4-4 (RK2, RK4, RK5, RK6, RS2, RS3, RS5, RS6)</li><li>• Topic 5-1 (RS4)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 19, 20, 21, 22, 23, 24</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>



## 2-8: Disentangling Victims

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.8

### Job Performance Requirement

Disentangle victims(s), given an extrication involving a small or simple machine, a machinery tool *cache*, PPE, and specialized equipment, so that undue victim injury is prevented; victim protection is provided; and stabilization is maintained.

### Requisite Knowledge

1. *Describe* tool selection and application
2. *Describe* stabilization systems
3. *Describe* protection methods
4. *Describe* disentanglement points and techniques
5. *Describe* dynamics of disentanglement

### Requisite Skills

1. Operate disentanglement tools
2. Initiate protective measures
3. Identify and eliminate points of entrapment
4. Maintain incident stability and scene safety

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 5-1</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 25, 26, 27, 28, 29, 30</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 5</li></ul>

## 2-9: Identifying Potential Emergency Incidents Involving Mechanical Equipment

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.9

### Job Performance Requirement

Identify potential emergency incidents involving mechanical equipment, given the associated structural and damage characteristics, so that incident-specific resources are identified and hazard control plans are developed.

### Requisite Knowledge

1. *Describe* types of stabilization devices
2. *Describe* mechanism of machinery movement and travel
3. *Identify* types of stabilization points
4. *Identify* types of energy sources
5. *Describe* system isolation and release methods
6. *Identify* access and egress points
7. *Describe* specialized system features
8. *Describe* tool selection and application
9. *Describe* special features of unique machinery systems and accompanying subject matter experts

### Requisite Skills

1. Identify access and egress points and probable victim locations
2. Identify common energy control devices and construction
3. Perform hazard control based on techniques selected
4. Apply tactics and strategy based on assignment
5. Select and operate tools and equipment specific to machinery rescue
6. Apply victim care and stabilization devices
7. Demonstrate safety procedures

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-3 (RK8, RS5)</li><li>• Topic 3-8 (RK7)</li><li>• Topic 4-2 (RK1, RK2, RK3, RK4, RK5, RK9, RS2, RS3)</li><li>• Topic 4-3 (RK6, RS1)</li><li>• Topic 5-2 (RS6)</li></ul>	N/A	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-10: Designating Access and Egress Points for Victims(s) and Rescuer(s)

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.10

### Job Performance Requirement

Designate access and egress points for victim(s) and rescuer(s), given a machinery rescue tool *cache* and hazard-specific PPE, so that all machinery involved is stabilized and isolated and chosen points can be protected.

### Requisite Knowledge

1. *Identify* types of stabilization devices
2. *Describe* mechanism of machinery movement and travel
3. *Identify* types of stabilization points
4. *Identify* types of energy sources
5. *Describe* system isolation and release methods
6. *Identify* access and egress points
7. *Describe* specialized system features
8. *Describe* tool selection and application
9. *Describe* special features of unique machinery systems

### Requisite Skills

1. Identify access and egress points and probable victim locations
2. Identify common energy control devices and construction
3. Perform hazard control based on techniques selected
4. Apply tactics and strategy based on assignment
5. Select and operate tools and equipment specific to machinery rescue
6. Apply victim care and stabilization devices
7. Demonstrate safety procedures

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-3 (RK8, RS5)</li><li>• Topic 3-8 (RS2, RK4, RK7)</li><li>• Topic 4-1 (RK1, RK3)</li><li>• Topic 4-2 (RK5, RK9)</li><li>• Topic 4-3 (RK2, RK6, RS1)</li><li>• Topic 4-4 (RS3)</li><li>• Topic 5-2 (RS6)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 18</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

## 2-11: Controlling Fluid or Mechanical Release Hazards

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.11

### Job Performance Requirement

Control the hazards presented by the release of fluids or mechanical release devices, given an entrapment within machinery, so that mechanical processes are secured, the position of machinery is determined to optimize the removal of victim(s), and chosen points do not compromise the removal of victim or rescuer.

### Requisite Knowledge

1. *Identify* types of stabilization devices
2. *Describe* mechanism of machinery movement and travel
3. *Identify* types of stabilization points
4. *Identify* types of energy sources
5. *Describe* system isolation and release methods
6. *Identify* access and egress points
7. *Describe* specialized system features
8. *Describe* tool selection and application
9. *Describe* special features of unique machinery systems

### Requisite Skills

1. Identify access and egress points and probable victim locations
2. Identify common energy control devices and construction
3. Perform hazard control based on techniques selected
4. Apply tactics and strategy based on assignment
5. Select and operate tools and equipment specific to machinery rescue
6. Apply victim care and stabilization device
7. Demonstrate safety procedures

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-8 (RK4)</li><li>• Topic 4-2 (RK1, RK2, RK3, RK5, RK7, RK8, RK9, RS2, RS3, RS4, RS5, RS7)</li><li>• Topic 4-3 (RK6, RS1)</li><li>• Topic 5-2 (RS6)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 17</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

## 2-12: Initiating Energy Equipment Stabilization

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.12

### Job Performance Requirement

Initiate stabilization of energy equipment, given an entrapment within machinery, so that undue injury is prevented and safety guideline points are followed.

### Requisite Knowledge

1. *Identify* types of stabilization devices
2. *Describe* mechanism of machinery movement and travel
3. *Identify* types of stabilization points
4. *Identify* types of energy sources
5. *Describe* system isolation and release methods
6. *Identify* access and egress points
7. *Describe* specialized system features
8. *Describe* tool selection and application
9. *Describe* special features of unique machinery systems

### Requisite Skills

1. Identify access and egress points and probable victim locations
2. Identify common energy control devices and construction
3. Perform hazard control based on techniques selected
4. Apply tactics and strategy based on assignment
5. Select and operate tools and equipment specific to machinery rescue

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-8 (RK4)</li><li>• Topic 4-2 (RK1, RK2, RK3, RK5, RK7, RK8, RK9, RS2, RS3, RS4, RS5)</li><li>• Topic 4-3 (RK6, RS1)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 17</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>



## 2-13: Utilizing Information from a Subject Matter Expert

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.13

### Job Performance Requirement

Utilize specific information from a subject matter expert (SME), given a machinery rescue event and an SME capable of supplying event- or system-specific technical guidance, so that the technical guidance supports decision making and operational considerations applied during the event.

### Requisite Knowledge

1. *Describe* operational protocols
2. *Describe* data collection *methods*
3. *Describe* data interpretation

### Requisite Skills

1. Conduct interviews
2. Take notes
3. Interpret diagrams/technical drawings

### Content Modification

Block	Modification	Justification
RK2	Added "methods".	Added to narrow scope.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-3</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 9</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 2-14: Removing a Packaged Victim

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.14

### Job Performance Requirement

Remove a packaged victim to a designated safe area as a member of a team, given a victim transfer device, a designated egress route, and PPE, so that the team effort is coordinated, the designated egress route is used, the victim is removed without compromising victim packaging, undue injury is prevented, and stabilization is maintained.

### Requisite Knowledge

1. *Describe* patient handling techniques
2. *Describe* operation of IMS (3-9)
3. *Describe* types of immobilization, packaging, and transfer devices
4. *Describe* types of immobilization techniques
5. *Describe* uses of immobilization devices

### Requisite Skills

1. Use immobilization, packaging, and transfer devices for specific situations
2. Use immobilization techniques
3. Apply medical protocols and safety features to immobilize, package, and transfer
4. Use all techniques for lifting the patient

### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 3-9 (RK2)</li><li>• Topic 5-2 (RK1, RK3, RK4, RK5, RS1, RS2, RS3, RS4)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 31</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 5</li></ul>

## 2-15: Terminating an Incident

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.2.15

### Job Performance Requirement

Terminate an incident, given PPE specific to the incident, isolation barriers, and tool *cache*, so that rescuers and bystanders are protected and accounted for during termination operations, the party responsible is notified of any modification 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 and post-incident analysis and critique are considered, and command is terminated.

### Requisite Knowledge

1. *Describe* PPE characteristics
2. *Identify* hazard and risk identification
3. *Describe* isolation techniques
4. *Identify* statutory requirements
5. *Identify* responsible parties
6. *Describe* accountability system use
7. *Describe* reporting methods
8. *Describe* post-incident analysis techniques

### Requisite Skills

1. Select and use hazard-specific PPE
2. Decontaminate PPE
3. Use barrier protection techniques
4. *Implement* data collection and record-keeping/reporting protocols
5. *Conduct* post-incident analysis activities

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.
RS4	Added “implement”.	NFPA did not provide a verb.
RS5	Added “conduct”.	NFPA did not provide a verb.

**Cross Reference**

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 6-1</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 32</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 6</li></ul>

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## Section 3: Technician

### 3-1: Planning for a Large Machinery Incident

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.3.1

#### Job Performance Requirement

Plan for a large machinery incident, and conduct initial and ongoing size-up, given agency guidelines, planning forms, and an operations-level machinery incident or simulation, so that a standard approach is used during training and operational scenarios; emergency situation hazards are identified; isolation methods and scene security measure are considered; fire suppression and safety measures are identified; machinery stabilization needs are evaluated; and resource needs are identified and documented for future use.

#### Requisite Knowledge

1. *Describe* operational protocols
2. *Identify* specific planning forms
3. *Identify* types of large, commercial/heavy machinery common to the AHJ boundaries
4. *Describe* machinery hazards
5. *Describe* incident support operations and resources
6. *Identify* machinery anatomy
7. *Describe* fire suppression and safety measures

#### Requisite Skills

1. Apply operational protocols
2. Select specific planning forms based on the types of large machinery
3. Identify and evaluate various types of large machinery within the AHJ boundaries
4. Request support and resources
5. Identify large machinery anatomy
6. Determine the required fire suppression and safety measures

#### Content Modification

Block	Modification	Justification

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-1 (RK3, RK6, RS3, RS5)</li><li>• Topic 3-1 (RK1, RK2, RK5, RS1, RS2)</li><li>• Topic 3-4 (RS4)</li><li>• Topic 3-6 (RK4)</li><li>• Topic 3-9 (RK7, RS9)</li></ul>	N/A	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 3</li></ul>

## 3-2: Stabilizing Large Machinery

### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.3.2

### Job Performance Requirement

Stabilize large machinery, given a machinery tool *cache* and PPE, so that the machinery is prevented from moving during the rescue operations; entry, exit, and tool placement points are not compromised; anticipated rescue activities will not compromise machinery stability; selected stabilization points are structurally sound; stabilization equipment can be monitored; and the risk to rescuers is minimized.

### Requisite Knowledge

1. *Describe* types and rated capacities of stabilization devices
2. *Describe* mechanism of machinery movement
3. *Identify* types of stabilization points
4. *Identify* types of stabilization surfaces
5. *Describe* AHJ policies and procedures
6. *Identify* types of machinery construction components as they apply to stabilization

### Requisite Skills

1. Select, operate, and monitor stabilization devices

### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 4-1</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 16</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

### 3-3: Determining Large Machinery Access and Egress Points

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.3.3

#### Job Performance Requirement

Determine large machinery access and egress points, given the structural damage characteristics and potential victim location(s), so that victim location(s) is identified; access and egress points for victims, rescuers, and equipment are designated; flows of personnel, victim(s), and equipment are identified; existing entry points are used; time constraints are factored; selected entry and egress points do not compromise machinery stability; chosen points can be protected; equipment and victim stabilization are initiated; and AHJ safety and emergency procedures are enforced.

#### Requisite Knowledge

1. *Describe* large machinery construction/features
2. *Identify* access and egress points
3. *Identify* routes and hazards
4. *Identify* operating systems
5. *Describe* AHJ standard operation procedure
6. *Describe* emergency evacuation and safety signals

#### Requisite Skills

1. Identify access and egress points
2. Identify possible victim locations
3. Assess and evaluate impact of large machinery stability on victim(s)

#### Content Modification

Block	Modification	Justification

#### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 4-3</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 18</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>



### 3-4: Creating Access and Egress Openings for Rescue from Large Machinery

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.3.4

#### Job Performance Requirement

Create access and egress openings for rescue from large machinery, given a machinery tool *cache*, specialized tools and equipment, PPE and an assignment, so that the movement of rescuers and equipment complements victim care and removal; an emergency escape route is provided; the technique chosen is expedient; victim and rescuer protection is afforded; and stability is maintained.

#### Requisite Knowledge

1. *Describe* large machinery construction and features
2. *Describe* electrical, mechanical, hydraulic, and pneumatic systems
3. *Describe* alternative access and egress equipment
4. *Describe* points and routes of ingress and egress
5. *Describe* techniques and hazards
6. *Describe* agency policies and procedures
7. *Describe* emergency evacuation and safety signals

#### Requisite Skills

1. Identify large machinery construction features
2. Select and operate tools and equipment
3. Apply tactics and strategy based on assignment
4. Apply victim care and stabilization devices
5. Perform hazard control based on techniques selected
6. Demonstrate safety procedures and emergency evaluation signals

#### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 2-1 (RK1, RS1)</li><li>• Topic 4-3 (RK3)</li><li>• Topic 4-4 (RK2, RK4, RK5, RK6, RS2, RS3, RS5, RS6)</li><li>• Topic 5-1 (RS4)</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 19, 20, 21, 22, 23, 24</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 4</li></ul>

### 3-5: Disentangling Victims

#### Authority

1. NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications (2021)
  - Paragraph 13.3.5

#### Job Performance Requirement

Disentangle victim(s), given an extrication incident, a machinery tool *cache*, PPE, and specialized equipment, so that undue victim injury is prevented; victim protection is provided; and stabilization is maintained.

#### Requisite Knowledge

1. *Describe* tool selection and application
2. *Describe* operation of stabilization systems
3. *Describe* protection methods
4. *Describe* disentanglement points and techniques
5. *Describe* dynamics of disentanglement

#### Requisite Skills

1. Operate disentanglement tools
2. Initiate protective measures
3. Identify and eliminate points of entrapment
4. Maintain incident stability and scene safety

#### Content Modification

Block	Modification	Justification
JPR	Changed “kit” to “cache”.	Agencies don’t have designated machinery rescue “tool kits”. They draw from their overall tool cache.

#### Cross Reference

Course Plan	Training Record	Task Book
Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Topic 5-1</li></ul>	Machinery Rescue Technician (2021) <ul style="list-style-type: none"><li>• Skill 25, 26, 27, 28, 29, 30</li></ul>	Machinery Rescue Technician (2021) Instructor Task Book <ul style="list-style-type: none"><li>• JPR 5</li></ul>



# Machinery Rescue Technician (2021) Interim Procedures

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Issued: **Month** 2023

## Procedure Changes

**Edition:** May 2022 edition of the State Fire Training Procedures Manual

**Effective Date:** **Month**, **##**, 2023 (anticipated)

**Section Changes:** Modify and update the following sections:

- 6.11.11: Fire Fighting and Rescue Instructor

**Justification:** Following approval by the State Board of Fire Services (SBFS), the new Machinery Rescue Technician (2021) will go into effect on June 1, 2023. The new curriculum provides directive for Instructor qualifications.

**SFT Contact:** SFT Staff assigned to Instructor Registration.

**Note:** Using the May 2022 edition of the State Fire Training Procedures Manual:

- Update Section 6.11.11.

## 6.11.11: FIRE FIGHTING AND RESCUE INSTRUCTOR

### 6.11.11.1: Eligible Courses

**Table 6.11.11.1: Fire Fighting and Rescue Instructor Eligible Courses**

CFSTES Courses	FSTEP Courses
<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Aircraft Rescue and Firefighting Awareness</li> <li>• Confined Space Rescue Awareness</li> <li>• Fire Fighter Survival</li> <li>• Incident Safety Awareness for Hired Vendors</li> <li>• Low Angle Rope Rescue Operational (LARRO)</li> <li>• <b>Machinery Rescue Technician</b></li> <li>• Open Water Rescuer – Basic</li> <li>• Open Water Rescue Boat Operator – Small Vessel</li> <li>• Open Water Rescue Boat Operator – Large Vessel</li> <li>• Personal Watercraft Operations</li> <li>• Rapid Intervention Crew (RIC) Operations</li> <li>• Rescue Boat Operations</li> <li>• River and Flood Water Rescue</li> <li>• River/Flood Rescue Technician</li> <li>• River and Flood Rescue Boat Technician (2019)</li> <li>• Trench Rescue</li> <li>• Vehicle Extrication</li> </ul>

### 6.11.11.2: General Qualifications

- A. A Registered Instructor for a Fire Service Training and Education Program (FSTEP) Fire Fighting and Rescue course shall meet the following the qualifications required of all State Fire Training (SFT) Registered Instructors.
1. See **6.2.1: Qualifications**.

**6.11.11.3: Course Work**

- A. Attending and passing SFT’s Confined Space Rescue Technician course meets the requirement for attending and passing Confined Space Rescue Awareness.
- B. Registered Low Angle Rope Rescue Operational Instructors must have attended and passed ICS-200: Basic ICS.
- C. Attending and passing SFT’s Auto Extrication (1996) course meets the requirement for attending and passing Vehicle Extrication.
- D. Incident Safety Awareness for Hired Vendors instructors must have attended and passed Incident Safety Awareness for Hired Vendors (2018); Introduction to Incident Command System (ICS-100); Firefighter Training (S-130); Introduction to Wildland Fire Behavior (S-190); Intermediate Wildland Fire Behavior (S-290); Human Factors in the Wildland Fire Service (L-180); ICS for Single Resources and Initial Action Incidents (IS-200.B); and National Incident Management System - An Introduction (NIIMS 700.A).
- E. Meeting all of the following conditions fulfills the requirement for attending and passing Machinery Rescue Technician (2021). This waiver is valid through December 31, 2023.
  - 1. Registered Instructor of Vehicle Extrication or Common Passenger Vehicle Rescue Technician
  - 2. Registered Instructor of Structural Collapse Specialist 2: Technician (SFT); or Structural Collapse Specialist 4.0 (FEMA); or Rescue Systems 1 (SFT – modules 2 and 4) and Rescue Systems 2 (SFT); or Rescue Systems 3 (SFT – all modules)
  - 3. Complete the Machinery Rescue Technician Instructor Roll Out course

**6.11.11.4: Teaching Experience**

- A. It is recommended that a new instructor for SFT’s Incident Safety Awareness for Hired Vendors co-teach with a primary instructor during their first course presentation.

**6.11.11.5: Professional Experience**

- A. A Registered Primary Instructor for an FSTEP Fire Fighting and Rescue course shall meet the professional experience qualifications listed below.
  - 1. Performing in an “acting” capacity does not qualify.

**Table 6.11.11.5: Fire Fighting and Rescue Instructor Professional Experience**

FSTEP Course	Experience
<ul style="list-style-type: none"> <li>• Aircraft Rescue and Firefighting Awareness</li> </ul>	<ul style="list-style-type: none"> <li>• Held the rank of Fire Fighter and/or performed rescue duties within a recognized fire agency in California for a minimum of three (3) years; or</li> </ul>

FSTEP Course	Experience
	<p>worked in a volunteer position or paid call firefighter with a Recognized Fire Agency in California for a minimum of five (5) years.</p> <ul style="list-style-type: none"> <li>• Have a minimum of three years' experience within a recognized fire agency in California in the field of aircraft rescue and fire fighting</li> </ul>
<ul style="list-style-type: none"> <li>• Confined Space Rescue Awareness</li> <li>• Low Angle Rope Rescue Operational</li> </ul>	<ul style="list-style-type: none"> <li>• Held the rank of Fire Fighter and/or performed rescue duties within a recognized fire agency in California for a minimum of two (2) years</li> </ul>
<ul style="list-style-type: none"> <li>• Low Angle Rope Rescue Operational</li> <li>• Open Water Rescuer - Basic</li> <li>• Personal Watercraft Operations</li> <li>• Rescue Boat Operations</li> <li>• River and Flood Water Rescue</li> <li>• Trench Rescue</li> </ul>	<ul style="list-style-type: none"> <li>• Held the rank of Fire Fighter and/or performing suppression/rescue duties within a recognized fire agency in California for a minimum of two (2) years</li> </ul>
<ul style="list-style-type: none"> <li>• Incident Safety Awareness for Hired Vendors</li> </ul>	<p>Letter verifying the following experience:</p> <ul style="list-style-type: none"> <li>• Minimum of five (5) years' full-time paid experience in a federal, state, local, or provincial fire agency and holds the rank of Company Officer</li> <li>• Has responded as a Single Resource or Overhead assignment which has gone through a check-in, briefing, and demobilization (completed a Shift Ticket) process on a campaign fire</li> <li>• Has working knowledge, skills, and abilities performing within Incident Command</li> <li>• Has been assigned to an incident within the last five (5) years (Red Card currency)</li> </ul>
<ul style="list-style-type: none"> <li>• Rapid Intervention Crew (RIC) Operations</li> <li>• Fire Fighter Survival</li> </ul>	<ul style="list-style-type: none"> <li>• Have five (5) years suppression/rescue experience, of which two (2) years must be while holding the rank of Fire Fighter performing suppression/rescue duties within a recognized fire agency in California</li> </ul>
<ul style="list-style-type: none"> <li>• Open Water Rescue Boat Operator – Small Vessel</li> <li>• Open Water Rescue Boat Operator – Large Vessel</li> <li>• River and Flood Rescue Boat Technician</li> </ul>	<ul style="list-style-type: none"> <li>• Held the rank of Fire Fighter and/or performed rescue duties within a recognized fire agency in California for a minimum of three (3) years; <b>or</b> worked in a volunteer position or paid call Fire Fighter with a Recognized Fire Agency in California for a minimum of five (5) years.</li> <li>• Specific expertise in Technical Rescue as it</li> </ul>

FSTEP Course	Experience
	relates to Open Water Search and Rescue Boat Operations and Seamanship. Expertise must be relative to the size of the vessel and power configuration and qualify based on the scope required for the curriculum chosen to facilitate.
<ul style="list-style-type: none"> <li>• River and Flood Rescue Technician</li> </ul>	<ul style="list-style-type: none"> <li>• Held the rank of Fire Fighter and/or performed rescue duties within a recognized fire agency in California for a minimum of two (2) years; <b>or</b> worked in a volunteer position or paid call Fire Fighter with a Recognized Fire Agency in California for a minimum of four (4) years.</li> </ul>
<ul style="list-style-type: none"> <li>• Vehicle Extrication</li> </ul>	<ul style="list-style-type: none"> <li>• Have three (3) year’s suppression/rescue experience performing suppression/rescue duties within a recognized fire agency in California</li> </ul>
<ul style="list-style-type: none"> <li>• <u>Machinery Rescue Technician</u></li> </ul>	<ul style="list-style-type: none"> <li>• <u>Have a minimum of three (3) years’ full-time or six (6) years’ part-time/volunteer experience performing suppression/rescue duties within a recognized fire agency in California</u></li> </ul>

**6.11.11.6: Task Book**

A. Fire Fighter Survival

1. An Instructor applicant for Fire Fighter Survival shall complete the appropriate instructor trainee task book.
2. A Registered Fire Fighter Survival Primary Instructor must sign off on the applicant’s task book within two (2) years of its initiation.

B. Low Angle Rope Rescue Operational

1. An Instructor applicant for Low Angle Rope Rescue Operational (LARRO) shall complete the appropriate Instructor Trainee Task Book.
2. A Registered LARRO Primary Instructor must sign off on the applicant’s Task Book within two (2) years of its initiation.

C. Rapid Intervention Crew Operations

1. An Instructor applicant for Rapid Intervention Crew Operations shall complete the appropriate Instructor Trainee Task Book.
2. A Registered Rapid Intervention Crew Operations Primary Instructor must sign off on the applicant’s Task Book within two (2) years of its initiation.



**D. Machinery Rescue Technician**

1. A new Instructor applicant shall complete the Machinery Rescue Technician Instructor Task Book.
2. A reciprocity Instructor applicant who applies on or before December 31, 2023, is not required to complete the Machinery Rescue Technician Instructor Task Book.

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