OFFICE OF THE STATE FIRE MARSHAL
STATEWIDE TRAINING AND EDUCATION ADVISORY COMMITTEE
DEPARTMENT OF FORESTRY AND FIRE PROTECTION
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Date: March 18, 2015 Attachment 7

To: Ronny J. Coleman, Chairman
c/o State Fire Training
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Sacramento, California 95811

From: Mark Romer, Fire Service Training Specialist
Jon Black, Fire Captain, Santa Clara County Fire Department

Subject/Agenda Action Item: FSTEP Vehicle Extrication Curriculum (2015)

Recommended Actions: Information/Discussion

Background Information:

Auto Extrication was last addressed in 1996. The class was 16 hours in length and instructors were provided with an course outline of topics to be covered. However, no supporting materials for the instructor or student were identified or provided. This led to a wide discrepancy in course content depending on instructor or location of course. The Auto Extrication curriculum did not address current automotive technology or firefighter safety issues.

Analysis/Summary of Issue:

The 2015 version of Vehicle Extrication is a 24 hour FSTEP class designed to meet the Terminal and Enabling Learning Objectives identified in the 2013 Firefighter-II curriculum. The intent is to provide a class that can be delivered in a stand-alone format or can be delivered as part of a firefighter II academy

The Cadre developed a course plan using the job performance requirements (JPRs) listed in Firefighter II (2013 curriculum) as well as the NFPA 1006, Technical Rescuer Professional Qualifications, chapter 10 Vehicle rescue, Level I. They also developed seven (7) required skills activities to ensure very student receive standardized instruction and hands-on experience for skills. The cadre felt this was crucial to safe and efficient operations at the scene of a vehicle extrication. The cadre also identified two course texts this is the first time this program has had an identified reference manuals for use by both Instructors and students, both are NFPA compliant and will further enhance their knowledge skills, and abilities.

With the development cadre choosing to follow the NFPA 1006 standard to develop the course then in the future if SFT moves forward on the development of the “Technical Rescue” certification this course would only need to have a certification training standard (CTS) developed and then inserted into that track.

CALIFORNIA STATE FIRE TRAINING

Vehicle Extrication

Course Plan

Course Details

Description: This course provides the knowledge and skills to prepare a firefighter to extricate victim(s) from a common passenger vehicle in a safe and effective manner in accordance with AHJ policies and procedures.

Designed For: Fire service personnel

Authority: NFPA 1006: Standards for Technical Rescuer Professional Qualifications (2013)

Prerequisites: Firefighter I training (certification not required)

Public Safety First Aid and CPR (*CA Health and Safety Code* 1979.182)

Corequisites: None

Standard: Complete all activities and mandatory skills

Hours: Lecture: 9:00

Activities: 0:30

Skills: 14:30

Hours (Total): 24:00

Maximum Class Size: 50

Instructor Level: Registered Primary Instructor

Instructor/Student Ratio: 1:50 (Lecture/Activities); 1:10 (Skills)

Restrictions: None

SFT Designation: FSTEP

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Required Resources

Instructor Resources

To teach this course, instructors need:

- One (or both) of the following course texts:
  - *Vehicle Extrication Levels I and II: Principles and Practice* (and instructor tool kit)
    - David A. Sweet, Jones & Bartlett Learning, 1st edition
  - *Principles of Vehicle Extrication*
    - Fire Protection Publications, International Fire Service Training Association (IFSTA), 3rd edition
- Full structural personal protective equipment (including hand and eye protection)

Online Instructor Resources

The following instructor resources are available online at http://osfm.fire.ca.gov/training/instructorresources.php:

- Skills Exercise 1: Vehicle Stabilization
- Skills Exercise 2: Hand Tools
- Skills Exercise 3: Energy Sources
- Skills Exercise 4: Access and Egress
- Skills Exercise 5: Disentangling Victims
- Skills Exercise 6: Victim Packaging and Removal
- Skills Exercise 7: Vehicle Extrication Scenarios

Student Resources

To participate in this course, students need:

- Course text selected by instructor (instructor determines whether or not students must purchase text and which one)
  - *Vehicle Extrication Levels I and II: Principles and Practice* (and instructor tool kit)
    - David A. Sweet, Jones & Bartlett Learning, 1st edition
  - *Principles of Vehicle Extrication*
    - Fire Protection Publications, International Fire Service Training Association (IFSTA), 3rd edition
- Full structural personal protective equipment (including hand and eye protection)

Facilities, Equipment, and Personnel

Facilities

- Classroom that accommodates up to 50 students
- Projection equipment and screen
- Activity 2-2: Table top or simulation equipment (required)

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- Training area that accommodates multiple skills stations
    - Sanitation facilities
    - Rehab area (shade, hydration, first aid)

Equipment

- **Incident action plan (IAP):** One for each skills day
- **Incident planning and ICS forms:** Tactical worksheets, ICS 201
- **Hand tools:** Bolt cutters, crowbar/pry bar, flat head axe, halligan tool, hack saw and spare blades, pick-head axe, pike pole (8 feet), flashlight, sledgehammer, spring-loaded center punch, cable cutters, webbing, utility rope, Duct tape, basic mechanic's tool kit
- **Power tools:** Gasoline-powered circular saw, generator, reciprocating saw, extension cords, air chisel
- **Fire extinguishers:** One per skills station
- **Extrication tools:** Cutters, spreaders, rams, power unit
- **Stabilization equipment:** Strap/cable come-along, chains (grade 70 or greater), manufactured strut systems, cribbing, wedges, step chocks, chock blocks
- **Vehicles:** See skills sheets for minimum requirements per station
    - Remove all batteries from vehicle before use by students/instructors
- **Victim immobilization equipment:** C-collar, KED or equivalent, spinal immobilization equipment, protection sheet (yellow blanket or equivalent)
- **Victims:** Manufactured or improvised rescue mannequins (determined by number of vehicles used)
- **Lifting equipment:** High pressure air bag set, hydraulic and mechanical jacks
- **Other supplies and equipment as needed:** Salvage covers, straight or folding ladder, dust masks (one/student minimum), hearing protection (one/student minimum), brooms, shovels, rakes, absorbent
- **For all equipment, ensure that you have the power source, operating supplies (blades, fuel, etc.), and cleaning supplies**

Personnel

- Lecture
    - One registered primary instructor
- Skills
    - One registered primary instructor (for a group of 10 students)
    - One assistant instructor (for each additional group of 10 students)
    - One safety officer

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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, 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. To be determined by the instructor

Activities

1. To be determined by the instructor

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Unit 2: Vehicle Extrication

Topic 2-1: Planning for and Sizing Up a Vehicle Incident

Terminal Learning Objective

At the end of this topic, a student, given agency guidelines, planning forms, and an operations-level vehicle incident or simulation, will be able to plan for a vehicle incident and conduct an initial and ongoing size-up, using a standard approach during training and operational scenarios, identifying emergency situation hazards, considering isolation methods and scene security measures, identifying fire suppression and safety measures, evaluating vehicle stabilization needs, and identifying and documenting resource needs for future use.

Enabling Learning Objectives

1. Describe the fire agency's role at a vehicle accident
    - Suppression
    - Extrication
    - Treatment
    - Transport
    - Unified command
2. Describe operational protocols
3. Identify specific planning and ICS forms
4. Identify all types of vehicles common to an AHJ's boundaries
5. Describe how to conduct a scene size-up
    - Windshield
    - Inner circle / outer circle method
    - Seven sides method
6. Identify vehicle anatomy and common terminology
7. Describe vehicle hazards
    - Propulsion
        - Conventional vehicles
        - Hybrid vehicles
        - Alternative power vehicles
    - Restraint systems
        - Pre-tensioners
        - Air bag systems
        - Rollover protection
    - Electrical 12-volt systems
    - Other hazards
        - Struts
        - Exotic metals
        - Vehicle contents/cargo
        - High-intensity discharge (HID) lights
8. Describe fire suppression and safety measures

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9. Describe emergency evacuation and safety signals
10. Identify incident support operations and resources
    - Medical and multi-casualty incident (MCI)
    - Specialized equipment
    - Allied agencies
11. Apply operational protocols
12. Select specific planning forms based on vehicle types
13. Identify and evaluate various types of vehicles within AHJ boundaries
14. Identify vehicle anatomy
15. Determine appropriate fire suppression and safety measures
16. Request support and resources

Discussion Questions

1. How is modern vehicle construction different from older vehicle construction and what challenges does each present?
2. What safety precautions should a firefighter take when working on a modern vehicle?
3. What are the differences between the inner circle and the outer circle of a vehicle accident scene size-up?

Activities

1. To be determined by the instructor

Instructor Notes

1. Provide students with samples of AHJ-specific operational protocols and planning and ICS forms (http://www.firescope.org/ics-forms.htm)
2. This video is a great resource for Discussion Question 1: 2009 Chevy Malibu vs. 1959 Bel Air Crash Test (http://www.youtube.com/watch?v=joMK1WZjP7g)

Topic 2-2: Establishing Scene Safety Zones

Terminal Learning Objective

At the end of this topic, a student, given scene security barriers, incident location, incident information, and personal protective equipment, will be able to establish scene safety zones, designating hot, warm, and cold safety zones, ensuring zone perimeters are consistent with incident requirements, ensuring others can recognize and understand perimeters, communicating zone perimeters to incident command, and allowing only authorized personnel access to the rescue scene.

Enabling Learning Objectives

1. Describe when to use different types of personal protective equipment
2. Identify AHJ scene safety operation procedures
3. Explain traffic control and traffic flow concepts
4. Describe types of traffic control devices and tools
5. Identify existing and potential emergency scene hazards
    - Weather
    - Terrain
    - Utilities

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- Hazardous materials
- Traffic
- Time of day
- Fire

6. Explain hazard mitigation methods
7. Describe the characteristics of hot, warm, and cold safety zones and the activities carried out within each
8. Select and use appropriate personal protective equipment
9. Apply traffic control concepts
10. Position traffic control devices and tools
11. Identify and mitigate existing or potential hazards
12. Apply zone identification and personal safety techniques

Discussion Questions

1. What determines whether an area is a hot, warm, or cold zone?
2. What is an effective initial scene protection tool?
3. What hazards might a firefighter encounter at a vehicle incident?

Activities

1. Table top or exercise simulation to be determined by the instructor (required)

Instructor Notes

1. The U.S. Department of Transportation's National Traffic Incident Management Responder curriculum is a good resource for this section

Topic 2-3: 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, managing fire and explosion potential and communicating fire hazards and rescue objectives to the fire support team.

Enabling Learning Objectives

1. Identify types of fire and explosion hazards associated with a vehicle extrication incident
2. Identify types of extinguishing agents/devices
   - Water or foam (1½" diameter hose line minimum)
   - ABC dry chemical extinguisher
3. Describe AHJ fire protection policies and procedures
4. Identify types of flammable and combustible substances and ignition sources
5. Describe extinguishment or control options
6. Identify fire and explosion hazards
7. Simulate use of extinguishing devices
8. Apply fire control strategies
9. Manage ignition potential

Discussion Questions

1. Why is it important to have a protection line in place during vehicle extrication?
2. When would a firefighter use an extinguisher versus a hose line?

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Activities

1. To be determined by the instructor

Topic 2-4: Stabilizing a Common Passenger Vehicle

Terminal Learning Objective

At the end of this topic, a student, given stabilization equipment and personal protective equipment, will be able to stabilize a common passenger vehicle, preventing the vehicle from moving during the rescue operations; ensuring entry, exit, and tool placement points are not compromised; ensuring anticipated rescue activities will not compromise vehicle stability; ensuring selected stabilization points are structurally sound; monitoring stabilization equipment; and minimizing risk to rescuers.

Enabling Learning Objectives

1. Describe AHJ vehicle stabilization policies and procedures
2. Describe the mechanisms of common passenger vehicle movement
   - Horizontal
   - Vertical
   - Roll
   - Pitch
   - Yaw
3. Identify initial vehicle immobilization techniques
   - Gear selector
   - Parking break
   - Ignition
4. Describe types of stabilization equipment
   - Cribbing
   - Struts
   - Chock blocks
   - Step chock
   - Come-along/chain/ratchet strap
   - Winch
   - Grip hoist
   - Other
5. Identify vehicle construction components that apply to stabilization
6. Identify stabilization points
   - Existing
   - Created
7. Describe how terrain conditions impact vehicle stabilization
8. Apply and operate stabilization equipment

Discussion Questions

1. How do terrain and vehicle position impact stabilization?
2. What are the advantages and disadvantages of tire deflation?
3. What is an effective initial stabilization technique?

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Activities

1. To be determined by the instructor

Topic 2-5: Isolating and Managing Energy Sources

Terminal Learning Objective

At the end of this topic, a student, given a common passenger vehicle, applicable tools, and personal protective equipment, will be able to isolate and manage potentially harmful energy sources, including propulsion power, restraint systems, and construction materials, identifying all hazards, managing systems, evaluating beneficial system use, and minimizing hazards to rescue personnel and victims.

Enabling Learning Objectives

1. Describe AHJ energy source isolation policies and procedures
2. Identify energy types
   - Kinetic
   - Potential
   - Electrical
3. Describe energy sources
   - 12-volt systems
   - 24-volt systems
   - Supplemental restraint systems
     - Pre-tensioners
     - Air bag systems
       - Stored gas inflator
     - Rollover protection
     - Electronic control unit/module
   - Struts
     - Bumper
     - Suspension
     - Lift
       - Pneumatic
       - Gas
       - Oil
   - High-intensity discharge (HID) lights
   - Modified suspension systems
4. Describe system awareness and isolation methods
   - Awareness
     - 5/10/20 rule
     - “Peel and Peek”
     - Multi-driver settings
   - Isolation
     - Disconnect 12-volt system
     - Isolate 24-volt system (if possible)

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    - Disconnect battery
    - Isolate alternative fuel sources
        - Compressed natural gas
        - Propane
        - Hydrogen
5. Identify beneficial systems
    - Seat adjustment
    - Power windows
    - Adjustable column
    - Retractable roofs
    - Adjustable pedals
6. Describe tools for disabling hazards
7. Identify hazards
8. Operate beneficial systems in support of tactical objectives
9. Operate tools and devices for securing and disabling hazards

Discussion Questions

1. Can an air bag system deploy more than once?
2. How much distance should exist between a firefighter and an active air bag?
3. What is the purpose of "peel and peek"?
4. What safety concerns are associated with alternative propulsion vehicle extrication?

Activities

1. To be determined by the instructor

Instructor Notes

1. This video is a great resource for the 5/10/20 Rule: Dayton Airbag Incident (https://www.youtube.com/watch?v=b1Qj75pbl8o)

Topic 2-6: Determining Passenger Vehicle Access and Egress Points

Terminal Learning Objective

At the end of this topic, a student, given structural and damage characteristics and potential victim location(s), will be able to determine the access and egress points of a common passenger vehicle, identifying victim location(s); designating entry and exit points for victims, rescuers, and equipment; identifying personnel, victim, and equipment flows; using existing entry points; factoring time constraints; ensuring selected entry and egress points do not compromise vehicle stability; protecting chosen points; initiating equipment and victim stabilization; and enforcing AHJ safety and emergency procedures.

Enabling Learning Objectives

1. Describe AHJ vehicle access and egress standard operating procedures
2. Describe entry and exit points
    - Primary (existing openings)
    - Secondary (created openings)
3. Describe potential hazards associated with victim access and egress
4. Identify entry and exit points and probable victim location

5. Assess and evaluate impact of vehicle stability on the victim

Discussion Questions

1. What is often the easiest way to remove a victim from a vehicle?
2. What are some hazards associated with removing a victim through a rear window?

Activities

1. To be determined by the instructor

Topic 2-7: Creating Access and Egress Openings for Rescue

Terminal Learning Objective

At the end of this topic, a student, given specialized tools and equipment, personal protective equipment, and an assignment, will be able to create access and egress openings for rescue from a common passenger vehicle, so that the movement of rescuers and equipment complements victim care and removal, providing emergency escape routes, choosing an expedient technique, affording victim and rescuer protection, and maintaining vehicle stability.

Enabling Learning Objectives

1. Describe AHJ vehicle access and egress policies and procedures
2. Describe extrication equipment uses, limitations, and safety considerations
   - Hand tools
   - Pneumatic tools
   - Electric/cordless tools
   - Hydraulic tools
   - Stabilization tools
   - Mechanical/power tools
   - Alternative entry and exit equipment
3. Identify points and routes of access and egress
   - Existing
   - Created
4. Describe techniques and potential hazards
5. Select and operate tools and equipment
6. Apply tactics and strategy based on assignment
7. Perform hazard control based on selected techniques
8. Demonstrate safety procedures and emergency evacuation signals

Discussion Questions

1. What are some common door removal methods?
2. What tools would a firefighter use during a roof removal operation?
3. What hazards are associated with removing the roof of a vehicle?
4. What hazards are associated with glass removal?
5. What technique references simultaneously removing two doors on one side of a vehicle?

Activities

1. To be determined by the instructor

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Topic 2-8: Disentangling Victims

Terminal Learning Objective

At the end of this topic, a student, given an operations-level extrication incident, extrication tools, personal protective equipment, and specialized equipment, will be able to disentangle victim(s), preventing undue victim injury, providing victim protection, and maintaining vehicle stabilization.

Enabling Learning Objectives

1. Describe disentanglement points and techniques
   - Cutting (remove)
   - Spreading (displace)
   - Lifting
2. Explain the dynamics of disentanglement
3. Describe tool selection and application
4. Describe victim protection methods
5. Apply victim care and immobilization devices
6. Initiate victim protective measures
7. Operate extrication tools
8. Evaluate and remove points of entanglement
9. Maintain incident stability and scene safety

Discussion Questions

1. What is the main safety concern with steering wheel displacement?
2. What possible complications can occur from rolling the dash?
3. When should a firefighter reevaluate tool position/placement?
4. What methods can a firefighter use to displace or remove pedals?
5. What methods can a firefighter use to displace or remove a seat?

Activities

1. To be determined by the instructor

Topic 2-9: Removing a Packaged Victim to a Safe Area

Terminal Learning Objective

At the end of this topic, a student, given a victim transfer device, a designated egress route, and personal protective equipment, will be able to remove a packaged victim to a designated safe area as a member of a team, coordinating the team effort, using the designated egress route, removing the victim without compromising victim packaging, preventing undue injury, and maintaining immobilization.

Enabling Learning Objectives

1. Identify patient handling techniques
2. Identify incident command system (ICS) roles
3. Describe patient immobilization devices
4. Describe immobilization packaging techniques
5. Describe patient transfer devices
6. Apply immobilization techniques

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7. Use immobilization, packaging, and transfer devices for specific situations
8. Apply medical protocols and safety features to immobilize, package, and transfer
9. Demonstrate safe techniques for lifting a patient

Discussion Questions

1. What immobilization devices are commonly used during victim removal?
2. When does a “victim” become a “patient”?
3. What ICS positions are essential to vehicle extrication?

Activities

1. To be determined by the instructor

Instructor Notes

1. Use a damaged vehicle for the skills demonstrations.

Topic 2-10: Terminating a Vehicle Incident

Terminal Learning Objective

At the end of this topic, a student, given personal protective equipment specific to the incident, isolation barriers, and extrication tools, will be able to terminate a vehicle incident, protecting rescuers and bystanders during termination operations, notifying the party responsible for the operation, maintenance, or removal of the affected vehicle of any modification or damage created during the extrication process, transferring scene control to a responsible party, communicating potential or existing hazards to that responsible party, and terminating command.

Enabling Learning Objectives

1. Describe vehicle extrication incident termination
   - Protect rescuers and bystanders during termination operations
   - Notify party responsible (RP) for vehicle removal and communicate potential or existing hazards
   - Transfer scene control to AHJ
   - Terminate command
   - Inventory, clean, and inspect tools and equipment
   - Return equipment to operational readiness
   - Properly dispose of used medical waste and biohazards
   - Complete documentation and reports
   - Debrief incident (post incident assessment)

Discussion Questions

1. At what point can a vehicle be removed from the incident?
2. What additional requirements exist if there is a fatality?

Activities

1. To be determined by the instructor

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Time Table

Segment	Lecture Time	Activity/Skills Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	00:30		
Activity 1-1		00:00	
Unit 1 Totals	**0:30**	**0:00**	**0:30**
Unit 2: Vehicle Extrication			
Topic 2-1: Planning for and Sizing Up a Vehicle Incident			
Lecture	1:30		
Activity 2-1: Determined by instructor		00:00	
Topic 2-2: Establishing Scene Safety Zones			
Lecture	1:00		
Activity 2-2: Tabletop Simulation (required)		00:30	
Topic 2-3: Establishing Fire Protection			
Lecture	00:15		
Activity 2-3: Determined by instructor		00:00	
Topic 2-4: Stabilizing a Common Passenger Vehicle			
Lecture	1:00		
Activity 2-4: Determined by instructor		00:00	
Topic 2-5: Isolating and Managing Energy Sources			
Lecture	2:00		
Activity 2-5: Determined by instructor		00:00	
Topic 2-6: Determining Passenger Vehicle Access and Egress Points			
Lecture	00:15		
Activity 2-6: Determined by instructor		00:00	
Topic 2-7: Creating Access and Egress Openings for Rescue			
Lecture	1:00		
Activity 2-7: Determined by instructor		00:00	
Topic 2-8: Disentangling Victims			
Lecture	1:00		
Activity 2-8: Determined by instructor		00:00	

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Segment	Lecture Time	Activity/Skills Time	Total Unit Time
Topic 2-9: Removing a Packaged Victim to a Safe Area			
Lecture	0:15		
Activity 2-9: Determined by instructor		00:00	
Topic 2-10: Terminating a Vehicle Incident			
Lecture	0:15		
Activity 2-10: Determined by instructor		00:00	
Unit 2 Totals	**8:30**	**0:30**	**9:00**
Lecture, Activity, and Unit Totals:	**9:00**	**0:30**	**9:30**

Number of Students	**50**
Total Lecture Time (LT)	9:00
Total Activity Time (AT)	0:30
Total Skills Time (ST)	14:30
Total Course Time	**24:00**

Note: Skills and activity time will vary depending on the number of students in the program. It is important to remember that the suggested skill hours are for up to 50 students.

Acknowledgments

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Partners

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Vehicle Stabilization

Activity: Related to Topic 2-4: Stabilizing a Common Passenger Vehicle

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to stabilize a common passenger vehicle resting on its wheels, its side, and its roof.

Materials
- One vehicle minimum (three recommended)
    - Remove batteries before use
- Standard size cribbing and wedges
- Wheel chocks
- Step chocks
- Chain
- Ratchet straps
- Come-along
- Manufactured strut system (4 struts minimum + accessories)
- Utility rope
- Lumber
- Ladder
- Hand tools
- Appropriate PPE (including hand and eye protection)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following stabilization skills:
#
1. Stabilize a wheel-resting vehicle using:
    a. Wheel chocks
    b. Cribbing (cribbing, wedges, and step chocks)
    c. Marrying
    d. Available resources (improvise)

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2. Stabilize a side-resting vehicle using:
    a. Cribbing (cribbing, wedges, and step chocks)
    b. Single strut
    c. Two struts
    d. Three struts
    e. Four struts
    f. Available resources (improvise)

3. Stabilize a roof-resting vehicle using:
    a. Cribbing (cribbing, wedges, and step chocks)
    b. Marrying
    c. Two struts
    d. Two struts + chain sling
    e. Three struts
    f. Four struts

4. Stabilize a vehicle improvising with available resources

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Hand Tools

Activity: Related to Topics 2-5 through 2-9

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Instructor Note
Use this optional skills exercise if students lack familiarity with hand and power tools. If students already have strong tool skills, this training can be carried out during the mandatory skills exercises.

Description
This exercise measures a firefighter's ability to safely and effectively manipulate hand and power tools commonly used during vehicle extrication incidents.

Materials
- One vehicle (minimum)
    - Remove batteries before use
- High-lift jack
- Bottle jack
- Come-along
- Chains
- Ratchet strap
- Air chisel
- Reciprocating saw
- Rotary saw
- Flathead axe
- Halligan bar
- Cable cutter
- Appropriate PPE (including hand, ear, and eye protection and dust masks)
- Additional tools identified by instructor requiring additional training
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following tool manipulation skills:

1. Use hand tools commonly associated with vehicle extrication incidents

2. Use power tools commonly associated with vehicle extrication incidents

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Energy Sources

Activity: Related to Topic 2-5: Isolating and Managing Energy Sources

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to isolate and manage potentially harmful energy sources.

Materials
- One stabilized vehicle (minimum)
    - Remove batteries before use
- Hand tools
- Appropriate PPE (including hand and eye protection)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following energy isolation and management skills:

1. Simulate isolating a vehicle's 12-volt system

2. Identify airbag locations within a vehicle with a visual inspection

3. Identify energy hazards within a vehicle using the "peel and peek" method

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Access and Egress

Activity: Related to Topic 2-6: Determining Passenger Vehicle Access and Egress Points, and Topic 2-7: Creating Access and Egress Openings for Rescue

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to create access and egress openings for rescue from a common passenger vehicle.

Materials
- One stabilized four-door vehicle (minimum)
  - Remove batteries before use
- One stabilized two-door vehicle (minimum)
  - Remove batteries before use
- Cutters
- Spreaders
- Hand tools
- Power tools
- Appropriate PPE (including hand, ear, and eye protection, and dust mask)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following access and egress skills:
1. Identify existing access points with a visual inspection
2. Create access and/or egress by opening a single door
3. Create access and/or egress by removing a single door
4. Create access and/or egress by complete side removal on a four-door vehicle (B pillar/post blow out)
5. Create access and/or egress by cutting an opening behind the B pillar/post of a two-door vehicle (3rd door conversion)
6. Create access and/or egress by removing a portion of a roof (roof flap)
7. Create access and/or egress by removing the roof of a vehicle
8. Create access and/or egress by removing vehicle glass
9. Create or use existing access and/or egress through the trunk of a vehicle manually or using appropriate tools

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Disentangling Victims

Activity: Related to Topic 5-8: Disentangling Victims

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to disentangle victims from a common passenger vehicle, protecting victims and preventing further injury.

Materials
- Two stabilized vehicles (minimum)
    - Remove batteries before use
- Two rescue mannequins (minimum)
- Cutters
- Spreaders
- Ram
- Cribbing
- Come-along
- Hand tools
- Power tools
- Lifting tools
- Victim protection blanket
- Appropriate PPE (including hand, ear, and eye protection)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following victim disentanglement skills:

1. Displace vehicle dashboard by rolling the dash
2. Displace vehicle dashboard by lifting the dash
3. Displace vehicle dashboard by jacking the dash
4. Displace vehicle steering wheel
5. Displace vehicle pedals
6. Remove vehicle pedals
7. Displace vehicle seat
8. Remove vehicle seat
9. Lift a vehicle off an entrapped victim

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Victim Packaging and Removal

Activity: Related to Topic 5-9: Removing a Packaged Victim to a Safe Area

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to remove a packaged victim to a designated safe area as a member of a team, protecting victims and preventing further injury.

Materials
- One stabilized and disentangled vehicle (minimum)
    - Remove batteries before use
- One live "victim" (a student or instructor)
- Victim immobilization equipment
- Appropriate PPE (including hand and eye protection)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following victim removal and packaging skills:

1. Immobilize and remove a live "victim" from the driver or front passenger seat of a disentangled vehicle
2. Immobilize and remove a live "victim" from any non-front seat of a disentangled vehicle

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Vehicle Extrication Scenarios

Activity: A comprehensive exercise that incorporates skills from all course topics

Format: Small group (maximum 10 students)

Time Frame: Open (based on a total of 14:30 hours for skills practice and completion)

Description
This exercise measures a firefighter's ability to extricate a victim entrapped in a common passenger vehicle, stabilizing the vehicle, disentangling the victim without further injury, and managing hazards, as a member of a team.

Materials
- Multiple vehicles
    - Remove batteries before use
- Mannequins
- Planning and ICS forms
- Hand tools
- Power tools
- Fire extinguisher
- Extrication tools
- Stabilization equipment
- Victim immobilization equipment
- Lifting equipment
- Other supplies and equipment as identified by instructor
- Appropriate PPE (including hand, ear and eye protection and dust masks)
- Fire extinguisher

Instructions
Working in groups, students will demonstrate the following victim extrication skills:

1. Size up the incident
2. Establish scene safety zones
3. Establish fire protection
4. Stabilize vehicle
5. Isolate and manage energy sources
6. Create access and egress points
7. Disentangle victim(s)
8. Remove packaged victim(s) to a safe area
9. Terminate incident

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