Vehicle Firefighting
Instructor Guide

Session Reference: 1

Level of Instruction:

Time Required: 6 Hours

Materials:
- Slide or Overhead Projector and Screen
- Brady Vehicle Fire Slides or Transparencies
- Video Tape "Vehicle Fires" Media Resources
- 3-4 Automobiles
- Excelsior or Untreated Straw
- Fully Equipped Fire Engine (may need two)

References:
- Essentials of Fire Fighting, 4th Edition

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PREPARATION:

Motivation:

Objective (SPO): 1-1

The student will demonstrate a basic understanding of the techniques to gain access and control and suppress a fire involving a motor vehicle using basic fire suppression and vehicle rescue techniques.

Overview:

Vehicle Firefighting
- Vehicle Construction
- Size Up
- Apparatus Placement
- Water Supply
- Safety
- Hoseline Placement
- Exposure Protection Priorities
- Special Considerations
- Practical Exercises

Session 1 **Vehicle Firefighting**

SPO 1-1 The student will demonstrate a basic understanding of the techniques to gain access and control and suppress a fire involving a motor vehicle using basic fire suppression and vehicle rescue techniques.

1-1 Demonstrate a basic knowledge of motor vehicle construction and the inherent problems that are present when such a vehicle is involved in a fire.

1-2 Demonstrate a basic knowledge of scene size up for an incident involving a motor vehicle fire.

1-3 Demonstrate a basic knowledge of apparatus placement for a fire involving a motor vehicle.

1-4 Demonstrate a basic knowledge of the water supply requirements for a fire involving a motor vehicle.

1-5 Demonstrate a basic knowledge of the scene safety requirements and considerations at a fire involving a motor vehicle.

1-6 Demonstrate a basic knowledge of hoseline placement at a fire involving a motor vehicle.

1-7 Demonstrate a basic knowledge of exposure protection priorities for a fire involving a motor vehicle.

1-8 Demonstrate a basic knowledge of the special considerations for a fire involving a motor vehicle.

1-9 Demonstrate the proper techniques to gain access and suppress a fire involving a motor vehicle.

I. Vehicle Construction (1-1)

A. Vehicle Components

1. Body

   a. Metal - sheet metal over structural supports

   b. Fiberglass on metal frame

   c. Plastic in fenders and around bumpers

2. Frame

   a. Standard - frame rails

   b. Unibody - integrated body support

3. Means of access

   a. Doors - front, rear, and hatchback

   b. Windows - front, side, rear

   c. Hood - hinged front or rear

   d. Trunk - usually in rear

   e. Wheel wells

   f. Lights - head lights and tail lights

B. Inherent Problems

1. Toxic gases from burning components

2. Batteries - acid and pressure which could result in an explosion

3. Bumpers - shock absorbers

4. Driveshaft - hollow tubes

5. Catalytic converters - source of ignition

6. Pressurized fuel systems - spray fuel vapors under pressure

7. Tires - pressure that could be released with explosive force and fuel (rubber burns)

8. Glass - breaking characteristics(tempered vs. safety)

9. Electrical shock hazard - battery cables and various electrical components

10. High pressure systems - hydraulic and air brake lines on trucks

11. Airbags - multiple locations dependent upon vehicle

12. Cooling systems - freon under pressure (freon produces toxic vapors when heated)

C. Fire Transmission

1. Interior features

   a. Seats - upholstery and padding (fire could be deep-seated and smolder before bursting into flames)

   b. Carpeting - may melt rather than burn

   c. Dashboard - plastic with wiring concealed behind

   d. Plastic - gauges, interior molding

   e. Insulation - conceal fire

   f. Sleeping area in large trucks - additional people and combustibles

2. Potential fire locations

   a. Engine compartment

      (1) Carburetor

      (2) Wiring in ignition system

      (3) Air Cleaner

   b. Passenger compartment

   c. Trunk

   d. Brake and tire areas on large trucks

e. Truck beds - from discarded smoking materials

D. Fuels

1. Gasoline - low flash point
2. Diesel - higher flash point
3. Gasohol - may require special extinguishing agents
4. Propane/LNG - presence may not be obvious
5. Electricity - may require special extinguishing agents

E. Gaining Access

1. Doors
   a. Locked or unlocked - conventional or electric locks - check all doors
   b. Cut sheet metal to expose lock
   c. May be able to force door with conventional tools
2. Windows
   a. Front windshield - safety glass
   b. Side and rear windows - tempered glass
   c. Glass may melt or explode
3. Hood
   a. Internal latch release that melts easily
   b. External release of latch - may require being in close proximity to vehicle
   c. Forcing sheet metal on side of hood to cool down before forcing latch
   d. Secure hood from closing - springs may collapse when heated

4. Trunk

    a. Key to gain access

    b. Forcing sheet metal on side to cool down

    c. Displacing lock assembly by forcing lock and opening trunk with haligan bar point or screwdriver

5. Wheel wells

    a. Locating existing openings

    b. Making openings

    c. Will require getting low to force water into engine compartment

6. Lights

    a. Head lights - force entry tool through light so that nozzle can be inserted to cool motor

    b. Front turn signals - alternative means of accessing motor compartment

    c. Tail lights - force entry tool through light so that nozzle can be inserted to cool trunk area

II. Size Up (1-2)

A. Auto fire

1. Simple auto fire with no exposures

2. Auto fire in or near structure

3. Auto fire near other automobiles

4. Victims still in vehicle on fire

B. Auto accident

1. Auto on fire

2. Potential for auto to ignite after arrival

3. Victims still in vehicle

4. Exposures

C. Time of day

D. Weather/season

E. Staffing/equipment

1. May more than one engine for certain areas or types of vehicles

2. Should have adequate staffing to place at least one attack line in service with a preference to a secondary line to protect exposures

3. Should consider an EMS unit

F. Location

1. Limited access

2. Apparatus from both directions on duel highways

G. Additional help

H. Suspicious fire

1. Smoke color

2. Fire extent

3. Preserve evidence

4. Call investigator

a. Arson increases during poor economy

b. Motive to collect insurance

5. Interviews

III. Apparatus Placement (1-3)

A. Upgrade - should be 100 to 150 feet away from fire

B. Upwind

C. Consider traffic and safety of personnel

D. Watch for downed wires - accidents

E. Access for additional apparatus (tankers)

F. Safety - regarding traffic patterns

IV. Water Supply (1-4)

A. Booster tank - adequate on most vehicle fires but should have a minimum of 500 gallons

B. Hydrant

C. Static source - may require more than one piece of apparatus

D. Tankers/other pumpers

V. Safety (1-5)

A. Account for all personnel

B. Protective clothing

C. Breathing apparatus

D. Correct approach

1. 45 degrees of vehicle
2. Stay away from front or rear bumpers
3. Separate fire from uninvolved areas and victims
4. Sweep fuel burning underneath vehicle

E. Area security - 100 foot perimeter around vehicle

F. Vehicle security - accidents

G. Spectators/firelines/police assistance

VI. Hoseline Placement (1-6)

A. Use 1-1/2" lines or greater

B. Rescue - protect occupants first

C. Overpower fire in passenger unit

D. Maintain escape route in case of change in wind direction or fire intensity

E. Protect exposures next

1. Other autos

2. Buildings

F. Cool fuel tanks

G. Attack fire (extinguishment)

H. Have hose line available for overhaul

VII. Exposure Protection Priorities (1-7)

A. Life/rescue

B. Distance between fire and uninvolved areas

C. Value - items of higher value should be protected first when having to choose

D. Wind direction - may change direction smoke and flame travel

E. Construction - some exposures more easily ignited than others

VIII. Special Considerations (1-8)

A. Ambulances/first aid for injured (helicopters)

B. Cargo - private auto

C. Trunks

1. Spray paint and closed containers

2. Gasoline

3. Ammunition

D. Cargo - commercial carriers

E. Bills of lading

1. Manifests

2. Driver may have in possession

F. Identify contents/Chemtrec 800-434-9300 - presence of hazardous materials may affect planning of apparatus and overall strategy and tactics

G. VW engines - magnesium metals

IX. Practical Exercises (1-9)

NOTE:Instructor may want to demonstrate techniques prior to student practice.

A. Gaining access to vehicle

1. Doors

a. Locked or unlocked - conventional or electric locks

b. Cut sheet metal to expose lock

2. Windows

a. Front windshield - safety glass

b. Side and rear windows - tempered glass

c. Glass melting or exploding

3. Hood

a. Internal latch release

b. External release of latch

c. Forcing sheet metal

d. Secure hood from closing - springs may collapse when heated

4. Trunk

a. Key to gain access

b. Forcing sheet metal

c. Displacing lock assembly

5. Wheel wells

a. Locating existing openings

b. Making openings

6. Lights

a. Head lights

b. Front turn signals

c. Tail lights

B. Attacking Fires in Engine Compartment

1. Adequate water supply

2. Adequate staffing

3. Adequate attack line capability

4. Safe approach

5. Gain access to fire area

6. Proper attack techniques - stream and application

C. Attacking Fires in Passenger Compartment

1. Adequate water supply

2. Adequate staffing

3. Adequate attack line capability

4. Safe approach

5. Gain access to fire area

6. Proper attack techniques - stream and application

D. Maintaining Escape Route - Watch Hose Handling Making Attack and Backing Out

E. Overhauling

SUMMARY:

Review:

Vehicle Firefighting

- Vehicle Construction
- Size Up
- Apparatus Placement
- Water Supply
- Safety
- Hoseline Placement
- Exposure Protection Priorities
- Special Considerations
- Practical Exercises

Remotivation:

Attacking a fire involving a motor vehicle should be no different than attacking a fire in a structure.Basic hose handling and attack techniques are used.Conventional forcible entry tools can be used to gain access to the passenger compartment, trunk, and hood.

Assignment:

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EVALUATION: