

INSTRUCTOR GUIDE

TOPIC: CONDUCTING A PRE-TRIP VEHICLE INSPECTION

LEVEL OF INSTRUCTION:

TIME REQUIRED: THREE HOURS

MATERIALS: Appropriate Audio Visual Support
 Emergency Vehicle(s)

REFERENCES: Emergency Vehicle Operator Student Manual, University of
 Maryland
 Emergency Vehicle Driver In-Service Student Manual, University
 of Maryland
 Maryland Fire and Rescue Institute. (1998). Rescue Technician
 Instructor' Guide. St. Louis, MO: Author.

PREPARATION:

MOTIVATION: An emergency vehicle operator has numerous responsibilities. Paramount is his/her duty to ensure that the assigned vehicle is mechanically ready and reliable for the arduous service it will certainly be called upon to perform during the course of a shift. Failure or neglect of this critical task may lead to departmental or civilian injury or death.

OBJECTIVE (SPO): 1-1

The student will demonstrate a basic understanding of a pre-trip vehicle inspection and perform a practical exercise involving a fire department emergency vehicle.

OVERVIEW:

COMPILING AND USING A PRE-INCIDENT SURVEY

- *Laws, Regulations, Standards Governing Pre-Trip Vehicle Inspections
- *Conducting the Pre-Trip Vehicle Inspection
- *Placing an Emergency Vehicle Out of Service
- *Documentation

CONDUCTING A PRE-TRIP VEHICLE INSPECTION

SPO 1-1 The student will demonstrate a basic understanding of a pre-trip vehicle inspection and perform a practical exercise involving a fire department emergency vehicle.

EO 1-1 Identify various laws, regulations, and standards that address pre-trip vehicle inspection.

EO 1-2 Describe the steps taken to conduct a pre-trip vehicle inspection.

EO 1-3 Discuss situations which warrant placing an emergency vehicle out of service.

EO 1-4 Demonstrate the documentation of a pre-trip vehicle inspection.

I. Laws, Regulations, Standards Governing Pre-Trip Vehicle Inspections

- A. NFPA 1451
 - 1. “Standard for a Fire Service Vehicle Operations Training Program”
 - 2. Apparatus must be inspected weekly
 - 3. Apparatus removed from service for repairs must remain so until repairs are inspected
- B. DOT Commercial Vehicle regulations
- C. Departmental policies and SOP’s

II. Conducting the Pre-Trip Vehicle Inspection

- A. Practice using a systematic circle check
 - 1. Top-to-bottom, left-to-right
 - 2. May be varied according to the type of vehicle
 - 3. Allows easy memorization of necessary steps
- B. Engine compartment
 - 1. Check radiator for leaks, coolant level and proper locking cap
 - 2. Check for obvious fluid leaks
 - a) Within engine compartment
 - b) On the ground
 - 3. Check fan for bent blades or loose mounting
 - 4. Check belts for snugness (up to $\frac{3}{4}$ inch play at center of belt), cracks or frays
 - a) Power steering belt
 - b) Water pump belt
 - c) Alternator belt
 - d) Air compressor belt
 - 5. Check oil level
 - 6. Check power steering fluid level
 - 7. Check brake fluid in master cylinder (if equipped)
 - 8. Check battery for cracks or excessive corrosion
 - 9. Check air cleaner for proper attachments
 - 10. Check for obvious breaks or loose connections in electrical system, coolant hoses and vacuum hoses

11. Check steering box and linkage (may also be perform while under vehicle)

- a) Securely mounted
- b) No leaks
- c) No missing nuts, bolts or cotter keys

C. In the cab

- 1. Check operation of doors, door handles and latches
- 2. Check seat adjustment and safety belts
- 3. Check mirror adjustment
- 4. Check windshield

- a) Clean
- b) No obstructions
- c) Illegal stickers
- d) Damage to glass

- 5. Check free play of clutch pedal (if equipped)

D. With engine started

- 1. Check engine for ease of starting and smooth operation
- 2. Check for fluid leaks with engine running
- 3. Engage hi-idle for diesel engines (RPM's should always be above 1000)
- 4. Check dashboard

- a) Proper lighting
- b) Appropriate indicators are working

- (1) Left turn indicator
- (2) Right turn indicator
- (3) 4-way hazard indicator
- (4) High beam indicator

- 5. Check fuel level
- 6. Make sure oil pressure gauge is working
- 7. Check voltage gauge for proper charging
- 8. Check air pressure gauge for build-up
- 9. Check temperature gauge

- a) Should gradually climb to the normal operating range
- b) Alarm should not sound

10. Sound horn
11. Test wipers/washer
12. Test heater/defroster
13. Check steering play

- a) Non-power steering: check for excessive play by turning steering wheel back and forth. Should not exceed 10 degrees (about 2 inches on a 20 inch wheel)
- b) Power steering: with engine running, check for excessive play by turning steering wheel back and forth. Play should not exceed 10 degrees (about 2 inches on a 20 inch wheel) before front left wheel barely moves

14. Test parking brake

- a) Ensure brake is engaged
- b) Place transmission in a low gear

E. Hydraulic brakes

1. Pump brake pedal several times then hold down for 5 seconds
2. Pedal should not move (depress) during the 5 seconds

F. Air brakes

1. Realize that safety devices vary
2. Place wheel chocks
3. Ensure air pressure is built up
4. Shut off engine
5. Fully apply brake pedal and hold for 1 minute
6. Air pressure should not drop more than a few pounds in 1 minute
7. Fan off air pressure by rapidly applying and releasing the brake pedal
8. Low air warning should activate before air pressure drops below 60 psi
9. Near 40 psi the parking brake valve should close (pop out)

G. Exterior check

1. Remember top-to bottom and left-to-right
2. Check for vehicle damage
3. Verify license plate is present
4. Check all tires for proper inflation and lug nuts
5. Check tire tread depth
 - a) $\frac{4}{32}$ inch on steering axle
 - b) $\frac{2}{32}$ inch all others

6. See that the hub/oil seals and axle seals are not leaking, and, if wheel has a sight glass, oil level is adequate
7. Check springs and u-bolts
8. Check all clearance lights and reflectors
9. Check headlights (high and low beams)
10. Check taillights
11. Check turn signals
12. Check four-way flashers
13. Check brake lights

H. Equipment

III. Placing an Emergency Vehicle Out of Service

A. Braking System

1. Audible or visual air leak
2. Air line with leak or bulge
3. Loose compressor mounting bolts
4. Evidence of oil seepage
5. Cracked brake drums
6. Inoperative low air warning device
7. Master cylinder less than $\frac{1}{2}$ full (if equipped)

B. Steering System

1. Excessive free play (30 degrees before steering axle tire moves)
2. Worn or faulty universal joints
3. Steering wheel not properly secured
4. Loose tire rod ends
5. Any condition that interferes with free movement

C. Exhaust System

1. Exhaust leak forward or below the cab

D. Frame

1. Cracked, loose or broken frame member

E. Fuel System

1. Visible fuel leak
2. Fuel tank not securely attached

F. Springs/Suspension

1. Cracked, loose or missing U-bolt or other spring to axle clamp
2. Missing leaf or portion of leaf spring
3. Any broken main leaf in the leaf spring (main leafs extends at both ends)
4. Any displaced leafs that could result in contact with a tire, rim, brake drum
5. Broken or missing shocks
6. Missing or broken axle bolts

G. Tires/Wheels

1. Tread depth of 4/32" or less on a steering axle tire at any two adjacent major tread grooves
2. Tread depth of 2/32" or less on a non-steering axle tire at any two adjacent major tread grooves
3. Cut sidewall where the cord is exposed
4. Flat tires
5. Missing or broken lug nuts or studs

H. Windshield/Wipers

1. Visual cracks or distortions that impair the driver's vision
2. Inoperable wiper or damage that makes the driver's wiper inoperable

I. Lighting Devices/Warning Lights

1. Any low beam head lamp missing or inoperative
2. Both brake lights missing or inoperative
3. Both tail lights missing or inoperative
4. Any turn signal missing or inoperative
5. Inoperative siren
6. Emergency lighting not visible from all sides

J. Drive Train

1. Engine overheating
2. Motor oil in engine (radiator) coolant
3. Engine coolant in motor oil
4. Broken or missing fan belts
5. Coolant leak at water pump
6. Any major coolant leak
7. Automatic transmission overheating
8. Transmission "Do Not Shift" indicator on
9. Defective clutch components

10. Defective foot throttle
11. Defective charging system

K. Pump/Aerial Components

1. Pump will not engage
2. Pump panel throttle defective
3. Leak in water tank
4. Contaminated pump transfer case lubricant
5. PTO will not engage
6. Defective stabilizer system
7. Cable sheaves worn excessively or defective
8. Missing or damages rungs
9. Major hydraulic system fluid leak

L. Cab/Body Components

1. Missing or broken mirrors that obstruct or limit the driver's view
2. Defective door latches
3. Defective defrosters

IV. Documentation

A. All findings must be documented on the AHJ's vehicle preventive maintenance record form

1. Discrepancies needing repair
2. Discrepancies found and repaired by inspector
3. Findings from annual DOT inspections, ladder testing, etc.
4. Complete and file for permanent record

REVIEW:

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REMOTIVATION:

ASSIGNMENT:

EVALUATION: