



EMERGENCY VEHICLE TECHNICIAN I

CERTIFICATION TRAINING STANDARDS

Draft 2011

Version: 2.15.11 – Presentation Draft



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EMERGENCY VEHICLE TECHNICIAN I

#1: THE ROLE OF THE EMERGENCY VEHICLE TECHNICIAN I

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.1.1 AND <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. *A summary of the mission of the fire service*
2. *Fire department and maintenance facility organizational charts*
3. *Federal Motor Carrier Safety Regulations*
4. *A sample Hazardous Materials Communication Plan*
5. *Applicable federal, state, and local regulations*

REQUISITE KNOWLEDGE:

1. Describe the mission of the fire service (4.1.1)
2. Describe the organization of the fire department and maintenance facility (4.1.1)
3. Describe the role of the EVT I within the organization (4.1.1)
4. Identify AHJ standard operating procedures, rules, and regulations as they apply to the EVT I (4.1.1)
5. Describe the critical aspects of NFPA standards as they apply to the EVT I, which at a minimum **shall** include:
 - NFPA 1500, Standard on Fire Department Occupational Safety and Health Program
 - NFPA 1901, Standard for Automotive Fire Apparatus
 - NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus (4.1.1)
6. Describe the critical aspects of the Federal Motor Carrier Safety Regulations (4.1.1)
7. Describe applicable federal, state, and local regulations as they apply to the EVT (4.1.1)
8. Apply and use manufacturer specifications, inspection checklists, maintenance schedules, maintenance checklists, and AHJ standard operating procedures (4.1.1)
9. *Identify recordkeeping requirements*
10. Describe how to select and use tools (4.1.1)
11. Describe fastener types and their usage (4.1.1)
12. Identify maintenance equipment and describe its usage (4.1.1)
13. Describe workplace safety practices (4.1.1)

14. Describe how to select and use cleaning products (4.1.1)
15. Describe EVT housekeeping responsibilities (4.1.1)
16. Identify the components of a Hazardous Materials Management Plan, which at a minimum shall include:
 - A Hazardous Materials Identification System
 - MSDS (Material Safety Data Sheets)
 - Storage
 - Handling
 - Dispensation
 - Use
 - Disposal (4.1.1)

JOB PERFORMANCE REQUIREMENT:

1. *Inspect and verify the operation and condition of emergency response vehicles*
2. *Maintain or repair emergency response vehicle operational condition in accordance with manufacturer specifications*
3. *Conduct performance testing for emergency response vehicle systems and components*
4. *Operate emergency response vehicles in compliance with regulations*
5. *Locate, interpret, and use manufacturer specifications, inspection checklists, maintenance schedules, maintenance checklists, and AHJ standard operating procedures, documents, and standards*
6. *Handle hazardous materials*

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

#2: INSPECTING THE LOW VOLTAGE SYSTEMS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.4.1, 5.4.1, 5.4.3, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle (4.4.1) (5.4.1) (5.4.3)
2. Standard operating procedures (4.4.1) (5.4.1) (5.4.3)
3. Manufacturer specifications (4.4.1) (5.4.1) (5.4.3)
4. Tools (4.4.1) (5.4.1) (5.4.3)
5. Test and calibration equipment, including a belt tension gauge and a multimeter (4.4.1) (5.4.1) (5.4.3)
6. An inspection checklist (4.4.1)

REQUISITE KNOWLEDGE:

1. Describe the principles of electricity and electronics:
 - Ohm's law
 - *Kirchoff's laws*
 - Magnetism
 - Voltage drop (4.4.1)
2. *Describe electrical schematic usage*
3. Select *tools* and test, diagnostic, and calibration equipment (4.4.1)
4. Describe types of defects, deficiencies, and potential problems associated with low-voltage electrical systems (4.4.1)
5. Describe the function, construction, operation, and requirements of starting and charging systems, chassis lighting and electrical components, emergency lighting, and accessory lighting (4.4.1)
6. Describe the function, construction, and operation of *batteries*, starting motors, alternators, and accessory electric motors, relays, solenoids, and regulators (5.4.1) (5.4.3)
7. Describe mounting and adjustment requirements (4.4.1)
8. Describe manufacturer and AHJ inspection procedures and documentation (4.4.1)

JOB PERFORMANCE REQUIREMENT:

1. *Utilize appropriate procedures to avoid hazards*

2. Verify operation, condition, and mounting of low voltage systems utilizing manufacturer specifications and appropriate checklists:
 - *Battery system*
 - Starting system
 - Charging system
 - Lighting systems
 - Other low voltage electronic and electrical systems and devices (4.4.1)
3. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ (4.4.1)
4. Document inspection and tests (4.4.1)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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#3: MAINTAINING AND REPAIRING THE LOW VOLTAGE SYSTEMS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.3.4, 4.4.2, 5.4.1, 5.4.3, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle (4.3.4) (4.4.2) (5.4.1) (5.4.3)
2. Manufacturer specifications (4.3.4) (4.4.2) (5.4.1) (5.4.3)
3. An inspection report detailing a deficiency or deformation (5.4.1)
4. A maintenance schedule (4.3.4) (4.4.2)
5. A maintenance checklist (4.3.4) (4.4.2)
6. Standard operating procedures (4.3.4) (4.4.2) (5.4.1) (5.4.3)
7. Tools (4.3.4) (4.4.2) (5.4.1) (5.4.3)
8. Test and calibration equipment (4.3.4) (4.4.2) (5.4.1) (5.4.3)
9. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus (5.4.3)

REQUISITE KNOWLEDGE:

1. Describe electrical troubleshooting procedures (4.4.2) (5.4.1) (5.4.3)
2. Describe manufacturer and AHJ inspection and maintenance procedures (4.4.2)
3. *Describe common maintenance requirements*
4. Describe adjustment and calibration methods and procedures (4.4.2) (5.4.1) (5.4.3)
5. Describe operational, diagnostic, and performance and verification tests (5.4.1) (5.4.3)
6. Describe manufacturer and AHJ diagnostic, repair, and overhaul procedures (5.4.1) (5.4.3)

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the low voltage systems in accordance with manufacturer specifications, which at a minimum **shall** include:
 - *Battery system*
 - Starting system
 - Charging system
 - Lighting systems
 - Other low voltage electronic and electrical systems and devices (4.4.2) (5.4.1)
2. Perform calibrations, adjustments, and performance tests (4.4.2) (5.4.3)



3. *Diagnose defective components*
4. Repair, rebuild, or replace *defective*, broken, loose, worn, or missing components (4.4.2) (5.4.1)
5. Document maintenance and repair activities and report additional required repairs to the AHJ (4.4.2) (5.4.1) (5.4.3)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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#4: INSPECTING AN EMERGENCY RESPONSE VEHICLE CHASSIS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.2.1, 4.2.3, 5.2.1, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle (4.2.1) (4.2.3) (5.2.1)
2. Standard operating procedures *or guidelines* (4.2.1) (4.2.3) (5.2.1)
3. Manufacturer specifications (4.2.1) (4.2.3) (5.2.1)
4. Tools (4.2.1) (4.2.3) (5.2.1)
5. Test and calibration equipment (4.2.1) (4.2.3) (5.2.1)
6. An inspection checklist (4.2.1) (4.2.3)

REQUISITE KNOWLEDGE:

1. Describe the function, operation, and construction of chassis and vehicle systems (4.2.1)
2. Describe the function, operation, construction, and interface of frames, independent suspension systems, all-wheel steering systems, secondary braking systems, and auxiliary cooling systems (4.2.3)
3. Describe types of suspension and steering systems (5.2.1)
4. Describe basic principles of suspension and steering geometry (5.2.1)
5. Describe types of defects, deficiencies, and potential problems associated with chassis systems and components unique to emergency response vehicles (4.2.1) (4.2.3)
6. Describe principles of hydraulics (5.2.1)
7. Describe types of brake systems, including secondary braking systems (5.2.1)
8. Describe types of cooling systems (5.2.1)
9. Select test, diagnostic, and calibration equipment (4.2.3)
10. Describe manufacturer and AHJ inspection procedures and documentation (4.2.1) (4.2.3)

JOB PERFORMANCE REQUIREMENT:

1. Inspect chassis systems and components:
 - Auxiliary drive systems
 - Axles
 - Driveline
 - Steering and suspension systems

- Independent suspension systems
 - All-wheel steering systems
 - Wheels
 - Tires
 - Electrical components:
 - Multiplexing
 - Interface electronics
 - Load management system (4.2.1) (4.2.3)
2. Verify that structural integrity, operation, and condition are within manufacturer specifications (4.2.1) (4.2.3)
 3. Utilize an inspection checklist (4.2.1) (4.2.3)
 4. Identify, document, and report defects, deficiencies, and potential problems to the AHJ (4.2.1) (4.2.3)
 5. Document inspection activities (4.2.1) (4.2.3)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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#5: MAINTAINING AND REPAIRING EMERGENCY VEHICLE CHASSIS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.2.2, 4.2.4, 5.2.1, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with identified defective components (4.2.2) (4.2.4) (5.2.1)
2. An inspection report detailing a deficiency or deformation (5.2.1)
3. Manufacturer specifications (4.2.2) (4.2.4) (5.2.1)
4. A maintenance schedule (4.2.2) (4.2.4)
5. A maintenance checklist (4.2.2) (4.2.4)
6. Standard operating procedures (4.2.2) (4.2.4) (5.2.1)
7. Test, calibration, and diagnostic equipment (4.2.2) (4.2.4) (5.2.1)
8. Tools (4.2.2) (4.2.4) (5.2.1)

REQUISITE KNOWLEDGE:

1. Describe types of defect, deficiencies, and potential problems associated with chassis and vehicle systems (4.2.2) (4.2.4) (5.2.1)
2. Select *tools* and test, diagnostic, and calibration equipment (4.2.2) (4.2.4) (5.2.1)
3. Describe troubleshooting procedures (4.2.2) (4.2.4) (5.2.1)
4. Describe adjustment and calibration methods and procedures (4.2.2) (5.2.1)
5. Describe operational, diagnostic, performance, and verification tests (5.2.1)
6. *Describe common maintenance requirements*
7. Describe repair and overhaul procedures (5.2.1)
8. Describe manufacturer and AHJ inspection, maintenance, and documentation procedures (4.2.2) (4.2.4)
9. Describe manufacturer and AHJ diagnostic, repair, and documentation procedures (5.2.1)

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the system's operational condition in accordance with manufacturer specifications:
 - Auxiliary drive systems
 - Axles
 - Driveline

- Steering and suspension system
 - Independent suspension systems
 - All-wheel steering systems
 - Wheels
 - Tires
 - Electrical components:
 - Multiplexing
 - Interface electronics
 - Load management system (4.2.2) (4.2.4) (5.2.1)
2. Conduct applicable tests to verify performance and diagnose *defective* components (4.2.2) (5.2.1)
 3. Lubricate chassis components and maintain fluid levels (4.2.2) (4.2.4) (5.2.1)
 4. Calibrate and adjust chassis components (4.2.2) (4.2.4)
 5. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components (4.2.2) (4.2.4) (5.2.1)
 6. Document maintenance and repair activities and report additional required repairs to the AHJ (4.2.2) (4.2.4) (5.2.1)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy



#6: INSPECTING EMERGENCY RESPONSE VEHICLE ENGINES AND TRANSMISSIONS

AUTHORITY:	STATE FIRE MARSHAL
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle
2. Standard operating procedures or guidelines
3. Manufacturer specifications
4. Tools and test and calibration equipment
5. An inspection checklist

REQUISITE KNOWLEDGE:

1. Select tools, test, diagnostic, and calibration equipment
2. Describe the function, construction, operation, and requirements of the engine(s) and related components
3. Describe the function, construction, operation, and requirements of the transmission(s) and related components.
4. Describe types of defects, deficiencies, and potential problems associated with the engine(s) and related components
5. Describe types of defects, deficiencies, and potential problems associated with the transmission(s) and related components
6. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENT:

1. Inspect engine(s) and related components:
 - Control/Management systems
 - Emissions
 - Cooling systems
 - Fuel systems
 - Intake systems
 - Exhaust systems
 - Lubrication systems
2. Inspect transmission(s) and related components:
 - Control/Management systems

- *Drive components*
 - *Cooling systems*
 - *Lubrication systems*
3. *Verify that structural integrity, operation, and condition are within manufacturer specifications*
 4. *Utilize an inspection checklist*
 5. *Identify, document, and report defects, deficiencies, and potential problems to the AHJ*
 6. *Document inspection activities*

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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#7: MAINTAINING AND REPAIRING EMERGENCY VEHICLE ENGINES AND TRANSMISSIONS

AUTHORITY:	STATE FIRE MARSHAL
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with identified defective components
2. An inspection report detailing a deficiency or deformation
3. Manufacturer specifications
4. A maintenance schedule
5. A maintenance checklist
6. Standard operating procedures
7. Test and calibration equipment
8. Tools and diagnostic equipment

REQUISITE KNOWLEDGE:

1. Describe common maintenance requirements
2. Describe types of defect, deficiencies, and potential problems associated with engines and related components
3. Describe types of defect, deficiencies, and potential problems associated with transmissions and related components
4. Describe troubleshooting procedures
5. Describe adjustment and calibration methods and procedures
6. Describe operational, diagnostic, performance, and verification tests
7. Describe selecting test, diagnostic, and calibration equipment
8. Describe manufacturer and AHJ inspection, maintenance, and documentation procedures
9. Describe manufacturer and AHJ diagnostic, repair, and documentation procedures

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the operational condition of the engine and related components in accordance with manufacturer specifications:
 - Control/Management systems
 - Emissions
 - Cooling systems

- *Fuel systems*
 - *Intake systems*
 - *Exhaust systems*
 - *Lubrication systems*
2. *Maintain or repair the operational condition of the transmission and related components in accordance with manufacturer specifications:*
 - *Control/Management systems*
 - *Drive components*
 - *Cooling systems*
 - *Lubrication systems*
 3. *Conduct applicable tests to verify performance and diagnose defective components*
 4. *Lubricate engine and transmission components and maintain fluid levels*
 5. *Calibrate and adjust engine and transmission components*
 6. *Repair, rebuild, or replace defective, broken, loose, worn, or missing components*
 7. *Document maintenance and repair activities and report additional required repairs to the AHJ*

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

#8: INSPECTING THE CAB AND BODY

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.7, 5.3.1, 5.3.2, 5.3.3, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a cab tilt system and its assigned equipment (4.3.1) (4.3.2) (4.3.3) (4.3.4) (4.3.5) (4.3.6) (4.3.7) (5.3.1) (5.3.2) (5.3.3)
2. Standard operating procedures (4.3.1) (4.3.2) (4.3.3) (4.3.4) (4.3.5) (4.3.6) (4.3.7) (5.3.1) (5.3.2) (5.3.3)
3. Manufacturer specifications (4.3.1) (4.3.2) (4.3.3) (4.3.4) (4.3.5) (4.3.6) (4.3.7) (5.3.1) (5.3.2) (5.3.3)
4. Maintenance schedule (4.3.2) (4.3.4) (4.3.7)
5. Maintenance checklist (4.3.2) (4.3.4) (4.3.7)
6. Tools (4.3.1) (4.3.2) (4.3.3) (4.3.4) (4.3.5) (4.3.6) (4.3.7) (5.3.1) (5.3.2) (5.3.3)
7. Test and calibration equipment (4.3.1) (4.3.2) (4.3.3) (4.3.4) (4.3.5) (4.3.6) (4.3.7) (5.3.1) (5.3.2) (5.3.3)
8. An inspection checklist (4.3.1) (4.3.3) (4.3.5) (4.3.6)
9. Inspection report detailing a deficiency or deformation (5.3.1) (5.3.2) (5.3.3)

REQUISITE KNOWLEDGE:

1. Describe the function, construction, and operation of doors, locks, latches, seats, safety restraints, instrumentation, window glass and mirrors, steps, handrails, trays, and skid-resistant walking surfaces (4.3.1) (4.3.6) (5.3.1)
2. Describe the function, construction, and operation of body, compartments, shelves and dividers, steps, ladders, platforms, handrails, and skid-resistant walking surfaces (4.3.6) (5.3.3)
3. Describe types of defects, deficiencies, and potential problems associated with the body, compartments, shelves and dividers, storage areas, steps, ladders, platforms, handrails, trays, and skid-resistant walking surfaces (4.3.6) (4.3.7) (5.3.3)
4. *Describe the function, construction and operation of climate control systems*
5. *Describe types of defects, deficiencies, and potential problems associated with climate control systems*

6. Describe the function, construction, and operation of assigned equipment mounting systems, self-contained breathing apparatus (SCBA) mounting, warning systems, and mounting racks, brackets, and latches (4.3.1) (4.3.3) (5.3.1) (5.3.4)
7. Describe types of defects, deficiencies, and potential problems associated with equipment mounting systems, warning systems, and mounting racks, brackets, and latches (4.3.3) (4.3.4)
8. Describe the function, construction, and operation of the cab tilt system, safety and latch systems, *interlock systems*, and warning systems (4.3.5) (5.3.2)
9. Describe types of defects, deficiencies, and potential problems associated with cabs and cab tilt systems (4.3.1) (4.3.5)
10. Describe principles of pneumatic, hydraulic, and electric operation (4.3.4) (5.3.1)
11. Describe types of fluids and lubricants (4.3.1) (4.3.2) (4.3.4) (4.3.7) (5.3.1)
12. Describe common problems and failures of finishes, paint, signs, and labels (4.3.1) (4.3.6)
13. Describe selecting test, diagnostic, and calibration equipment (4.3.3)
14. Describe manufacturer and AHJ inspection procedures and documentation (4.3.1) (4.3.3) (4.3.5) (4.3.6)

JOB PERFORMANCE REQUIREMENT:

1. Verify operation and condition of cab, body, components, and associated hardware utilizing manufacturer specifications and appropriate checklists:
 - Doors
 - Latches
 - Trays
 - Glass
 - Mounting systems
 - Warning systems
 - *Interlock systems* (4.3.1) (4.3.3) (4.3.5) (4.3.6)
2. Verify operation and condition of cab tilt components and warning systems utilizing manufacturer specifications:
 - Ready safe the tilt mechanism
 - Visually assess structural integrity (4.3.1) (4.3.6)
3. Verify operation and condition of climate control systems utilizing manufacturer specifications (4.3.1)
4. Determine condition of finishes, signs, labels, and paint (4.3.1) (4.3.6)
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ (4.3.1) (4.3.3) (4.3.5) (4.3.6)
6. Document inspection and tests (4.3.1) (4.3.3) (4.3.5) (4.3.6)

STANDARD:



EMERGENCY VEHICLE TECHNICIAN CERTIFICATION TRAINING STANDARDS

EMERGENCY VEHICLE TECHNICIAN I

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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#9: MAINTAINING AND REPAIRING THE CAB AND BODY

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.3.2, 4.3.4, 4.3.7, 5.3.1, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle (4.3.2) (4.3.4) (4.3.7) (5.3.1)
2. An inspection report detailing a deficiency or deformation (5.3.1)
3. Manufacturer specifications (4.3.2) (4.3.4) (4.3.7) (5.3.1)
4. A maintenance schedule (4.3.2) (4.3.4) (4.3.7)
5. A maintenance checklist (4.3.2) (4.3.4) (4.3.7)
6. Standard operating procedures (4.3.2) (4.3.4) (4.3.7) (5.3.1)
7. Test and calibration equipment (4.3.2) (4.3.4) (4.3.7) (5.3.1)
8. Tools (4.3.2) (4.3.4) (4.3.7) (5.3.1)

REQUISITE KNOWLEDGE:

1. Select *tools*, test, diagnostic, and calibration equipment (5.3.1)
2. Describe common maintenance requirements (4.3.4)
3. Describe troubleshooting procedures (4.3.2) (4.3.4) (4.3.7) (5.3.1)
4. Describe adjustment and calibration methods and procedures (4.3.2) (4.3.4) (4.3.7)
5. Describe methods to stop leaks (4.3.4)
6. Describe repair, rebuilding, overhaul and replacement procedures (5.3.1)
7. Describe operational, diagnostic, performance, and verification tests (5.3.1)
8. Describe manufacturer and AHJ and inspection, maintenance, and documentation procedures (4.3.2) (4.3.4) (4.3.7)
9. Describe manufacturer and AHJ repair, diagnostic, and documentation procedures (5.3.1)

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the cab, body, components, and associated hardware's operational condition in accordance with manufacturer specifications:
 - Doors
 - Latches
 - Trays
 - Glass

- Mounting systems
 - Warning systems
 - *Interlock systems* (4.3.2) (4.3.4) (4.3.7) (4.3.4)
2. *Diagnose defective components*
 3. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components (4.3.2) (4.3.4) (4.3.7) (5.3.1)
 4. Lubricate components (4.3.2) (4.3.4) (4.3.7)
 5. Verify skid-resistant walking surfaces are intact (4.3.2) (4.3.7)
 6. Clean and preserve finishes and surfaces (4.3.2) (4.3.7)
 7. Conduct performance tests (4.3.7) (5.3.1)
 8. Document maintenance and repair activities and report additional required repairs to the AHJ (4.3.2) (4.3.4) (4.3.7) (5.3.1)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

DRAFT

#10: INSPECTING FIRE PUMPS AND WATER TANKS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.5.1, 4.5.2, 4.5.3, 4.7.1, 5.5.1, 5.5.3, AND THE STATE FIRE MARSHAL
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a fire pump or an auxiliary pump (4.5.1) (4.5.3) (4.7.1) (5.5.1) (5.5.3)
2. An emergency response vehicle with a water tank (4.5.2)
3. Standard operating procedures (4.5.1) (4.5.2) (4.5.3) (4.7.1) (5.5.1) (5.5.3)
4. Manufacturer specifications (4.5.1) (4.5.2) (4.5.3) (4.7.1) (5.5.1) (5.5.3)
5. Inspection report detailing a deficiency or deformation (5.5.1)
6. Maintenance schedule (4.5.3)
7. Tools (4.5.1) (4.5.2) (4.5.3) (4.7.1) (5.5.1) (5.5.3)
8. Facilities (5.5.3)
9. Test and calibration equipment (4.5.1) (4.5.2) (4.5.3) (4.7.1) (5.5.1) (5.5.3)
10. An inspection checklist (4.5.1) (4.5.2) (4.7.1)

REQUISITE KNOWLEDGE:

1. Describe the function, construction, and operation of fire pumps, auxiliary pumps, primer pumps, and related components; plumbing and valves; pressure control devices (4.5.1) (5.5.1) (5.5.3)
2. Describe the function, operation, and construction of water tanks and related components (4.5.2)
3. Evaluate sacrificial anodes (4.5.2)
4. Describe types, grades, and viscosity of lubricating oils (4.5.1)
5. Describe instrumentation and controls (4.5.3)
6. Describe operational and service testing procedures and requirements (5.5.1) (5.5.3)
7. Describe safety procedures (5.5.1) (5.5.3)
8. Describe fire flow hydraulic calculations (5.5.3) (4.7.1)
9. Describe characteristics of water flow and pressure (4.7.1)
10. Describe types of defects, deficiencies, and potential problems associated with fire pumps, auxiliary pumps, primer pumps, water tanks, and related components (4.5.1) (4.5.2)

11. Describe manufacturer and AHJ inspection procedures and documentation (4.5.1) (4.5.2)

JOB PERFORMANCE REQUIREMENT:

1. Verify operation, condition, and mounting of fire pumps utilizing manufacturer specifications and appropriate checklists:
 - Primer pumps
 - Plumbing and valves
 - Pressure control systems
 - Gauges
 - *Pump drive systems*
 - Warning systems
 - Interlocks (4.5.1)
2. Verify operation, condition, and mounting of water tanks utilizing manufacturer specifications and appropriate checklists:
 - *Tank types*
 - *Tank accessories* (4.5.2)
3. Verify recommended fluid *types* and levels utilizing manufacturer specifications (4.5.1)
4. Identify and report leaks and fluid contamination (4.5.1)
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ (4.5.1) (4.5.2)
6. Document inspection and tests (4.5.1) (4.5.2)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy



#11: MAINTAINING AND REPAIRING FIRE PUMPS AND WATER TANKS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.5.2, 4.5.3, 5.5.1, 5.5.3, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a fire pump or an auxiliary pump (4.5.3) (5.5.1) (5.5.3)
2. An emergency response vehicle with a water tank (4.5.2)
3. Standard operating procedures (4.5.2) (4.5.3) (5.5.1) (5.5.3)
4. Manufacturer specifications (4.5.2) (4.5.3) (5.5.1) (5.5.3)
5. Tools (4.5.2) (4.5.3) (5.5.1) (5.5.3)
6. Facilities (5.5.3)
7. Test and calibration equipment (4.5.2) (4.5.3) (5.5.1) (5.5.3)
8. An inspection checklist (4.5.2)
9. A maintenance schedule (4.5.3)
10. A maintenance checklist (4.5.3)
11. An inspection report detailing a deficiency or deformation (5.5.1)
12. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus (5.5.3)

REQUISITE KNOWLEDGE:

1. *Describe common maintenance requirements*
2. Describe sacrificial anode replacement procedures and schedules (4.5.3)
3. Describe flushing procedures (4.5.2)
4. Describe pump seals/packing adjustment or replacement methods and procedures (4.5.3)
5. *Describe adjustment and calibration methods and procedures*
6. Select *tools* and test, diagnostic, and calibration equipment (5.5.1) (5.5.3)
7. Describe troubleshooting procedures (4.5.3) (5.5.1)
8. Describe repair and overhaul procedures (5.5.1)
9. *Describe operational, diagnostic, performance, and verification tests*
10. Describe manufacturer and AHJ inspection procedures and documentation (4.5.3)
11. Describe manufacturer and AHJ diagnostic and repair procedures and documentation (5.5.1) (5.5.3)

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the fire pumps in accordance with manufacturer specifications:
 - Adjust packing and seals
 - Ensure valves, fittings, and hoses are leak-free and in good condition
 - Apply recommended lubricants and fluids
 - Operate, adjust, and lubricate controls
 - Adjust fluid levels
 - Ensure performance of indicator lights, instrumentation, and controls
 - Ensure electrical connections are clean and tight (4.5.3)
2. *Maintain the water tank in accordance with manufacturer specifications*
3. Diagnose defective components (4.5.3)
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components (4.5.3) (5.5.1)
5. Conduct performance tests
 - Verify pump/engine combination meets performance requirements of original certification test
 - Document testing in accordance with NFPA standards and the AHJ (5.5.3)
6. Document maintenance and repair activities and report additional required repairs to the AHJ (4.5.3) (5.5.1) (5.5.3)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

#12: INSPECTING FOAM PROPORTIONING SYSTEMS AND COMPRESSED AIR FOAM SYSTEMS (CAFS)

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.5.2, 4.7.1, 4.7.3, 4.7.4, 5.7.3, 5.7.4, AND THE STATE FIRE MARSHAL
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a foam proportioning system (4.7.1)
2. An emergency response vehicle with a foam tank (4.5.2)
3. An emergency response vehicle with a CAFS (4.7.3) (4.7.4) (5.7.3) (5.7.4)
4. Standard operating procedures (4.5.2) (4.7.1) (4.7.3) (4.7.4) (5.7.3) (5.7.4)
5. Manufacturer specifications (4.5.2) (4.7.1) (4.7.3) (4.7.4) (5.7.3) (5.7.4)
6. Maintenance schedule (4.7.4)
7. Maintenance checklist (4.7.4)
8. Tools (4.5.2) (4.7.1) (4.7.3) (4.7.4) (5.7.3) (5.7.4)
9. Test and calibration equipment (4.5.2) (4.7.1) (4.7.3) (4.7.4) (5.7.3) (5.7.4)
10. Facilities (5.7.4)
11. An inspection checklist (4.5.2) (4.7.1) (4.7.3)

REQUISITE KNOWLEDGE:

1. Describe the system design, function, construction, and operation of foam proportioning systems, including foam types and construction and operation of eduction, injection, and venturi proportioning systems and related components (4.7.1) (4.7.2) (5.7.1)
2. Describe the *system design*, function, construction, and operation of the CAFS, including foam types, drive systems, flowmeters, proportioners, valves, eductors, nozzles, and related components (4.7.3) (4.7.4) (5.7.3) (5.7.4)
3. Describe common failure symptoms associated with component interfaces of related equipment (4.7.3)
4. Describe instrumentation, controls, warning and interlock systems, and pressure control devices (4.7.3)
5. Describe manufacturer and AHJ inspection procedures (4.7.1) (4.5.2) (4.7.3)
6. Describe operational and service testing procedure and requirements (4.7.3)
7. *Describe safety procedures*

8. Select *tools* and test, diagnostic, and calibration equipment (4.7.1)
9. Describe types and functions of *foam* pump packing and seals (4.7.3)
10. Describe types, grades, and viscosity of lubricants (4.7.3)
11. Describe types of defects, deficiencies, and potential problems associated with foam proportioning systems (4.7.1)
12. Describe types of defects, deficiencies, and potential problems associated with foam agent tanks (4.5.2)
13. Describe types of defects, deficiencies, and potential problems associated with CAFS (4.7.3) (4.7.4)
14. *Describe manufacturer and AHJ inspection procedures and documentation*

JOB PERFORMANCE REQUIREMENT

1. Verify operation, condition, mounting, and structural integrity of the foam proportioning system utilizing manufacturer specifications and appropriate checklists (4.5.2) (4.7.1) (4.7.3)
2. Verify recommended fluid *types* and levels of the foam proportioning system (4.5.2) (4.7.1) (4.7.3)
3. Verify operation, condition, mounting, and structural integrity of foam agent tanks utilizing manufacturer specifications and appropriate checklists:
 - *Tank types*
 - *Tank accessories* (4.5.2)
4. Verify operation, condition, mounting, and structural integrity of the compressed air foam system (CAFS) and associated components utilizing manufacturer specifications and appropriate checklists:
 - Air tank
 - Hoses
 - Valves and fittings
 - Warning system
 - Interlock system
 - Linkage
 - *Drive systems*
 - *Cooling systems*
 - *Strainers*
 - Fluid levels (4.7.3)
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ (4.5.2) (4.7.1) (4.7.3)
6. Document inspection and tests (4.5.2) (4.7.1) (4.7.3)

STANDARD:



EMERGENCY VEHICLE TECHNICIAN CERTIFICATION TRAINING STANDARDS

EMERGENCY VEHICLE TECHNICIAN I

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

DRAFT

#13: MAINTAINING AND REPAIRING FOAM PROPORTIONING SYSTEMS

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.5.2, 4.7.1, 4.7.2, 5.7.1, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a foam proportioning system (4.7.1) (4.7.2) (5.7.1)
2. An emergency response vehicle with a foam tank (4.5.2)
3. A maintenance schedule (4.7.2)
4. A maintenance checklist (4.7.2)
5. Manufacturer specifications (4.5.2) (4.7.1) (4.7.2) (5.7.1)
6. Standard operating procedures (4.5.2) (4.7.1) (4.7.2) (5.7.1)
7. Test and calibration equipment (4.5.2) (4.7.1) (4.7.2) (5.7.1)
8. Tools (4.5.2) (4.7.1) (4.7.2) (5.7.1)
9. An inspection checklist (4.5.2) (4.7.1)

REQUISITE KNOWLEDGE:

1. Describe flushing procedures (4.7.1) (4.5.2)
2. Describe troubleshooting procedures (4.7.2)
3. Describe adjustment and calibration methods and procedures (4.7.2)
4. Select *tools* and test, diagnostic, and calibration equipment (5.7.1)
5. *Describe common maintenance requirements*
6. *Describe repair and overhaul procedures*
7. *Describe operational, diagnostic, performance, and verification tests*
8. Describe manufacturer and AHJ inspection, maintenance, and documentation procedures (4.7.2)
9. Describe manufacturer and AHJ repair, diagnostic, and documentation procedures (5.7.1)

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the foam proportioning system components in accordance with manufacturer specifications:
 - Component mounts
 - Drive systems

- Pumps
 - Plumbing
 - Valves
 - Tanks (4.7.2) (5.7.1)
2. Maintain foam proportioning system fluid levels (4.7.2)
 3. Diagnose defective components (5.7.1)
 4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components (4.7.2) (5.7.1)
 5. Conduct performance tests (5.7.1)
 6. Document maintenance and repair activities and report additional required repairs to the AHJ (4.7.2) (5.7.1)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

DRAFT

#14: MAINTAINING COMPRESSED AIR FOAM SYSTEMS (CAFS)

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.7.4 AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. An emergency response vehicle with a CAFS (4.7.4)
2. Manufacturer specifications (4.7.4)
3. A maintenance schedule (4.7.4)
4. A maintenance checklist (4.7.4)
5. Standard operating procedures (4.7.4)
6. Tools (4.7.4)
7. Test equipment (4.7.4)

REQUISITE KNOWLEDGE:

1. Describe common maintenance requirements
2. Describe troubleshooting procedures (4.7.4)
3. Describe operational, diagnostic, performance, and verification tests
4. Describe repair and overhaul procedures
5. Describe adjustment and calibration methods and procedures (4.7.4)
6. Describe manufacturer and AHJ inspection, maintenance, and documentation procedures (4.7.4)
7. Describe manufacturer and AHJ repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENT:

1. Maintain or repair the compressed air foam system in accordance with manufacturer specifications:
 - Ensure compressor and system components function to recommended specifications:
 - Component mounts
 - Drive systems
 - Pumps
 - Plumbing
 - Valves
 - Pressurized components

- Ensure hoses are tight and secured
 - Stop fluid leaks
 - Apply lubricants
 - Ensure electrical connections are clean and tight
 - Verify system operation (4.7.4)
2. Diagnose defective components (4.7.4)
 3. Document maintenance activities and report required repairs to the AHJ (4.7.4)

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

DRAFT

#15: INSPECTING AIR AND HYDRAULIC BRAKES

AUTHORITY:	THE STATE FIRE MARSHAL
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. *An emergency response vehicle with an air brake system*
2. *An emergency response vehicle with a hydraulic brake system*
3. *Manufacturer specifications*
4. *Standard operating procedures*
5. *California Commercial Driver Handbook*
6. *A maintenance schedule*
7. *Tools*
8. *Test and calibration equipment*
9. *An inspection checklist*

REQUISITE KNOWLEDGE:

1. *Describe air brake systems*
2. *Describe the operation and components of air brake systems*
3. *Describe types of defects, deficiencies, and potential problems associated with air brake systems*
4. *Describe hydraulic brake systems*
5. *Describe the operation and components of hydraulic brake systems*
6. *Describe types of defects, deficiencies, and potential problems associated with hydraulic brake systems*
7. *Describe types of auxiliary braking systems*
8. *Describe the operation and components of auxiliary braking systems*
9. *Describe types of defects, deficiencies, and potential problems associated with auxiliary brake systems*
10. *Describe operational and service testing procedures and requirements*
11. *Describe safety procedures*
12. *Select tools and test, diagnostic, and calibration equipment*
13. *Describe types, grades, and viscosity of lubricants*
14. *Describe federal, state, manufacturer, and AHJ inspection procedures and documentation*

JOB PERFORMANCE REQUIREMENT:

1. *Verify operation, condition, mounting, and structural integrity of air brake systems utilizing manufacturer specifications and appropriate checklists*
2. *Verify operation, condition, mounting, and structural integrity of hydraulic brake systems utilizing manufacturer specification and appropriate checklists*
3. *Verify operation, condition, mounting, and structural integrity of auxiliary brake systems utilizing manufacturer specifications and appropriate checklists*
4. *Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ*
5. *Document inspection and tests*

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

DRAFT



#16: AXLE, BRAKE, AND ROAD PERFORMANCE TESTING

AUTHORITY:	NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 5.2.2, 5.2.3, 5.2.4, 5.2.5, AND THE <i>STATE FIRE MARSHAL</i>
LEVEL OF LEARNING:	II

PERFORMANCE GOAL

The following must be in accordance with department policy and standard operating procedures.

GIVEN:

1. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of an In-Service Automotive Fire Apparatus (5.2.2) (5.2.3) (5.2.4) (5.2.5)
2. An emergency response vehicle (5.2.2) (5.2.3) (5.2.4.) (5.2.5)
3. An applicable driving license (if required) (5.2.2) (5.2.3) (5.2.4) (5.2.5)
4. A commercial certified scale (5.2.2)
5. A calibrated driving course (5.2.3)
6. An appropriate road grade (5.2.4)
7. An approved driving course (5.2.5)

REQUISITE KNOWLEDGE:

1. Describe NFPA 1911, federal, and state regulations *that pertain to emergency response vehicles and operations* (5.2.3) (5.2.4) (5.2.5)
2. *Determine* the drivability of the apparatus (5.2.5)
3. *Describe an axle weight performance test*
4. *Describe a brake performance test*
5. *Describe a road performance test*
6. Describe NFPA 1911 and AHJ recordkeeping requirements (5.2.2) (5.2.3) (5.2.4) (5.2.5)

JOB PERFORMANCE REQUIREMENT:

1. Adhere to applicable codes, standards, and regulations:
 - Federal Motor Carrier Safety Act
 - Code of Federal Regulations, Title 49
 - California Code of Regulations
 - California Vehicle Code
 - NFPA 1911 (5.2.3) (5.2.4) (5.2.5)
2. Document tests in accordance with NFPA and AHJ standards (5.2.2) (5.2.3) (5.2.4) (5.2.5)
3. Complete axle weight performance test (5.2.2)

4. Determine apparatus weight to ensure weight on vehicle does not exceed gross axle weight rating (GAWR) and the gross vehicle weight rating (GVWR) or gross combination weight rating (GCWR) as shown on the fire apparatus rating plate (5.2.2)
5. Complete braking performance test to ensure braking ability complies with required codes, standards, and regulations (5.2.3) (5.2.4) (5.2.5)
6. Complete parking brake performance test to ensure braking ability complies with required codes, standards, and regulations (5.2.4)
7. *Complete road performance test on apparatus to ensure apparatus system performance complies with required codes, standards, and regulations*

STANDARD:

By successfully completing all assignments and activities, passing all performance tests, and passing all written tests with a minimum of 80% accuracy

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REFERENCE RESOURCES

- Departmental Standard Operating Procedures
- Manufacturer Service Manuals
- Title 49 Code of Federal Regulations
- California Vehicle Code
- Title 21, Division 2, California Code of Regulations

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