

EMERGENCY VEHICLE TECHNICIAN



Approved and Adopted by the
Office of the State Fire Marshal



Recommended for adoption by the
Statewide Training and Education
Advisory Committee and the
State Board of Fire Services

CERTIFICATION TRAINING STANDARDS

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EMERGENCY VEHICLE TECHNICIAN

CERTIFICATION TRAINING STANDARDS



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State Fire Training

Mission Statement

The mission of State Fire Training is to enable the California fire service to safely protect life and property through education, training, and certification.

California Fire Service Training and Education System

The California Fire Service Training and Education System (CFSTES) was established to provide a single statewide focus for fire service training in California. CFSTES is a composite of all the elements that contribute to the development, delivery, and administration of training for the California fire service. The authority for the central coordination of this effort is vested in the Training Division of the California State Fire Marshal's Office with oversight provided by the State Board of Fire Services.

CFSTES facilitates, coordinates, and assists in the development and implementation of standards and certification for the California fire service. CFSTES manages the California Fire Academy System by providing standardized curriculum and tests; accredited courses leading to certification; approved standardized training programs for local and regional delivery; administering the certification system; and publishing Career Development Guides, Instructors Guides, Student Manuals, Student Supplements, and other related support materials.

This system is as successful and effective as the people involved in it are. It is a fire service system developed by the fire service, for the fire service ... and we believe it is the best one in the country.

Acknowledgments

State Fire Training coordinated the development of the material contained in this CTS Guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) recommended this Guide for adoption by the State Fire Marshal (SFM). This Guide is appropriate for fire service personnel and for personnel in related occupations that are pursuing State Fire Training certification.

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CERTIFICATION TRAINING STANDARDS

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"We gratefully acknowledge the hard work and accomplishments of those before us who built the solid foundation on which this program continues to grow."

Introduction

State Fire Training develops a Certification Training Standards (CTS) Guide for each rank in the fire service: fire fighter, driver/operator, fire instructor, fire officer, etc. The CTS Guide lists every responsibility a person is expected to complete and student performance goals with a measurable minimum performance standard. In addition, it provides a comprehensive list of reference resources.

The CTS Guide has several valuable uses:

- It serves as the foundation for the certification programs recommended for adoption by the State Board of Fire Services. Any certification program must be based upon job-related knowledge and measurable objectives.
- It provides measurable minimum performance standards. It is easier to defend the validity and reliability of fire service entrance and promotional examinations when training utilizes measurable standards. To master the knowledge and skills needed for specialized operations, students will require additional training to augment the minimum performance standards included in the CTS Guide.

Format

Title

The title should be as concise as possible and may indicate whether a standard is cognitive, psychomotor, or both. The CTS Guide accomplishes this indication using corresponding verbs.

A task title might be, "Describe and Demonstrate the Use of Ropes." This indicates that the standard has both cognitive (describe) and psychomotor (demonstrate) requirements.

Authority

The CTS Guide keys each CTS, when possible, to a subsection of the appropriate National Fire Protection Association (NFPA) Professional Qualifications. This correlation between the CTS Guide and the NFPA standard ensures that each fire service position in California's certification system meets or exceeds the corresponding NFPA standard.

In some instances, because of repetition in the NFPA standard, the CTS Guide might cite several NFPA subsections for a single CTS.

In other instances, NFPA may overlook or neglect California requirements. When this occurs, the CTS Guide cites the authority that requires the standard or a performance within the standard. In most cases, the CTS guide cites the State Fire Marshal as the authority and prints the requirements in *italics*.



CERTIFICATION TRAINING STANDARDS

Performance Goal

The performance goals contain the heart of the CTS Guide. They specifically identify what a student knows or is capable of doing prior to certification by defining the amount of cognitive knowledge or psychomotor skill performance level required.

The performance goal provides the instructor or testing agency with the following guidelines:

1. What physical objects the student needs to accomplish the CTS.
2. What requisite knowledge the student needs to accomplish the CTS.
3. What job performances the student should be able to accomplish.
4. How well the student should perform.

Given

The Given section of the performance goal contains a list of objects, equipment, or materials a student needs to learn the requisite knowledge and skills and to accomplish each job performance requirement (JPR).

Requisite Knowledge and Skills

The Requisite Knowledge and Skills section of the performance goal lists what a student must know in order to accomplish each JPR. In many cases, the Guide does not individually list the NFPA requisite skills because they are incorporated into the teaching of the requisite knowledge.

Job Performance Requirements (JPR)

The JPR section of the performance goal includes written statements that describe a specific job task and defines measurable or observable outcomes.

Standard

The Standard section of the performance goal identifies how the student will be evaluated. For cognitive requirements, the standard is a minimum 80% accuracy on a written exam. For psychomotor requirements, the standard is completing all operations on a performance test. In cases where the CTS has both psychomotor and cognitive performance goals, the standard lists both the written exam and a performance test.

Certification Levels and Standards

This CTS Guide utilizes NFPA 1071 Standard for Emergency Vehicle Technician Professional Qualifications (2011) to provide the qualifications for three certification levels:

- Emergency Vehicle Mechanic
- Emergency Vehicle Technician
- Emergency Vehicle Lead Technician



EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

EMERGENCY VEHICLE MECHANIC

1: THE ROLE OF THE EMERGENCY VEHICLE MECHANIC

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.1.1 AND THE *STATE FIRE MARSHAL*

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 AND SKILLS:

1. Describe the mission of the fire service
2. Describe the organization of the fire department and maintenance facility
3. Describe the role of the emergency vehicle mechanic within the organization
4. Identify AHJ standard operating procedures, rules, and regulations as they apply to the emergency vehicle mechanic
5. Describe the critical aspects of NFPA standards as they apply to the emergency vehicle mechanic:
 - 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
6. Describe the critical aspects of the Federal Motor Carrier Safety Regulations
7. Describe applicable federal, state, and local regulations as they apply to the emergency vehicle mechanic
8. Identify the components of a Hazardous Materials Management Plan
9. Describe workplace safety practices
10. Describe how to select and use cleaning products
11. Describe Emergency Vehicle Mechanic housekeeping responsibilities

JOB PERFORMANCE REQUIREMENTS:

No JPRs identified for this CTS

STANDARD:

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the principles of electricity and electronics*
4. *A summary of electrical schematic usage*
5. *A summary of how to select and use test, diagnostic, and calibration equipment*
6. *A summary of the types of defects, deficiencies, and potential problems associated with low-voltage electrical systems*
7. *A summary of the function, construction, operation, and requirements of starting and charging systems, chassis lighting and electrical components, emergency lighting, and accessory lighting*
8. *A summary of the function, construction, and operation of batteries, starting motors, alternators, and accessory electric motors, relays, solenoids, and regulators*
9. *A summary of mounting and adjustment requirements*
10. *A summary of manufacturer and AHJ inspection and documentation procedures*
11. *A summary of operational tests*
12. *A summary of how to complete checklists and inspection documentation*
13. An emergency response vehicle
14. Tools and test and calibration equipment, including a belt tension gauge and a multimeter
15. An inspection checklist

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the principles of electricity and electronics:
 - Ohm's law
 - Kirchoff's laws
 - Magnetism
 - Voltage drop
2. *Describe electrical schematic usage*
3. Select and use test, diagnostic, and calibration equipment
4. Describe types of defects, deficiencies, and potential problems associated with low-voltage electrical systems
5. Describe the function, construction, operation, and requirements of starting and charging systems, chassis lighting and electrical components, emergency lighting, and accessory lighting

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

6. Describe the function, construction, and operation of *batteries*, starting motors, alternators, and accessory electric motors, relays, solenoids, and regulators
7. Describe mounting and adjustment requirements
8. Describe manufacturer and AHJ inspection *and documentation* procedures

JOB PERFORMANCE REQUIREMENTS:

1. Utilize appropriate procedures to avoid hazards
2. Inspect 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
3. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
4. Document inspection and tests

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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 STATE FIRE MARSHAL
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PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of electrical troubleshooting procedures*
4. *A summary of common maintenance requirements*
5. *A summary of adjustment and calibration methods and procedures*
6. *A summary of operational, diagnostic, and performance and verification tests*
7. *A summary of manufacturer and AHJ diagnostic, repair, overhaul, and documentation procedures*
8. An emergency response vehicle
9. An inspection report detailing a deficiency or deformation
10. A maintenance schedule and checklist
11. Tools and test and calibration equipment
12. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus

REQUISITE KNOWLEDGE AND SKILLS:

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

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair the low voltage systems in accordance with manufacturer specifications:
 - *Battery system*
 - Starting system
 - Charging system
 - Lighting systems
 - Other low voltage electronic and electrical systems and devices
2. Perform calibrations, adjustments, and performance tests
3. *Diagnose defective components*
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
5. Document maintenance and repair activities and report additional required repairs to the AHJ



EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

STANDARD:

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

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures *or guidelines*
2. A summary of manufacturer specifications
3. A summary of the function, operation, and construction of chassis and vehicle systems
4. A summary of the function, operation, construction, and interface of frames, independent suspension systems, all-wheel steering systems, secondary braking systems, and auxiliary cooling systems
5. A summary of types of suspension and steering systems
6. A summary of basic principles of suspension and steering geometry
7. A summary of types of defects, deficiencies, and potential problems associated with chassis systems and components unique to emergency response vehicles
8. A summary of principles of hydraulics
9. A summary of types of brake systems, including secondary braking systems
10. A summary of types of cooling systems
13. A summary of how to select and use test, diagnostic, and calibration equipment
11. A summary of manufacturer and AHJ inspection and documentation procedures and documentation
12. An emergency response vehicle
13. Tools and test and calibration equipment
14. An inspection checklist

REQUISITE KNOWLEDGE AND SKILLS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

JOB PERFORMANCE REQUIREMENTS:

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
2. Verify that structural integrity, operation, and condition are within manufacturer specifications
3. Utilize an inspection checklist
4. Identify, document, and report defects, deficiencies, and potential problems to the AHJ
5. Document inspection activities

STANDARD:

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

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the types of defect, deficiencies, and potential problems associated with chassis and vehicle systems*
4. *A summary of how to select tools and test, diagnostic, and calibration equipment*
5. *A summary of troubleshooting procedures*
6. *A summary of adjustment and calibration methods and procedures*
7. *A summary of operational, diagnostic, performance, and verification tests*
8. *A summary of common maintenance requirements*
9. *A summary of repair and overhaul procedures*
10. *A summary of manufacturer and AHJ diagnostic, repair, maintenance, and documentation procedures*
11. An emergency response vehicle with identified defective components
12. An inspection report detailing a deficiency or deformation
13. A maintenance schedule and checklist
14. Tools and test, calibration, and diagnostic equipment

REQUISITE KNOWLEDGE AND SKILLS:

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

JOB PERFORMANCE REQUIREMENTS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

6: INSPECTING EMERGENCY RESPONSE VEHICLE ENGINES AND TRANSMISSIONS

AUTHORITY: STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures and manufacturer specifications
2. A summary of how to select tools and test, diagnostic, and calibration equipment
3. A summary of the function, construction, operation, and requirements of the engine(s) and related components
4. A summary of the types of defects, deficiencies, and potential problems associated with the engine(s) and related components
5. A summary of the function, construction, operation, and requirements of the transmission(s) and related components
6. A summary of the types of defects, deficiencies, and potential problems associated with the transmission(s) and related components
7. A summary of manufacturer and AHJ inspection procedures and documentation
8. An emergency response vehicle
9. An inspection checklist
10. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Select and use tools and test and diagnostic, and calibration equipment
2. Describe the function, construction, operation, and requirements of the engine(s) and related components
3. Describe types of defects, deficiencies, and potential problems associated with the engine(s) and related components
4. Describe the function, construction, operation, and requirements of the transmission(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 REQUIREMENTS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

- *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:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

7: MAINTAINING AND REPAIRING EMERGENCY VEHICLE ENGINES AND TRANSMISSIONS

AUTHORITY: STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures and manufacturer specifications
2. A summary of common maintenance requirements
3. A summary of troubleshooting procedures
4. A summary of how to select and use test, diagnostic, and calibration equipment
5. A summary of adjustment and calibration methods and procedures
6. A summary of operational, diagnostic, performance, and verification tests
7. A summary of manufacturer and AHJ inspection, diagnostic, repair, maintenance, and documentation procedures
8. An emergency response vehicle with identified defective components
9. An inspection report detailing a deficiency or deformation
10. A maintenance schedule and checklist
11. Tools and test, calibration, and diagnostic equipment

REQUISITE KNOWLEDGE AND SKILLS:

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

JOB PERFORMANCE REQUIREMENTS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

- *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:

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of 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. *A summary of the function, construction, and operation of body, compartments, shelves and dividers, steps, ladders, and platforms*
5. *A summary of the 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*
6. *A summary of the function, construction and operation of climate control systems*
7. *A summary of the types of defects, deficiencies, and potential problems associated with climate control systems*
8. *A summary of the function, construction, and operation of assigned equipment mounting systems, self-contained breathing apparatus (SCBA) mounting, warning systems, and mounting racks, brackets, and latches*
9. *A summary of the types of defects, deficiencies, and potential problems associated with equipment mounting systems, warning systems, and mounting racks, brackets, and latches*
10. *A summary of the function, construction, and operation of the cab tilt system, safety and latch systems, interlock systems, and warning systems*
11. *A summary of the types of defects, deficiencies, and potential problems associated with cabs and cab tilt systems*
12. *A summary of the principles of pneumatic, hydraulic, and electric operation*
13. *A summary of the types of fluids and lubricants*
14. *A summary of the common problems and failures of finishes, paint, signs, and labels*
15. *A summary of how to select and use test, diagnostic, and calibration equipment*
16. *A summary of manufacturer and AHJ inspection and documentation procedures*
17. An emergency response vehicle with a cab tilt system and its assigned equipment
18. A maintenance schedule and checklist
19. An inspection checklist
20. An inspection report detailing a deficiency or deformation
21. Tools and test and calibration equipment

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, and operation of doors, locks, latches, seats, safety restraints, instrumentation, window glass and mirrors, steps, handrails, trays, skid-resistant walking surfaces, and storage areas
2. Describe the function, construction, and operation of body, compartments, shelves and dividers, steps, ladders, and platforms
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. *Describe the function, construction and operation of climate control systems*
5. *Describe the 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
7. Describe types of defects, deficiencies, and potential problems associated with equipment mounting systems, warning systems, and mounting racks, brackets, and latches
8. Describe the function, construction, and operation of the cab tilt system, safety and latch systems, *interlock systems*, and warning systems
9. Describe types of defects, deficiencies, and potential problems associated with cabs and cab tilt systems
10. Describe principles of pneumatic, hydraulic, and electric operation
11. Describe types of fluids and lubricants
12. Describe common problems and failures of finishes, paint, signs, and labels
13. Select test, diagnostic, and calibration equipment
14. Describe manufacturer and AHJ inspection *and documentation* procedures

JOB PERFORMANCE REQUIREMENTS:

1. Inspect 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*
2. Inspect operation and condition of cab tilt components and warning systems utilizing manufacturer specifications:
 - Ready safe the tilt mechanism
 - Visually assess structural integrity
3. Inspect operation and condition of climate control systems utilizing manufacturer specifications



EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

4. Determine condition of finishes, signs, labels, and paint
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
6. Document inspection and tests

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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, 5.3.2, 5.3.3, AND THE STATE FIRE MARSHAL
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PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of how to select and use tools and test, diagnostic, and calibration equipment*
4. *A summary of common maintenance requirements*
5. *A summary of troubleshooting procedures*
6. *A summary of adjustment and calibration methods and procedures*
7. *A summary of methods to stop leaks*
8. *A summary of repair, rebuilding, overhaul and replacement procedures*
9. *A summary of operational, diagnostic, performance, and verification tests*
10. *A summary of manufacturer and AHJ repair, diagnostic, maintenance, and documentation procedures*
11. An emergency response vehicle
12. A maintenance schedule and checklist
13. An inspection report detailing a deficiency or deformation
14. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

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

JOB PERFORMANCE REQUIREMENTS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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

STANDARD:

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

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, 5.5.1, 5.5.3, AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. A summary of the function, construction, and operation of fire pumps, auxiliary pumps, primer pumps, and related components; plumbing and valves; and pressure control devices
4. A summary of the types of defects, deficiencies, and potential problems associated with fire pumps, auxiliary pumps, primer pumps, water tanks, and related components
5. A summary of the function, operation, and construction of water tanks and related components
6. A summary of how to evaluate sacrificial anodes
7. A summary of the types, grades, and viscosity of lubricating oils
8. A summary of instrumentation and controls
9. A summary of operational and service testing procedures and requirements
10. A summary of safety procedures
11. A summary of fire flow hydraulic calculations
12. A summary of the characteristics of water flow and pressure
13. A summary of manufacturer and AHJ inspection procedures and documentation
14. An emergency response vehicle with a fire pump or an auxiliary pump
15. An emergency response vehicle with a water tank
16. An inspection checklist
17. An inspection report detailing a deficiency or deformation
18. A maintenance schedule
19. Tools and test and calibration equipment
20. Facilities

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, and operation of fire pumps, auxiliary pumps, primer pumps, and related components; plumbing and valves; packing and seals; and pressure control devices
2. Describe types of defects, deficiencies, and potential problems associated with fire pumps, auxiliary pumps, primer pumps, water tanks, and related components
3. Describe the function, operation, and construction of water tanks and related components
4. Evaluate sacrificial anodes
5. Describe types, grades, and viscosity of lubricating oils
6. Describe instrumentation and controls

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

7. Describe operational and service testing procedures and requirements
8. Describe safety procedures
9. Describe fire flow hydraulic calculations
10. *Describe characteristics of water flow and pressure*
11. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENTS:

1. Inspect 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
2. Inspect operation, condition, and mounting of water tanks utilizing manufacturer specifications and appropriate checklists:
 - *Tank types*
 - *Tank accessories*
3. Inspect recommended fluid *types* and levels utilizing manufacturer specifications
4. Identify and report leaks and fluid contamination
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
6. Document inspection and tests

STANDARD:

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of common maintenance requirements*
4. *A summary of sacrificial anode replacement procedures and schedules*
5. *A summary of flushing procedures*
6. *A summary of pump seals/packing adjustment or replacement methods and procedures*
7. *A summary of adjustment and calibration methods and procedures*
8. *A summary of how to select tools and test, diagnostic, and calibration equipment*
9. *A summary of troubleshooting procedures*
10. *A summary of repair and overhaul procedures*
11. *A summary of operational, diagnostic, performance, and verification tests*
12. *A summary of manufacturer and AHJ repair, diagnostic, maintenance, and documentation procedures*
13. An emergency response vehicle with a fire pump or an auxiliary pump
14. An emergency response vehicle with a water tank
15. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
16. A maintenance schedule and checklist
17. An inspection checklist
18. An inspection report detailing a deficiency or deformation
19. Tools and test, and calibration equipment
20. Facilities

REQUISITE KNOWLEDGE AND SKILLS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

JOB PERFORMANCE REQUIREMENTS:

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
2. *Maintain the water tank in accordance with manufacturer specifications*
3. Diagnose defective components
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
5. Conduct performance tests
 - Inspect pump/engine combination meets performance requirements of original certification test
 - Document testing in accordance with NFPA standards and the AHJ
6. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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, 4.7.2, 4.7.3, 4.7.4, 5.7.1, 5.7.2, 5.7.3, 5.7.4, AND THE STATE FIRE MARSHAL
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PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of 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. *A summary of the system design, function, construction, and operation of the CAFS, including foam types, drive systems, flowmeters, proportioners, valves, eductors, nozzles, and related components*
5. *A summary of common failure symptoms associated with component interfaces of related equipment*
6. *A summary of instrumentation, controls, warning and interlock systems, pressure control devices, backflow prevention, and filters and strainers*
7. *A summary of manufacturer and AHJ inspection procedures and documentation*
8. *A summary of operational and service testing procedure and requirements*
9. *A summary of safety procedures*
10. *A summary of how to select tools and test, diagnostic, and calibration equipment*
11. *A summary of the types and functions of foam pump packing and seals*
12. *A summary of the types, grades, and viscosity of lubricants*
13. *A summary of the types of defects, deficiencies, and potential problems associated with foam proportioning systems*
14. *A summary of the types of defects, deficiencies, and potential problems associated with foam agent tanks*
15. *A summary of the types of defects, deficiencies, and potential problems associated with CAFS*
16. An emergency response vehicle with a foam proportioning system
17. An emergency response vehicle with a foam tank
18. An emergency response vehicle with a CAFS
19. Maintenance schedule and checklist
20. An inspection checklist
21. Tools and test and calibration equipment
22. Facilities

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

REQUISITE KNOWLEDGE AND SKILLS:

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
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
3. Describe common failure symptoms associated with component interfaces of related equipment
4. Describe instrumentation, controls, warning and interlock systems, pressure control devices, backflow prevention, and filters and strainers
5. Describe manufacturer and AHJ inspection procedures *and documentation*
6. Describe operational and service testing procedure and requirements
7. Describe safety procedures
8. Select and use *tools* and test, diagnostic, and calibration equipment
9. Describe types and functions of *foam pump packing* and seals
10. Describe types, grades, and viscosity of lubricants
11. Describe types of defects, deficiencies, and potential problems associated with foam proportioning systems
12. Describe types of defects, deficiencies, and potential problems associated with foam agent tanks
13. Describe types of defects, deficiencies, and potential problems associated with CAFS

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, mounting, and structural integrity of the foam proportioning system utilizing manufacturer specifications and appropriate checklists
2. Verify recommended fluid *types* and levels of the foam proportioning system
3. Inspect operation, condition, mounting, and structural integrity of foam agent tanks utilizing manufacturer specifications and appropriate checklists:
 - *Tank types*
 - *Tank accessories*
4. Inspect 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*



EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

- Fluid levels
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
 6. Document inspection and tests

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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, 5.7.2, 5.7.3, 5.7.4 AND THE STATE FIRE MARSHAL
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PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of flushing procedures*
4. *A summary of troubleshooting procedures*
5. *A summary of adjustment and calibration methods and procedures*
6. *A summary of how to select tools and test, diagnostic, and calibration equipment*
7. *A summary of foam flow calculations*
8. *A summary of common maintenance requirements*
9. *A summary of repair and overhaul procedures*
10. *A summary of operational, diagnostic, performance, and verification tests*
11. *A summary of manufacturer and AHJ inspection, repair, diagnostic, maintenance, and documentation procedures*
12. An emergency response vehicle with a foam proportioning system
13. An emergency response vehicle with a foam tank
14. NFPA 1911 Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
15. A maintenance schedule and checklist
16. An inspection checklist
17. Tools and test and calibration equipment
18. Facilities

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe flushing procedures
2. Describe troubleshooting procedures
3. Describe adjustment and calibration methods and procedures
4. Select and use *tools* and test, diagnostic, and calibration equipment
5. Describe foam flow calculations
6. *Describe common maintenance requirements*
7. *Describe repair and overhaul procedures*
8. Describe operational, diagnostic, performance, and verification tests
9. Describe manufacturer and AHJ maintenance, repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

1. Maintain or repair the foam proportioning system components in accordance with manufacturer specifications:
 - Component mounts
 - Drive systems
 - Pumps
 - Plumbing
 - Valves
 - Tanks
2. Maintain foam proportioning system fluid levels
3. Diagnose defective components
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
5. Conduct performance tests
6. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

14: MAINTAINING COMPRESSED AIR FOAM SYSTEMS (CAFS)

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.7.4 AND THE STATE FIRE MARSHAL
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PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of common maintenance requirements*
4. *A summary of troubleshooting procedures*
5. *A summary of operational, diagnostic, performance, and verification tests*
6. *A summary of repair and overhaul procedures*
7. *A summary of adjustment and calibration methods and procedures*
8. *A summary of manufacturer and AHJ inspection, repair, diagnostic, maintenance, and documentation procedures*
9. An emergency response vehicle with a CAFS
10. A maintenance schedule and checklist
11. Tools and test equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. *Describe common maintenance requirements*
2. Select and use *tools* and test, diagnostic, and calibration equipment
3. Describe troubleshooting procedures
4. *Describe operational, diagnostic, performance, and verification tests*
5. *Describe repair and overhaul procedures*
6. Describe adjustment and calibration methods and procedures
7. Describe manufacturer and AHJ maintenance, repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair the CAFS 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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

- Apply lubricants
 - Ensure electrical connections are clean and tight
 - Verify system operation
2. Diagnose defective components
 3. Document maintenance activities and report required repairs to the AHJ

STANDARD:

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

15: INSPECTING AIR AND HYDRAULIC BRAKES

AUTHORITY: THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures and manufacturer specifications
2. A summary of air brake systems
3. A summary of the operation and components of air brake systems
4. A summary of the types of defects, deficiencies, and potential problems associated with air brake systems
5. A summary of hydraulic brake systems
6. A summary of the operation and components of hydraulic brake systems
7. A summary of the types of defects, deficiencies, and potential problems associated with hydraulic brake systems
8. A summary of the types of auxiliary braking systems
9. A summary of the operation and components of auxiliary braking systems
10. A summary of the types of defects, deficiencies, and potential problems associated with auxiliary brake systems
11. A summary of operational and service testing procedures and requirements
12. A summary of safety procedures
13. A summary of how to select tools and test, diagnostic, and calibration equipment
14. A summary of types, grades, and viscosity of lubricants
15. A summary of federal, state, manufacturer, and AHJ inspection procedures and documentation
16. An emergency response vehicle with an air brake system
17. An emergency response vehicle with a hydraulic brake system
18. California Commercial Driver Handbook
19. A maintenance schedule
20. An inspection checklist
21. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

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

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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 REQUIREMENTS:

1. *Inspect operation, condition, mounting, and structural integrity of air brake systems utilizing manufacturer specifications and appropriate checklists*
2. *Inspect operation, condition, mounting, and structural integrity of hydraulic brake systems utilizing manufacturer specification and appropriate checklists*
3. *Inspect 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:

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

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 STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. A summary of NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of an In-Service Automotive Fire Apparatus, federal, and state regulations *that pertain to emergency response vehicles and operations*
4. A summary of NFPA 1911 and AHJ recordkeeping requirements
5. A summary of how to determine the drivability of the apparatus
6. A summary of an axle weight performance test
7. A summary of a brake performance test
8. A summary of a road performance test
9. An emergency response vehicle
10. An applicable driving license (if required)
11. A commercial certified scale
12. An appropriate road grade
13. An approved, calibrated driving course

REQUISITE KNOWLEDGE AND SKILLS:

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

JOB PERFORMANCE REQUIREMENTS:

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
2. Document tests in accordance with NFPA and AHJ standards
3. Complete axle weight performance test

EMERGENCY VEHICLE MECHANIC

CERTIFICATION TRAINING STANDARDS

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. Complete braking performance test to ensure braking ability complies with required codes, standards, and regulations
6. Complete parking brake performance test to ensure braking ability complies with required codes, standards, and regulations
7. *Complete road performance test on apparatus to ensure apparatus system performance complies with required codes, standards, and regulations*

STANDARD:

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



EMERGENCY VEHICLE TECHNICIAN

CERTIFICATION TRAINING STANDARDS

EMERGENCY VEHICLE TECHNICIAN

1: THE ROLE OF THE EMERGENCY VEHICLE TECHNICIAN

AUTHORITY: STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of the role of the emergency vehicle technician within the organization
2. A summary of AHJ standard operating procedures, rules, and regulations as they apply to the emergency vehicle technician
3. A summary of the critical aspects of NFPA standards as they apply to the emergency vehicle technician:
 - 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. A summary of Federal Motor Carrier Safety Regulations as they apply to emergency vehicle technician roles and responsibilities
5. A summary of federal, state, and local regulations as they apply to the emergency vehicle technician's roles and responsibilities
6. A sample Hazardous Materials Management Plan
7. A sample Hazardous Materials Communication Plan

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the role of the emergency vehicle technician within the organization
2. Identify AHJ standard operating procedures, rules, and regulations as they apply to the emergency vehicle technician
3. Describe the critical aspects of NFPA standards as they apply to the emergency vehicle technician:
 - 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. Apply Federal Motor Carrier Safety Regulations as they apply to emergency vehicle technician roles and responsibilities
5. Apply federal, state, and local regulations as they apply to the emergency vehicle technician's roles and responsibilities
6. Apply a Hazardous Materials Management Plan
7. Apply a Hazardous Materials Communication Plan

JOB PERFORMANCE REQUIREMENTS:



EMERGENCY VEHICLE TECHNICIAN

CERTIFICATION TRAINING STANDARDS

No JPRs identified for this CTS

STANDARD:

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



EMERGENCY VEHICLE TECHNICIAN

CERTIFICATION TRAINING STANDARDS

2: INSPECTING AERIAL SYSTEM LADDERS, ELEVATING PLATFORMS, AND WATERWAYS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.6.1, 4.6.2, 4.6.9, 5.6.1, 5.6.7, AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the principles of hydraulics*
4. *A summary of the function, operation, construction, and inspection practices of aerial ladders*
5. *A summary of the types of defects, deficiencies, and potential problems associated with aerial ladders*
6. *A summary of the function, operation, and construction of elevating platforms or water towers*
7. *A summary of the types of defects, deficiencies, and potential problems associated with elevating platforms or water towers*
8. *A summary of the function, operation, and construction of aerial device waterway systems*
9. *A summary of the types of defects, deficiencies, and potential problems associated with aerial device waterway systems*
10. *A summary of how to select and use tools and test and calibration equipment*
11. *A summary of fluid types and lubricants*
12. *A summary of lubrication requirements*
13. *A summary of manufacturer and AHJ inspection procedures and documentation*
14. An emergency response vehicle with an aerial ladder
15. An emergency response vehicle with an elevating platform or water tower
16. An emergency response vehicle with an aerial device waterway system
17. An inspection checklist
18. An inspection report detailing a deficiency or deformation
19. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe principles of hydraulics
2. Describe the function, operation, construction, and inspection practices of aerial ladders
3. Describe types of defects, deficiencies, and potential problems associated with aerial ladders
4. Describe the function, operation, and construction of elevating platforms or water towers
5. Describe types of defects, deficiencies, and potential problems associated with elevating platforms or water towers
6. Describe the function, operation, and construction of aerial device waterway systems

7. Describe types of defects, deficiencies, and potential problems associated with aerial device waterway systems
8. Select and use *tools* and test and calibration equipment
9. Describe fluid types and lubricants
10. Describe lubrication requirements
11. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, and mounting of the ladder sections, extension systems, and all related components of an aerial ladder utilizing manufacturer specifications and appropriate checklists:
 - Check for twists and bows
 - Check for corrosion, dents, wear, and defects
 - *Check for compliance with applicable standards, specifications, and regulations*
2. Inspect operation, condition, and mounting of an elevating platform or water tower and all related components utilizing manufacturer specifications and appropriate checklists:
 - Check for twists and bows
 - Check for corrosion, dents, wear, and defects
 - *Check for compliance with applicable standards, specifications, and regulations*
 - Check extension elevation and leveling systems for damage
3. Inspect operation, condition, and mounting of an aerial device waterway system and all related components utilizing manufacturer specifications and appropriate checklists:
 - *Check for bows and leaks*
 - *Check for corrosion, dents, wear, and defects*
 - *Check for compliance with applicable standards, specifications, and regulations*
 - Check legibility and operation of gauges
4. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
5. Document inspection and tests

STANDARD:

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

3: MAINTAINING AND REPAIRING AERIAL SYSTEM LADDERS, ELEVATING PLATFORMS, AND WATERWAYS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.6.3, 5.6.1, 5.6.7, AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. A summary of how to select and use *tools* and test and calibration equipment
4. A summary of troubleshooting procedures
5. A summary of adjustment and alignment methods and procedures
6. A summary of manufacturer and AHJ apparatus inspection, diagnostic, repair, maintenance, and documentation procedures
7. An emergency response vehicle with an aerial ladder
8. An emergency response vehicle with an elevating platform or water tower
9. An emergency response vehicle with an aerial device waterway system
10. A maintenance schedule and checklist
11. An inspection report detailing a deficiency or deformation
12. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Select and use *tools* and test and calibration equipment
2. Describe troubleshooting procedures
3. Describe adjustment and alignment methods and procedures
4. Describe manufacturer and AHJ maintenance, diagnostic, repair, test, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair ladder sections, extension systems, elevating platforms, water towers, aerial device waterway systems, and all related components in accordance with manufacturer specifications:
 - Cleaning
 - Lubrication
 - Adjustment
2. Diagnose defective components
3. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
4. Conduct performance tests
5. Document maintenance and repair activities and report additional required repairs to the AHJ



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CERTIFICATION TRAINING STANDARDS

STANDARD:

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

4: INSPECTING AERIAL HYDRAULIC SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.6.4, 4.6.5, 4.6.7, AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the function, construction, and operation of an aerial device stabilization system, including wheels, tires, axles, frame, torque box, turntable, and related components*
4. *A summary of the types of defects, deficiencies, and potential problems associated with stabilization systems and related components*
5. *A summary of the function, construction, operation, and inspection procedures of stabilizers, rotation motors, extension cylinders, elevation cylinders, leveling cylinders, gauges, and parts of an aerial device hydraulic system and related components*
6. *A summary of fluid requirements*
7. *A summary of the defects, deficiencies, and potential problems associated with hydraulic systems and related components*
8. *A summary of the types of contamination sources*
9. *A summary of the function, construction, and operation of lifting, rotating, and extension systems of an aerial device and related components*
10. *A summary of the types of defects, deficiencies, and potential problems associated with aerial device lifting, rotating, and extension systems and related components*
11. *A summary of normal operating conditions*
12. *A summary of manufacturer and AHJ inspection procedures and documentation*
13. An emergency response vehicle with an aerial device
14. An emergency response vehicle with an aerial device stabilization system
15. An inspection checklist
16. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, and operation of an aerial device stabilization system, including wheels, tires, axles, frame, torque box, turntable, and related components
2. Describe types of defects, deficiencies, and potential problems associated with stabilization systems *and related components*
3. Describe the function, construction, operation, and inspection procedures of stabilizers, rotation motors, extension cylinders, elevation cylinders, leveling cylinders, gauges, and parts of an aerial device hydraulic system *and related components*
4. Describe fluid requirements

5. Describe defects, deficiencies, and potential problems associated with hydraulic systems *and related components*
6. Describe types of contamination sources
7. Describe the function, construction, and operation of lifting, rotating, and extension systems of an aerial device *and related components*
8. Describe types of defects, deficiencies, and potential problems associated with aerial device lifting, rotating, and extension systems and related *components*
9. Describe normal operating conditions
10. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, and mounting of the stabilization system utilizing manufacturer specifications and appropriate checklists
2. Inspect operation, condition, and mounting of the hydraulic system components, warning systems, and gauges of an aerial device utilizing manufacturer specifications and appropriate checklists:
 - Verify recommended fluid levels
 - Identify visible leakage or contamination
3. Inspect operation, condition, and mounting of the lifting, rotating, and extension systems utilizing manufacturer specifications and appropriate checklists
4. Complete performance tests
5. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
6. Document inspection and tests

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

5: MAINTAINING AND REPAIRING AERIAL HYDRAULIC SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.6.6, 5.6.2, 5.6.3, 5.6.4, AND 5.6.5

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the principles of hydraulics*
4. *A summary of lubrication and fluid types*
5. *A summary of how to select and use tools and test and calibration equipment*
6. *A summary of troubleshooting procedures*
7. *A summary of adjustment methods and procedures*
8. *A summary of manufacturer and AHJ repair procedures and documentation for an aerial device*
9. An emergency response vehicle with an aerial device
10. An emergency response vehicle with an aerial device stabilization system
11. A maintenance schedule and checklist
12. An inspection report detailing a deficiency or deformation
13. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe principles of hydraulics
2. Describe lubrication and fluid types
3. Select and use *tools* and test and calibration equipment
4. Describe troubleshooting procedures
5. Describe adjustment methods and procedures
6. Describe manufacturer and AHJ repair procedures and documentation for an aerial device

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair the aerial device stabilization system in accordance with manufacturer specifications
2. Maintain or repair the aerial device lifting, rotating, and extension systems in accordance with manufacturer specifications
3. Maintain or repair the hydraulic system components, warning systems, and gauges of an aerial device in accordance with manufacturer specifications
4. Diagnose defective components
5. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
6. Conduct performance tests
7. Document maintenance and repair activities and report additional required repairs to the AHJ



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CERTIFICATION TRAINING STANDARDS

STANDARD:

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

6: INSPECTING AERIAL DEVICE ELECTRICAL SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTION 4.6.8 AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the function, construction, operation, and inspection of aerial device electrical systems, warning systems, and related components*
4. *A summary of the normal condition of aerial device electrical and warning systems and related components*
5. *A summary of the types of defects, deficiencies, and potential problems of aerial device electrical systems*
6. *A summary of how to select and use tools and test gauges and meters*
7. *A summary of manufacturer and AHJ inspection procedures and documentation*
8. An emergency response vehicle with an aerial device
9. An inspection checklist
10. Tools and test equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, operation, and inspection of aerial device electrical systems, warning systems, and related components
2. Describe the normal condition of aerial device electrical and warning systems *and related components*
3. Describe types of defects, deficiencies, and potential problems of aerial device electrical systems
4. Select and use *tools* and test gauges and meters
5. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, and mounting of the electrical system utilizing manufacturer specifications and appropriate checklists:
 - Interlocks
 - Warning systems
 - *Wiring harnesses (low voltage / line voltage)*
 - *Communication systems*
 - *Lighting systems (low voltage / line voltage)*
 - *Auxiliary component electrical controls*
 - *Electric over hydraulic controls*



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CERTIFICATION TRAINING STANDARDS

2. Inspect operation and legibility of gauges
3. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
4. Document inspection

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

7: MAINTAINING AND REPAIRING AERIAL ELECTRICAL SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 5.6.6 AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of how to select and use test, calibration, and diagnostic equipment*
4. *A summary of troubleshooting procedures*
5. *A summary of adjustment methods and procedures*
6. *A summary of manufacturer and AHJ diagnostic, repair, test, and documentation procedures*
7. An emergency response vehicle with an aerial device
8. An inspection report detailing a deficiency or deformation
9. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Select and use test, calibration, and diagnostic equipment
2. *Describe troubleshooting procedures*
3. *Describe adjustment methods and procedures*
4. Describe manufacturer and AHJ diagnostic, repair, test, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair the aerial device electrical systems in accordance with manufacturer specifications:
 - Interlocks
 - Warning systems
 - *Wiring harnesses (low voltage / line voltage)*
 - *Lighting systems (low voltage / line voltage)*
 - *Communication systems*
 - *Auxiliary component electrical controls*
 - *Electric over hydraulic controls*
2. Diagnose defective components
3. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
4. Conduct performance tests
5. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

8: AERIAL SYSTEMS ANNUAL PERFORMANCE TESTING

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 5.6.8 AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. A summary of how to select and use test and calibration equipment
4. A summary of test equipment calibration requirements
5. A summary of aerial device performance requirements and test procedures
6. A summary of fire flow hydraulic calculations
7. A summary of how to document test results
8. An emergency vehicle with an aerial device
9. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
10. Records and forms
11. Facilities
12. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Select and use test and calibration equipment
2. Describe test equipment calibration requirements
3. Describe aerial device performance requirements and test procedures
4. Describe fire flow hydraulic calculations
5. Describe how to document test results

JOB PERFORMANCE REQUIREMENTS:

1. Conduct annual performance testing on aerial devices, systems, and related components to evaluate the performance of *mechanical, hydraulic, and electrical systems*
2. Identify defects and deficiencies
3. Verify operation
4. Document test results

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

9: INSPECTING LINE VOLTAGE SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 4.7.5 AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of electricity safety and inspection procedures*
4. *A summary of the function, construction, operation, and inspection of the components of electrical line voltage generation, controls, and instrumentation*
5. *A summary of the types of defects, deficiencies, and potential problems associated with electrical line voltage generation systems*
6. *A summary of performance tests applicable to line voltage electrical systems*
7. *A summary of required labels, plates, and signs*
8. *A summary of manufacturer and AHJ inspection procedures and documentation*
9. An emergency response vehicle with a line voltage electrical system
10. An inspection checklist
11. Tools and test equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe electricity safety and inspection procedures
2. Describe the function, construction, operation, and inspection of the components of electrical line voltage generation, controls, and instrumentation
3. Describe types of defects, deficiencies, and potential problems associated with electrical line voltage generation systems
4. *Describe performance tests applicable to line voltage electrical systems*
5. Describe required labels, plates, and signs
6. Describe manufacturer and AHJ inspection procedures and documentation

JOB PERFORMANCE REQUIREMENTS:

15. Inspect operation, condition, and mounting of the electrical line voltage generation system, controls, and instrumentation utilizing manufacturer specifications and appropriate checklists:
 - Generators
 - System components
 - Drive unit
 - Instrumentation controls
 - Safety and load protection devices
 - Interlocks
 - *Shoreline systems*



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CERTIFICATION TRAINING STANDARDS

16. Verify condition and correct placement of information and warning signs
17. *Complete performance tests*
18. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
19. Document inspection and tests

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

10: MAINTAINING AND REPAIRING LINE VOLTAGE SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 4.7.6, 5.7.5, 5.7.6, AND 5.7.7

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of safety procedures and protection devices*
4. *A summary of local, state, and federal regulations regarding inspection and maintenance of line voltage installations*
5. *A summary of electrical load, grounding, and insulation calculations*
6. *A summary of wiring and grounding standards*
7. *A summary of fluid and lubrication requirements and types*
8. *A summary of line voltage wiring procedures and requirements*
9. *A summary of troubleshooting or diagnostic procedures*
10. *A summary of repair procedures*
11. *A summary of required calibrations*
12. *A summary of how to select and use tools and test and calibration equipment*
13. *A summary of operational and performance testing procedures and requirements*
14. *A summary of adjustment methods and procedures*
15. *A summary of manufacturer and AHJ inspection, repair, diagnostic, maintenance, and documentation procedures*
16. An emergency response vehicle with a line voltage electrical system
17. An emergency response vehicle with hardwired line voltage appliances and controls
18. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus)
19. A maintenance schedule and checklist
20. An inspection report detailing a deficiency or deformation
21. Facilities
22. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe safety procedures and protection devices
2. Describe local, state, and federal regulations regarding inspection and maintenance of line voltage installations
3. Describe electrical load, grounding, and insulation calculations
4. Describe wiring and grounding standards
5. Describe fluid and lubrication requirements and types
6. Describe line voltage wiring procedures and requirements

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CERTIFICATION TRAINING STANDARDS

7. Describe troubleshooting or diagnostic procedures
8. Describe required calibrations
9. Select and use *tools* and test and calibration equipment
10. Describe operational and performance testing procedures and requirements
11. Describe adjustment methods and procedures
12. Describe manufacturer and AHJ maintenance, repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair the electrical line voltage generation system, controls, appliances, and instrumentation in accordance with manufacturer specifications:
 - Generators
 - System components
 - Drive unit
 - Instrumentation controls
 - Safety and load protection devices
 - Interlocks
 - *Shoreline systems*
2. Maintain or repair the hardwired line voltage appliances and controls in accordance with manufacturer specifications:
 - *System components*
 - *Safety and load protection devices*
3. Diagnose defective components
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
5. Conduct performance tests on hardwired line voltage appliances and controls
20. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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

11: INSPECTING BREATHING AIR SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTION 4.7.7 AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the function, construction, and operation of a breathing air purification system, high-pressure air regulation, and related components*
4. *A summary of the types of defects, deficiencies, and potential problems associated with breathing air and purification systems*
5. *A summary of cascading operations, high-pressure air regulation, and purification testing*
6. *A summary of the function, construction, and operation of drive units and compressors*
7. *A summary of test methods and troubleshooting procedures*
8. *A summary of how to select and use tool and test and calibration equipment*
9. *A summary of manufacturer and AHJ system inspection, maintenance, and documentation procedures*
10. An emergency response vehicle with a breathing air and purification system
11. An inspection checklist
12. Quality sample kits
13. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, and operation of a breathing air purification system, high-pressure air regulation, and related components
2. Describe types of defects, deficiencies, and potential problems associated with breathing air and purification systems
3. Describe cascading operations, high-pressure air regulation, and purification testing
4. *Describe the function, construction, and operation of drive units and compressors*
5. Describe test methods and troubleshooting procedures
6. Select and use *tools* and test and calibration equipment
7. Describe manufacturer and AHJ system inspection and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, and mounting of all components of a breathing air and purification system utilizing manufacturer specifications and appropriate checklists:
 - Drive unit and compressors
 - Electrical protection devices
 - Safety devices



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CERTIFICATION TRAINING STANDARDS

- Interlocks
 - Instrumentation
 - Filtration systems
2. Verify drive unit fluid levels
 3. Verify compressor fluid levels and condition
 4. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
 5. Document inspection

STANDARD:

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

12: MAINTAINING, REPAIRING, AND PERFORMANCE TESTING BREATHING AIR SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTIONS 4.7.8, 5.7.8, AND 5.7.9

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of test procedures*
4. *A summary of troubleshooting procedures*
5. *A summary of adjustment methods and procedures*
6. *A summary of how to inspect and repair or replace system components*
7. *A summary of lubricants and lubrication systems*
8. *A summary of how to select and use tools and test and calibration equipment*
9. *A summary of compressed breathing air quality standards and air quality testing agencies*
10. *A summary of purification testing*
11. *A summary of compressor manufacturers or manufacturer representatives*
12. *A summary of manufacturer and AHJ inspection, diagnostic, repair, maintenance, and documentation procedures*
13. An emergency response vehicle with a breathing air and purification system
14. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
15. NFPA 1989, Standard on Breathing Air Quality for Emergency Services Respiratory Protection
16. A maintenance schedule and checklist
17. An inspection report detailing a deficiency or deformation
18. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe test procedures
2. Describe troubleshooting procedures
3. Describe adjustment methods and procedures
4. Inspect and repair or replace system components
5. Describe lubricants and lubrication systems
6. Select and use *tools* and test and calibration equipment
7. Identify compressed breathing air quality standards and air quality testing agencies
8. Describe purification testing
9. Identify compressor manufacturers or manufacturer representatives
10. Describe manufacturer and AHJ system maintenance, diagnostic, repair, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair all components of a breathing air and purification system in accordance with manufacturer specifications:
 - Drive unit and compressors
 - Electrical protection devices
 - Safety devices
 - Interlocks
 - Instrumentation
 - Filtration systems
2. Ensure breathing air is within purification standards and regulations
3. Diagnose defective components
4. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components:
 - Mounts
 - Drive systems
 - Pumps
 - Piping
 - Valves
 - Fittings
 - Tanks
5. Conduct operational and performance tests
 - Ensure that compressor performs to manufacturer original requirements
 - Document results in accordance with NFPA standards, manufacturer, and the AHJ
6. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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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CERTIFICATION TRAINING STANDARDS

13: INSPECTING AUXILIARY AIR SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTIONS 4.7.9 AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of the function, construction, and operation of auxiliary air compressors, drive units, and related components*
4. *A summary of the types of instrumentation*
5. *A summary of pressure control and safety devices, packing, and seals*
6. *A summary of warning and interlock systems*
7. *A summary of the types, grades, and viscosity of lubricants*
8. *A summary of how to select and use tools and test and calibration equipment*
9. *A summary of the types of defects, deficiencies, and potential problems associated with auxiliary air compressors, drive units, and related components*
10. *A summary of common failure symptoms associated with component interfaces of related equipment*
11. *A summary of manufacturer and AHJ inspection, operational testing, and documentation requirements and procedures*
12. *An auxiliary air compressor*
13. An emergency response vehicle with an auxiliary air compressor
14. An inspection checklist
15. Tools and test equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the function, construction, and operation of auxiliary air compressors, drive units, and related components
2. Describe types of instrumentation
3. Describe pressure control and safety devices, packing, and seals
4. Describe warning and interlock systems
5. Describe types, grades, and viscosity of lubricants
6. Select and use *tools* and test and calibration equipment
7. Describe types of defects, deficiencies, and potential problems associated with auxiliary air compressors, drive units, and related components
8. Describe common failure symptoms associated with component interfaces of related equipment
9. Describe manufacturer and AHJ inspection, operational testing, and documentation requirements and procedures



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CERTIFICATION TRAINING STANDARDS

JOB PERFORMANCE REQUIREMENTS:

1. Inspect operation, condition, and mounting of an auxiliary air compressor, drive units, and related components utilizing manufacturer specifications and appropriate checklists:
 - Auxiliary air compressor
 - Warning systems
 - Instrumentation
 - Interlock systems
 - Drive system
2. Assess condition of air tank, dryer, reels, hoses, piping, valves, and fittings
3. Verify recommended fluid levels and condition
4. Identify and report defects and deficiencies including broken, loose, worn, or missing components to the AHJ
5. Document inspection and tests

STANDARD:

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

14: MAINTAINING AND REPAIRING AUXILIARY AIR SYSTEMS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTIONS 4.7.10 AND 5.7.10

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of test procedures*
4. *A summary of lubricants and lubrication systems*
5. *A summary of how to select and use tools and test and calibration equipment*
6. *A summary of troubleshooting procedures*
7. *A summary of adjustment and calibration methods and procedures*
8. *A summary of the inspection and repair or replacement of system components*
9. *A summary of manufacturer and AHJ inspection, repair, diagnostic, maintenance, and documentation procedures*
10. An emergency response vehicle with an auxiliary air compressor
11. An emergency response vehicle with an auxiliary air system
12. A maintenance schedule and checklist
13. An inspection report detailing a deficiency or deformation
14. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe test procedures
2. Describe lubricants and lubrication systems
3. Select and use *tools* and test and calibration equipment
4. Describe troubleshooting procedures
5. Describe adjustment and calibration methods and procedures
6. Repair or replace system components
7. Describe manufacturer and AHJ maintenance, repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Maintain or repair all components of auxiliary air compressors, drive units, and related components in accordance with manufacturer specifications:
 - Auxiliary air compressor
 - Warning systems
 - Instrumentation
 - Interlock systems
 - Drive systems



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CERTIFICATION TRAINING STANDARDS

2. Replace filters
3. Repair leaks in hoses, piping, valves, and fittings
4. Apply recommended lubricants
5. Ensure all electrical connections are clean and tight
6. Diagnose defective components
7. Repair, *rebuild*, or replace *defective*, broken, loose, worn, or missing components
8. Conduct performance tests
9. Document maintenance and repair activities and report additional required repairs to the AHJ

STANDARD:

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

15: REPAIRING CAB AND BODY

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 5.3.1, 5.3.2, 5.3.3, 5.3.4, AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of welding and fabrication principles and procedures*
4. *A summary of failures and restoration of finishes, signs, labels, and paint*
5. *A summary of principles of pneumatic, hydraulic, and electric operation*
6. *A summary of safety precautions to avoid hazardous conditions*
7. *A summary of how to select and use tools and equipment*
8. *A summary of troubleshooting procedures*
9. *A summary of repair, rebuilding, and replacement procedures*
10. *A summary of adjustment and alignment procedures*
11. *A summary of verification testing*
12. *A summary of manufacturer and AHJ repair, diagnostic, and documentation procedures*
13. An emergency response vehicle with a cab tilt system
14. An inspection report detailing a deficiency or deformation
15. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe welding and fabrication principles and procedures
2. Describe failures and restoration of finishes, signs, labels, and paint
3. Describe principles of pneumatic, hydraulic, and electric operation
4. *Describe safety precautions to avoid hazardous conditions*
5. Select and use tools and equipment
6. Describe troubleshooting procedures
7. Describe repair, rebuilding, and replacement procedures
8. Describe adjustment and alignment procedures
9. Describe verification testing
10. Describe manufacturer and AHJ repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Follow safety precautions to avoid hazards during repairs
2. Diagnose defective components
3. Repair, rebuild, or replace *defective*, broken, loose, worn, or missing parts to manufacturer specifications:
 - Cab

- Cab tilt system
 - Body
 - Compartment
 - Storage area
 - Equipment-mounting systems and racks
4. Fabricate, adjust, align, and lubricate components
 5. Resolve hazardous conditions
 6. Conduct operational tests and verify performance
 7. Document repairs in accordance with manufacturer and AHJ procedures

STANDARD:

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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16: REPAIRING ELECTRONIC CONTROLS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 5.4.2 AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of safety procedures*
4. *A summary of the function, construction, operation, and requirements of electronic engine, transmission, and brake controls, instrumentation, load control devices, sequencers, interfaces, and interlocks*
5. *A summary of testing and programming procedures*
6. *A summary of repair procedures*
7. *A summary of how to select and use tools and test and calibration equipment*
8. *A summary of electronic schematic usage*
9. *A summary of digital volt-ohmmeter, electronic readers, and fault code interpretation*
10. *A summary of common deficiencies*
11. *A summary of manufacturer and AHJ diagnostic, repair, and documentation procedures*
12. An emergency response vehicle
13. An inspection report detailing a deficiency or deformation
14. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe safety procedures
2. Describe the function, construction, operation, and requirements of electronic engine, transmission, and brake controls, instrumentation, load control devices, sequencers, interfaces, and interlocks
3. *Describe testing and programming procedures*
4. Describe repair procedures
5. Select and use *tools* and test and calibration equipment
6. *Describe electronic schematic usage*
7. Describe digital volt-ohmmeter, electronic readers, and fault code interpretation
8. Describe common deficiencies
9. Describe manufacturer and AHJ diagnostic, repair, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Diagnose defective components
2. Perform repairs on electronic controls and instrumentation:
 - Engine

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- Transmission
 - Brake electronic control units
 - Electronic control modules
 - Pump throttles and pressure control devices
 - Load control devices
 - Sequencer
 - Interfaces
 - Interlocks
3. Repair, rebuild, or replace *defective*, broken, loose, worn, or missing parts to manufacturer specifications
 4. Verify programming:
 - *Version*
 - *Calibration level*
 5. Conduct operational tests and verify performance
 6. Document repairs in accordance with manufacturer and AHJ procedures

STANDARD:

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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17: REPAIRING FOAM AND WATER TANKS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 5.5.2 AND THE <i>STATE FIRE MARSHAL</i>

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. A summary of materials recognition
4. A summary of cleaning and coating procedures
5. A summary of flow requirements
6. A summary of how to select and use *tools* and test and calibration equipment
7. A summary of testing procedures
8. A summary of troubleshooting procedures
9. A summary of manufacturer an AHJ diagnostic, repair, and documentation procedures
10. An emergency response vehicle with a water or foam tank
11. An inspection report detailing a deficiency or deformation
12. Tools

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe materials recognition
2. Describe cleaning and coating procedures
3. Describe flow requirements
4. Select and use *tools* and test and calibration equipment
5. Describe testing procedures
6. Describe troubleshooting
7. Describe manufacturer an AHJ diagnostic, repair, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. *Diagnose defective components*
2. Repair, rebuild, or replace *defective*, broken, loose, worn, or missing parts to manufacturer specifications
3. Verify interior and exterior surfaces are free of corrosion/*erosion*
4. Renew coatings
5. Conduct service flow test of the tank(s)
6. Document repairs in accordance with manufacturer and AHJ procedures

STANDARD:

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

18: REPAIRING AND PERFORMANCE TESTING COMPRESSED AIR FOAM SYSTEMS (CAFS)

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTIONS 5.7.3 AND 5.7.4

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. A summary of manufacturer specifications
3. *A summary of principles of compressed air systems*
4. *A summary of safety procedures*
5. *A summary of foam proportioning systems*
6. *A summary of lubrication and fluid types*
7. *A summary of operational and performance testing procedures and requirements*
8. *A summary of foam and compressed air flow calculations*
9. *A summary of how to select and use tools and test and calibration equipment*
10. *A summary of diagnostic procedures*
11. *A summary of adjustment methods and procedures*
12. *A summary of manufacturer and AHJ repair, diagnostic, and documentation procedures*
13. An emergency response vehicle with a CAFS
14. NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
15. An inspection report detailing a deficiency or deformation
16. Facilities
17. Tools and test and calibration equipment

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe principles of compressed air systems
2. Describe safety procedures
3. Describe foam proportioning systems
4. Describe lubrication and fluid types
5. Describe operational and performance testing procedures and requirements
6. Describe foam and compressed air flow calculations
7. Select and use *tools* and test and calibration equipment
8. Describe diagnostic procedures
9. Describe adjustment methods and procedures
10. Describe manufacturer and AHJ repair, diagnostic, and documentation procedures

JOB PERFORMANCE REQUIREMENTS:

1. Diagnose defective components

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2. Repair, rebuild, or replace *defective*, broken, loose, worn, or missing parts to manufacturer specifications:
 - Component mounts
 - Drive systems
 - Pumps
 - Plumbing
 - Valves
3. Restore fluid levels
4. Conduct operational tests and verify performance
5. Document repairs in accordance with manufacturer and AHJ procedures
6. Complete performance testing on a CAFS and related components in accordance with NFPA 1911, Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus
7. Document testing in accordance with NFPA standards and AHJ requirements

STANDARD:

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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1: THE ROLE OF THE EMERGENCY VEHICLE LEAD TECHNICIAN

AUTHORITY: STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. AHJ standard operating procedures, rules, and regulations
2. NFPA standards
3. Federal Motor Carrier Safety Regulations
4. A sample budget

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the roles and responsibilities of an emergency vehicle lead technician within the organization
 - Task assignments
 - Training
 - Performance evaluations
 - Disciplinary processes
 - Workplace safety
 - EPA regulation compliance
 - Documentation
 - Quality control
 - Fire apparatus specifications
2. Identify AHJ standard operating procedures, rules, and regulations as they apply to the emergency vehicle lead technician
3. Describe the critical aspects of NFPA standards as they apply to the emergency vehicle lead technician:
 - 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. Apply Federal Motor Carrier Safety Regulations as they apply to emergency vehicle technician's roles and responsibilities
5. Identify budgetary processes and how they impact the role of the emergency vehicle lead technician

JOB PERFORMANCE REQUIREMENTS:

No JPRs identified for this CTS

STANDARD:



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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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2: TASK ASSIGNMENTS AND TRAINING

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.2.1 AND 6.2.2

PERFORMANCE GOAL

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

GIVEN:

1. A summary of skill levels of assigned technicians
2. A summary of agency priorities
3. A summary of available resources
4. A work order or assignment
5. An emergency vehicle
6. Work space
7. Tools, equipment, and parts

REQUISITE KNOWLEDGE AND SKILLS:

1. Identify skill levels of assigned technicians
2. Identify agency priorities
3. Identify available resources

JOB PERFORMANCE REQUIREMENTS:

1. Assign tasks or responsibilities to technicians
 - Use complete, clear, and concise instructions
 - Address safety considerations
 - Verify completion of tasks or responsibilities within scheduled timeframe
2. Verify that technician understands the procedure and can demonstrate proficiency at the given task
3. Conduct individual training for technicians

STANDARD:

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: PERFORMANCE EVALUATIONS AND THE DISCIPLINARY PROCESS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.2.3.1, 6.2.3.2, AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of standard operating procedures
2. *A summary of the goals of an evaluation program*
3. *A summary of AHJ policies and procedures related to performance levels and disciplinary action*
4. *A summary of organizational job descriptions to provide input on performance levels*
5. *A summary of how to analyze employee failure*
6. *A summary of the disciplinary process*
7. *A summary of typical employee behavior during an evaluation or disciplinary process*
8. *A summary of how to recognize potential problem areas before they become actual disciplinary issues*
9. A time record
10. Pertinent work orders
11. Evaluation forms
12. Employee history
13. *Sample disciplinary issues*

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe the goals of an evaluation program
2. Describe AHJ policies and procedures related to performance levels and disciplinary action
3. Use organizational job descriptions to provide input on performance levels
4. Analyze employee failure
5. *Describe the disciplinary process*
6. Describe typical employee behavior during an evaluation or disciplinary process
7. Recognize potential problem areas before they become actual disciplinary issues:
 - *Sexual harassment*
 - *Hostile work environment*
 - *Unsafe work practices*
 - *External pressures on employees*

JOB PERFORMANCE REQUIREMENTS:

1. Provide input on a technician's performance level
 - Determine a technician's abilities and weaknesses
 - Schedule training to maintain or improve a technician's proficiency as needed



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2. Recommend, specify, and enforce discipline, giving the necessary guidance, to improve or resolve issues
 - Schedule required counseling *as needed*
 - Refer an issue to the next level of supervision *when necessary*

STANDARD:

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: WORKPLACE SAFETY

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.2.3.3 AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of agency policies and procedures related to workplace safety
2. A summary of federal, state, local, *AHJ*, and industry standards for workplace safety
3. *A summary of safe work practices*
4. *A summary of equipment limitations*
5. *A summary of personal protective devices*
6. A summary of safety hazards

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe agency policies and procedures related to workplace safety
2. Apply federal, state, local, *AHJ*, and industry standards for workplace safety
3. *Identify safe work practices*
4. *Describe equipment limitations*
5. *Identify personal protective devices*

JOB PERFORMANCE REQUIREMENTS:

1. Recommend and enforce safety policies and procedures
2. Monitor workplace safety
3. Document recommendations for *correcting* safety deficiencies

STANDARD:

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: ENVIRONMENTAL PROTECTION AGENCY (EPA) REGULATION COMPLIANCE

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS
(2011): SECTION 6.2.3.4

PERFORMANCE GOAL

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

GIVEN:

1. A summary of agency policies and procedures *related to environmental regulation compliance*
2. A summary of federal, state, and local environmental regulations
3. A summary of how to maintain material safety data sheets (MSDS)
4. Material safety data sheets (MSDS)

REQUISITE KNOWLEDGE AND SKILLS:

1. Apply agency policies and procedures related to environmental regulation compliance
2. Apply federal, state, and local environmental regulations
3. Maintain material safety data sheets (MSDS)

JOB PERFORMANCE REQUIREMENTS:

1. Monitor compliance with applicable environmental regulations
2. Verify workplace compliance with all regulations
3. Identify and correct all deficiencies

STANDARD:

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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6: DOCUMENTATION: ESTIMATES, SCHEDULES, AND REPORTS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.5.1, 6.5.2 AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of required recordkeeping and documentation
2. A summary of AHJ policies, procedures, and recordkeeping system
3. A summary of parts and components costs
4. A summary of available resources
5. A summary of how to determine repair times
6. A summary of the components of a maintenance or repair schedule
7. A summary of the components of standard emergency vehicle repair reports
8. A summary of how to verify activity or documentation completion
9. An emergency response vehicle
10. Repair history
11. Estimate forms
12. Parts lists
13. Required repair or upgrade hours
14. A calculator
15. A schedule
16. Maintenance forms
17. A repair or maintenance request
18. Current staffing and workload
19. Work estimate
20. Work space availability

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe required recordkeeping and documentation
2. Identify AHJ policies, procedures, and recordkeeping system
3. Identify parts and components costs
4. Identify available resources
5. Determine repair times
6. Describe the components of a maintenance or repair schedule
7. Describe the components of standard emergency vehicle repair reports
8. Describe how to verify activity or documentation completion

JOB PERFORMANCE REQUIREMENTS:

1. Prepare an estimate of deficiencies or upgrades that calculates, documents, and communicates costs



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2. *Prepare and adhere to a maintenance or repair schedule*
3. *Assign and verify completion of required repairs or maintenance in accordance with the projected timeframe*
4. *Prepare standard reports related to emergency vehicle repair*

STANDARD:

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: DOCUMENTATION: WARRANTIES, WORK ORDERS, AND MAINTENANCE RECORDS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.5.3, 6.5.4, 6.5.5, AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. A summary of AHJ policies, procedures, and recordkeeping system
2. *A summary of the components of a work order*
3. *A summary of how to prepare a work order*
4. *A summary of how to evaluate previous repair history*
5. *A summary of how to use accounting information and statistical analysis to identify trends*
6. *A summary of reference technical service bulletins*
7. *A summary of current warranties to determine job assignment*
8. *A summary of required testing*
9. *A summary of how to verify activity or documentation completion*
10. An emergency response vehicle
11. A repaired *emergency response vehicle*
12. Applicable warranties
13. A deficiency list
14. Technical service bulletins
15. A list of completed tasks
16. Agency work order forms
17. Completed documentation of maintenance records

REQUISITE KNOWLEDGE AND SKILLS:

1. Describe required recordkeeping and documentation
2. Identify AHJ policies, procedures, and recordkeeping system
3. *Describe the components of a work order*
4. *Prepare a work order*
5. Evaluate previous repair history
6. Use accounting information and statistical analysis to identify trends
7. Reference technical service bulletins
8. Identify current warranties to determine job assignment
9. Identify required testing
10. *Describe how to verify activity or documentation completion*

JOB PERFORMANCE REQUIREMENTS:

1. Verify that emergency response vehicle is prepared for repair or maintenance
2. Create work orders that document all required information and work to be performed
3. Communicate work order information to technician(s)



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4. Verify repair completion and testing
5. Verify warranty claim processing
6. Document warranty repairs
7. Validate records
8. Maintain accurate records

STANDARD:

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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8: INVENTORY

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.4.1, 6.4.2, AND THE STATE FIRE MARSHAL

PERFORMANCE GOAL

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

GIVEN:

1. A summary of AHJ policies, procedures, and standards
2. A summary of manufacturer specifications including any recommended part substitutions
3. A summary of current suppliers and vendors
4. A summary of the parameters for supplier selection
5. A summary of how to use previous repair history to anticipate inventory needs
6. A summary of how to establish, track, and maintain inventory levels
7. A summary of how to prepare, track, and record purchase orders and purchases
8. Current inventory
9. Agency equipment lists
10. A maintenance schedule
11. Previous repair history
12. Manufacturer parts manuals
13. Part numbers or specifications and applications of part required
14. Purchase order form and procedure
15. Vendor lists

REQUISITE KNOWLEDGE AND SKILLS:

1. Identify AHJ policies, procedures, and standards
2. Identify manufacturer specifications including any recommended part substitutions
3. Identify current suppliers and vendors
4. Describe parameters for supplier selection:
 - Parts availability
 - Parts cost
 - Shipping cost
 - Delivery time
 - History
 - AHJ purchasing policies
5. Describe how to use previous repair history to anticipate inventory needs
6. Establish, track, and maintain inventory levels
7. Prepare, track, and record purchase orders and purchases

JOB PERFORMANCE REQUIREMENTS:

1. Monitor inventory levels within the relevant level of responsibility
2. Maintain inventory at the required levels



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3. Order correct part from the vendor
4. Track purchase orders
5. Track and record purchases

STANDARD:

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: QUALITY CONTROL

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTIONS 6.3.1.1, 6.3.1.2, AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. *A summary of the quality control inspection process*
2. *A summary of vehicle safety requirements for quality control*
3. *A summary of qualifications and limitations of service providers*
4. An emergency response vehicle
5. A completed emergency response vehicle
6. A deficiency list
7. Required licenses
8. A list of completed tasks

REQUISITE KNOWLEDGE AND SKILLS:

1. *Describe the quality control inspection process*
2. *Identify vehicle safety requirements for quality control*
3. *Identify qualifications and limitations of service providers*

JOB PERFORMANCE REQUIREMENTS:

1. Inspect a completed vehicle to verify vehicle is tested to manufacturer specifications, deficiencies are repaired, and documentation is complete
2. Monitor outsourced repairs to verify vehicle is tested to manufacturer specifications, deficiencies are repaired, and documentation is complete

STANDARD:

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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10: FIRE APPARATUS SPECIFICATIONS

AUTHORITY: NFPA 1071 STANDARD FOR EMERGENCY VEHICLE TECHNICIAN PROFESSIONAL QUALIFICATIONS (2011): SECTION 6.6.1 AND THE *STATE FIRE MARSHAL*

PERFORMANCE GOAL

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

GIVEN:

1. *A summary of AHJ requirements in developing specifications*
2. *A summary of the recommendations, requirements, and standards of oversight and regulatory agencies in developing specifications*
3. *A summary of how to review and research existing fire apparatus, agency needs, and specifications*
4. *A summary of agency committee recommendations*
5. *A summary of agency policies and procedures*
6. *A summary of applicable NFPA Standards*
7. *A summary of applicable oversight and regulatory agencies' roles, requirements, and standards*

REQUISITE KNOWLEDGE AND SKILLS:

1. *Identify AHJ requirements in developing specifications*
2. *Identify the recommendations, requirements, and standards of oversight and regulatory agencies in developing specifications*
3. *Review and research existing fire apparatus, agency needs, and specifications*

JOB PERFORMANCE REQUIREMENTS:

1. *Develop and present emergency vehicle technical criteria as a completed specification*

STANDARD:

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