Reference Material: This exam may contain some "accepted practice" type questions not found in the reference material. When an inconsistency arises between NFPA 414 and FAA 10E, NFPA 414 will take precedence.

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus*.

NFPA 414 *Standard for Aircraft Rescue and Fire-Fighting Vehicles*

National Fire Protection Association, Quincy, MA (800) 344-3555 or www.nfpa.org


Any hydraulic reference material with symbols such as *Fluid Power Designers’ Lightning Reference Handbook*, -


Cummins After Treatment System [https://cumminsengines.com/cummins-aftertreatment-system](https://cumminsengines.com/cummins-aftertreatment-system)

Any recognized manufacturer’s training manuals

**Learning Objectives for the A-2 Exam**

1. **Definitions**: The Aircraft Rescue Vehicle Technician shall define the terms and phases commonly used in connection with the operation and/or testing of ARFF Vehicles, to include the following:

   **a. Vehicle Chassis:**
   

   **b. Vehicle Components:**
   
   (1) Body and Cab  (a) warning lights  (2) Eductor  (3) Proportioner  (4) Foam Agent Pump (not transfer pump)  (5) Dual Agent Nozzle & Turret  (6) Built in battery Charger  (7) Valves and plumbing  (8) MADAS  (9) Generators  (a) Bonding  (10) Lateral Acceleration Indicator (LAI)  (11) Elevated Waterway Nozzles

   **c. Emissions**
   
   (1) SCR - Selective catalytic reduction  (2) DEF - Diesel Exhaust Fluid  (3) DOC - Diesel Oxidation Catalysts  (4) CCF - Closed Crankcase Filter  (5) DPF - Diesel Particulate Filter  (6) Dosing Valve  (7) Regeneration  (8) Ultra Low Sulfur Diesel Fluid

2. **Principles of operation**: Understand the basic operating principles of the chassis and its components.

   **a. Identify Hydraulic and Air system symbols, such as:**
   
   (1) Hydraulic Pump  (2) Pressure Protection Valve

   **b. Describe the Function and Application of the following:**
   
   (1) Engine Governors  (2) All Wheel Drive  (3) Pump and Roll  (4) Quick build up air systems  (5) Steering and Suspension  (6) Built in battery charger  (7) Air Mechanical Brakes  (8) Air-over Hydraulic Brakes  (9) Dual Agent Nozzle & Turret  (10) Windshield deluge system  (11) Winterization system  (12) Exhaust system  (13) Pressure relief valves  (14) Side Slope (SAEJ2180)

3. **Principles of Repair, Maintenance & Troubleshooting**: The Aircraft Rescue Vehicle Technician shall understand the principles of service of Aircraft Rescue and Fire-Fighting Vehicles.

   **a. Identify Service and Preventative Maintenance Activities:**
   
   (1) Types of inspections & procedures  (4) Use of maintenance schedules  (2) Purpose of visual inspections  (5) Manufacturers "Accepted Practice" methods  (3) Maintenance records  (6) Procedures  (7) Vehicle retirement

   **b. Troubleshooting and repair procedures:**
   
   (1) Diagnose common problems  (7) Identify Out-of-Service criteria  (2) Interpret schematics/diagrams  (3) Retrieve and interpret diagnostic codes  (4) Describe use of diagnostic equipment  (5) Understand operational test requirements  (6) Identify "Accepted Practice" repair procedures