

**Reference Materials:**

Note: This exam may contain "accepted practice" type questions not found in reference material.

When an inconsistency arises between NFPA 414 and FAA 10D, NFPA 414 will take precedence.

**Pumping Apparatus DRIVER/OPERATOR Handbook**, 3rd edition, International Fire Service Training Association (IFSTA), 800-654-4055 or [www.ifta.org](http://www.ifta.org); Ch. 5,9 & 10

NFPA 412 **Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Equipment**

National Fire Protection Association, Quincy, MA (800) 344-3555 or [www.nfpa.org](http://www.nfpa.org)

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

National Fire Protection Association, Quincy, MA. (800) 344-3555 or [www.nfpa.org](http://www.nfpa.org)

**FAA Advisory Circular 10-E** [www.faa.gov](http://www.faa.gov)

Any Major Fire Pump Manufacturer Repair Manual

**Learning Objectives for the ARFF-3 Exam****1. Fire and Water Pump Systems**

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|------------------------------|---------------------------------|------------------|
| a. Hydraulic Theory          | d. Controls and Instrumentation | g. Pump and Roll |
| b. Mechanical                | e. Over Heat Protection         | h. Interlock     |
| c. Operations and Components | f. Pump Engagement              |                  |

**2. Plumbing Systems**

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|---------------------------|---------------------|------------------|
| a. Hose Reel Hand Lines   | f. Water tank       | j. Piping        |
| b. Master Drains          | g. Flow Switches    | k. Valve         |
| c. Windshield Deluge      | h. Interlocks       | l. Winterization |
| d. Pressure Relief Valves | i. Structural Panel |                  |
| e. Priming System         |                     |                  |

**3. Foam Systems**

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|-----------------------------|--------------------------|------------------------|
| a. Transfer Pumps           | f. Foam Tanks            | k. Foam Pumps          |
| b. Flushing Systems         | (1) Mounting             | l. Testing             |
| c. Instruments and Controls | g. Metering Valves       | (1) Foam Concentration |
| d. Interlocks               | h. Proportioning Systems | m. Premix              |
| e. Check Valves             | i. Foam Agents           | n. CAFS                |
|                             | j. Eductors              | o. Fluoroprotein       |
|                             |                          | p. Protein Foam        |

**4. Nozzle and Turret Systems**

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|-----------------------|-------------------------|-----------------------------------|
| a. Piercing Nozzles   | g. Micro-Processors     | n. Dual Agent Turrets             |
| b. Discharge Patterns | h. Joysticks            | o. Dual Rate Turrets              |
| c. Non-Aspirated      | i. Auto oscillation     | p. Bumper Turrets                 |
| d. Aspirated          | j. Hydraulic Controls   | q. Roof Turrets                   |
| e. Electric Controls  | k. Actuators            | r. Interlock Systems              |
| f. Manual Overrides   | l. Ground Sweep Systems | s. Elevated Water-Way Systems     |
|                       | m. Under Truck Nozzles  | t. Parallel multiple agent nozzle |

**5. Ancillary Agent Systems**

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|------------------------------------|---------------------------|--|
| a. Instruments and Controls        | f. Check Valves           | l. Dual Agent Nozzles  |
| b. Refilling Agents                | g. Safety Valves          | m. Propellant Gases  |
| c. Caking and Fluffing             | h. Pressure Regulators    | n. Agents  |
| d. Plumbing                        | i. Pressure Vessels       | o. Interlocks  |
| (1) Halogenated agent              | j.                        | p. Flow and Range Performance parameters for clean agent systems |
| e. Discharge and Blow Down Systems | k. Hydro Chemical Nozzles |  |