

F-7 Foam Systems

March 2008

Reference Material: Note: Exam may contain “accepted practice” type questions not found in the reference material listed below
NFPA 1901, *Standard for Automotive Fire Apparatus*, 2003 edition Chapters 21, 22 and appropriate annex
NFPA 1911 *Standard for Inspections, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus*
Chapters 11, 12, 18 and appropriate annex

Fire Department Pumping Apparatus Maintenance, First edition, by Don Henry, Oklahoma State University

IFSTA *Principals of Foam Firefighting* 2nd edition Chapters 2, 3, 4, glossary and appendix

IFSTA *Driver/Operator Handbook*, 2nd edition Chapters 15, 16, glossary and appendix

Fire pump manufacturer’s operations manual

Hale CAFS Pro System User Operation Training Manual. To download, go to www.haleproducts.com, then downloads, manuals, CAFSPro Manual.

Waterous “Eclipse” CAFS System Operation and Maintenance Form F131 Section 2121. To download go to; www.waterousco.com/servicemanual/Eclipse/SEC2121.PDF

Waterous 200P PTO Driven Compressor Kit Installation and Operations Instructions. To download go to: <http://pneumaxcafs.com/support.htm>

Manufacturer’s web sites go to www.waterousco.com or www.wsdarley.com or www.foammpro.com

LEARNING OBJECTIVES FOR THE F7 EXAM

1. **Principals of Foam:** The Fire Apparatus Technician should understand the principals of foam firefighting
 - a. Foam Types
 - b. Characteristics
 - c. Application
 - (1) Induction
 - (2) Injection
 - (3) Pre-mix
 - (4) Batch-mix
 - d. Limitations
2. **Foam Systems and Operations:** The Fire Apparatus Technician should understand the requirements for foam systems and operations
 - a. Systems
 - (1) Eductor Type
 - (2) Installed In-line Eductor System
 - (3) Around the Pump Proportioners
 - (4) By-pass Balanced Pressure Proportioners
 - (5) Variable Flow - Demand Type Pressure Proportioner
 - (6) Variable Flow - Variable Rate Direct
 - (7) C.A.F.S.
 - (a) Compressor Engagements
 - b. Operations
 - (1) Cleaning and Flushing
 - (2) Labeling
 - (3) Safety
 - (4) Injections rates
 - c. Foam Concentrate Storage
3. **Mechanical Components:** The Fire Apparatus Technician should understand the requirements for mechanical components
 - a. Nozzles
 - b. Tanks
 - (1) Atmosphere
 - (2) Pressure
 - c. Hose
 - d. Strainers
 - e. Check Valves
 - f. Flow Meters
 - g. Controlers
 - (1) Electronics
 - h. Proportioners
 - i. Manifolds
 - j. Water Filters
 - k. Oil Separators
 - l. Compressors
 - m. Injectors
 - n. Pressure Indicating Devices & Gauges
4. **Maintenance and Testing:** The Fire Apparatus Technician should understand the proper maintenance and testing procedures
 - a. Maintenance
 - (1) Air Compressor Systems
 - (a) Frequency
 - (b) Filters/Strainers
 - (c) Fluids
 - (d) Adjustments
 - (e) Compressor Drives
 - (2) Proportioning System
 - (a) Flushing
 - (b) Calibration
 - (c) Strainers
 - (d) Frequency
 - b. Testing
 - (1) Air Compressor systems
 - (a) Air Flow
 - (b) Pressure Balance
 - (2) Proportioning Systems
 - (a) Test Methods
 - (b) Concentration Flows
 - (c) Flow Meters
 - c. Troubleshooting guides
 - (1) Air compressor systems
 - (2) Proportioning systems
 - d. Repairs
 - (1) Air compressor drives
 - (2) Proportioning systems
 - (3) Out of service criteria