



NYC Department of Buildings
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Report of Materials and Equipment Acceptance Division

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use subject to the terms and conditions contained herein.

MEA 232-07-E

Manufacturer: Fireflex Systems Inc., 1935 Lionel-Bertrand Blvd.,
Boisbriand, Quebec, Canada J7H 1N8

Trade Name(s): Fireflex Systems

Product: Integrated compressed air-foam fire extinguishing
systems for fixed-piping networks

Pertinent Code Section(s): Subchapter 17 and Reference Standard RS 17

Prescribed Test(s): FM Approvals Standards – 5135

Laboratory: Factory Mutual Approvals

Test Report(s): Project ID: 3019601 dated October 28, 2004
Project ID: 3025398 dated March 13, 2006
Project ID: 3026593 dated November 9, 2006

Description: The fire extinguishing system is used to protect flammable liquid hazards, in local applications. It is a deluge-type system, wherein foam will discharge simultaneously from all nozzles upon system activation. It may be triggered electrically, manually, or pneumatically. The system may be designed to protect a single or multiple zones.

The extinguishing agent is compressed air foam (CAF). CAF is generated by a proprietary-mixing device that combines the foam concentrate, water, and compressed air. Two FM-approved AFFF (aqueous film-forming) concentrates, National Foam Aer-O-Lite 3% and Aer-O-Water 3EM 3% were submitted for use with these systems. CAF uses the concentrates at a 2 percent dilution ratio, rather than the 3 percent used to produce typical AFFF. It also exhibits higher expansion ratios and much smaller and more consistent bubble size than AFFF, providing it with substantially different buoyancy and stability. This allows it to successfully extinguish fires at this low application rate.

CAF is generated at the mixer and moves through the piping as a foam. It is discharged from proprietary nozzles at an application rate of 0.04 gal/min/ft².

In addition to the two currently FM-approved AFFF concentrates, it is permitted to use of the Ansul 3X3 LV concentrate at 6 percent concentration for use on both hydrocarbon and listed polar solvent fires.

The 3X3 LV based CAF is discharged from proprietary nozzles at an application rate of 0.06 gal/min/ft², based upon a maximum nozzle coverage area of 100 ft².

The maximum specified asymmetry of systems using the 3X3 LV concentrate is 6 x 12.8 ft (1.8 x 3.9 m).

The maximum installation height will be 46 ft when using the currently-approved concentrates. Systems using the 3X3 LV concentrates will be limited to a maximum installation height of 35 ft (10.7 m).

The Fireflex integrated compressed air foam system (ICAF) is a modular system and it is available in balanced piping configurations of 1, 2, 4, 8, 16, or 32 nozzles. Multiple systems can be ganged to protect larger hazards. The basic system module comprises compressed air storage tanks, a concentrate tank, the mixer, and various valves, pressure switches, and regulators mounted on a unitized skid. Control is via Fireflex's FM-approved, proprietary ARC-1 release panel.

Remarks:

Compatible MEA-approved detectors and the Fireflex ARC-1 panel must be used and must be specifically approved for the control of fixed extinguishing systems.

When disconnecting a fixed fire extinguishing system for testing or maintenance, it must be isolated mechanically from the control system by means of switches or similar devices and not solely by programming a control via software or firmware.

Installations of these systems are subject to the limitations specified in the FM Approvals report to remain within the scope of the approval and are subject to FM Global acceptance of plans prior to installation in FM Global insured property. Required design application rates may vary, depending upon FM Global guidelines or local jurisdictional rules for the hazard to be protected. Adequate and appropriate primary protection for the building, such as automatic sprinklers, is usually required irrespective of the installation of a special hazard extinguishing system. Generally, ICAF extinguishing systems are not accepted as primary protection for a building.

Pursuant to "Promulgation of the Rules relating to Material and Equipment Application Procedures" dated November 5, 1992, the Bureau of Fire Prevention has no objections Letter dated October 10, 2007, F.P. Index #0707026A.

Terms and Conditions: The above units are accepted on condition that:

1. The compressed air-foam system is used to protect flammable liquid hazards in local applications. Other applications shall be as tested and approved by a nationally recognized testing laboratory. It is a deluge-type system. It may be triggered electrically, manually or pneumatically. The system may be designed to protect a single or multiple zones. The system shall conform to the requirements of NFPA 11 and the Tentative Interim Amendment (NFPA 11) for the period that it is effective.
2. The system shall be in compliance with the requirements/conditions/limitations of Factory Mutual Research Corporations' Approval reports (Projects: #309601 dated October 28, 2004, #3021612 dated December 6, 2004, #3025398 dated March 13, 2006, #3025049 dated May 25, 2006 and #3026593 dated November 9, 2006) including the manufacturer's approved design manual and the applicable FM Global Property Loss Prevention Data Sheet.
3. High-pressure cylinders shall be FM-approved, and constructed to meet the specifications of DOT 3AA2300. Testing shall be in accordance with the requirements of the NYC Administrative Code 27-4100.
4. High-pressure cylinders used in compressed air-foam systems shall not be recharged without a hydrostatic test if more than 5 years have elapsed from the date of the last test in accordance with the NYC Administrative Code 27-4100.
5. The foam concentrate tank shall be FM-approved, and ASME code-stamped unfired pressure vessel. It shall be tested to ASME requirements and periodically tested at least once in five years in accordance with the NYC Administrative Code 27-4100.
6. The system shall be used only with the MEA-approved release panel ARC-1, compatible MEA-approved detectors, FM-approved foam concentrate for compressed air foam, FM-approved compressed air-foam discharge devices and FM-approved components and vessels.
7. Design shall be in accordance with the FM-approved Design Manual, FM-090M-0-1C.
8. The compressed air-foam system must be designed using FM-approved FireFlex's proprietary software, HydroPneumatic Calculations, Version 1.2, dated June 2006, and its user's manual FM080P-0-4, Revision B.
9. The application rate shall not be less than 0.04 gal/min/sq. ft.

10. The maximum installation height shall be 46 feet.
11. Compressed Air-Foam Systems are not permitted to be used on the following fire hazards:
 - a) Polar solvents
 - b) Chemicals, such as cellulose nitrate, that release sufficient oxygen or other oxidizing agents to sustain combustion
 - c) Energized unenclosed electrical equipment
 - d) Water-reactive metals, such as sodium, potassium and sodium-potassium alloys
 - e) Hazardous water-reactive materials, such as tri-ethyl-aluminum and phosphorus pentoxide
 - f) Liquefied flammable gas
12. High-pressure piping shall be clearly identified by means of labeling.
13. Installation shall comply with all applicable New York City codes, rules, regulations and testing requirements and NFPA 11.
14. The system shall be installed with manual discharge capabilities.
15. All alarms shall be in accordance with the applicable requirements of Reference Standard 17-3 of the NYC Building Code, the NYC Electrical Code and NFPA 11.
16. Compressed air-foam systems shall not be used in lieu of other extinguishing systems, such as sprinklers, required by the NYC Buildings unless specific approval is obtained by the NYC Department of Buildings for such an installation.
17. The system shall be subject to a satisfactory inspection and test in the presence of an inspector from the NYC Fire Department, Bureau of Fire Prevention, prior to placing the system in operation. Tests shall be in accordance with NFPA 11, applicable to compressed air-foam systems.
18. Maintenance shall be in accordance with NFPA 11 as applicable to compressed air-foam systems.
19. The discharge devices shall be visually inspected annually for the evidence of mechanical damage.
20. Each approved system shall bear a metal label, permanently affixed, indicating the MEA-approval number issued by the Material and Equipment Acceptance Division of the NYC Department of Buildings.

Final Acceptance

November 16, 2007.

Examined By

Donald [Signature]