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6.4.8 System Operational Tests. System operational tests shall be performed in accordance with the manufacturer's design, installation, and maintenance manual and include functional tests of the automatic detection system, the manual release devices, the gas shutoff, the shutoff of makeup air supplied internally to a hood, and the electrical power shutdown.

6.4.9 Releasing Control Panel.

6.4.9.1 Where a releasing control panel is provided, verification that it is connected to a dedicated circuit and labeled properly shall be required.

6.4.9.2 Where a releasing control panel is provided, verification that it is readily accessible and restricted from unauthorized personnel shall be required.

6.4.10 Return of System to Operational Condition.

6.4.10.1 Verification that each extinguishing agent storage container is reconnected and the system has been returned to its fully operational condition shall be required.

6.4.10.2 After completion of functional testing, if the system is connected to an alarm-receiving office, the alarm-receiving office and all concerned personnel at the end user's facility shall be notified that the fire system test is complete and that the system has been returned to full-service operational condition.

6.4.10.3* The installing contractor shall complete and sign an acceptance test report acceptable to the authority having jurisdiction.

6.4.10.4 The owner shall be provided with a copy of the manufacturer's design, installation, and maintenance manual or the owner's manual.

Chapter 7 Inspection, Maintenance, and Recharging

7.1 General. The responsibility for inspection, testing, maintenance, and recharging of the fire protection system shall ultimately be that of the owner(s) of the system, provided that this responsibility has not been transferred in written form to a management company, tenant, or other party.

7.2 Owner's Inspection.

7.2.1 On a monthly basis, inspection shall be conducted in accordance with 7.2.2 and the owner's manual.

7.2.1.1 The system owner shall maintain the design and installation documents and maintenance manual or owner's manual on the premises and shall make them available for review, upon request, by the authority having jurisdiction.

7.2.2 At a minimum, the inspection shall include verification of the following:

- (1) The extinguishing system is in its proper location.
- (2) The manual actuators are unobstructed.
- (3) The tamper indicators and seals are intact.
- (4) The maintenance tag or certificate is in place.
- (5) No obvious physical damage or condition exists that might prevent operation.

- (6) The pressure gauge(s), if provided, has been inspected physically or electronically to ensure it is in the operable range.
- (7) The nozzle blowoff caps, where provided, are intact and undamaged.
- (8) The hazard has not changed, including replacement, modification, and relocation of protected equipment.

7.2.3 If any deficiencies are found, appropriate corrective action shall be taken immediately.

7.2.3.1 Where the corrective action involves maintenance, it shall be conducted by a service technician as outlined in 7.3.1.

7.2.4 Personnel making inspections shall keep records for those extinguishing systems that were found to require corrective actions.

7.2.5 At least monthly, the date the inspection is performed and the initials of the person performing the inspection shall be recorded.

7.2.6 The records shall be retained for the period between the semiannual maintenance inspections.

7.3 Maintenance.

7.3.1* A service technician who performs maintenance on an extinguishing system shall be trained and shall have passed a written or online test that is acceptable to the authority having jurisdiction.

7.3.1.1 The service technician shall possess a certification document confirming the requirements in 7.3.1 and issued by the manufacturer or testing organization that is acceptable to the authority having jurisdiction.

7.3.2* A service technician who has the applicable manufacturer's design, installation, and maintenance manual and service bulletins shall service the wet chemical fire-extinguishing system at intervals of no more than 6 months as outlined in 7.3.3.

7.3.3* At least semiannually and after any system activation, maintenance shall be conducted in accordance with the manufacturer's design, installation, and maintenance manual.

7.3.3.1 Maintenance shall include the following:

- (1) A check to see that the hazard has not changed
- (2) An examination of all detectors, the expellant gas container(s), the agent container(s), releasing devices, piping, hose assemblies, nozzles, signals, all auxiliary equipment, and the liquid level of all nonpressurized wet chemical containers
- (3)* Verification that the agent distribution piping is not obstructed

7.3.3.2* Where maintenance of any wet chemical containers reveals conditions such as, but not limited to, corrosion or pitting in excess of the manufacturer's limits; structural damage; fire damage; or repairs by soldering, welding, or brazing, the affected container shall be hydrostatically tested in accordance with Section 7.5 or replaced in accordance with the instructions of the manufacturer or the listing agency.

7.3.3.3 Where maintenance of any wet chemical system components reveals corrosion or pitting in excess of the manufacturer's limits, structural damage, or fire damage, the affected part(s) shall be replaced.

7.3.3.4* All wet chemical systems shall be tested, which shall include operation of the detection system signals and releasing devices, including manual stations and other associated equipment.

7.3.3.5 Parts that are found during maintenance that could cause an impairment or failure of operation of the system shall be replaced by listed components as required by Section 4.1 in accordance with the manufacturer's instructions.

7.3.3.5.1 Until such repairs are accomplished, the systems shall be tagged as impaired, and the owner or owner's representative responsible for the system and, where required, the authority having jurisdiction shall be notified of the impairment.

7.3.3.5.2 When all repairs have been accomplished and the system has been restored to full operating conditions, all previously notified parties shall be informed that the system is in the full operating condition.

7.3.3.6 The maintenance report, including any recommendations, shall be filed with the owner or with the owner's representative.

7.3.3.6.1 The owner or owner's representative shall retain all maintenance reports for a period of 1 year after the next maintenance of that type required by the standard.

7.3.3.7* Each wet chemical system shall have a tag or label securely attached, indicating the month and year the maintenance is performed and identifying the person performing the service. Only the current tag or label shall remain in place.

7.3.4* Fixed temperature-sensing elements of the fusible metal alloy-type or glass bulb-type shall be replaced at least semiannually from the date of installation or more frequently, if necessary, and shall be destroyed when removed.

7.3.4.1* Replacement fixed temperature-sensing elements shall be listed and shall be the same temperature ratings as the ones being replaced unless temperature readings dictate a need for a change.

7.3.4.2 The year of manufacture and the date of installation of the fixed temperature-sensing element shall be marked on the system inspection tag, and the tag shall be signed or initialed by the installer.

7.3.5 Fixed temperature-sensing elements other than the fusible metal alloy type shall be permitted to remain continuously in service, provided they are inspected and cleaned or replaced, if necessary, in accordance with the manufacturer's instructions, every 12 months or more frequently to ensure proper operation of the system.

7.3.5.1 At a minimum, maintenance of restorable-type heat detectors shall include the following:

- (1) A visual inspection to determine whether there is damage to the detector or buildup of foreign debris
- (2) An operational/functional test in accordance with the detector manufacturer's testing instructions
- (3) A calibration verification test, if applicable, in accordance with the detector manufacturer's instructions

7.3.5.2 Nonrestorable heat detectors shall be functionally tested in accordance with the manufacturer's instructions.

7.3.5.3 Heat detectors and all associated wiring that show signs of fire damage shall be tested in accordance with the manufacturer's instructions and replaced if necessary.

7.3.6 Expellant Gas. A method and instructions shall be provided for checking the amount or the pressure of expellant gas to ensure that it is sufficient for proper operation of the system.

7.3.7 Access. System access for inspection or maintenance that requires opening panels in fire chases, ducts, or both shall not be permitted while any appliance(s) or equipment protected by that system is in operation.

7.4 Recharging.

7.4.1* **Recharge.** After any discharge or if insufficient charge is noted during an inspection or maintenance procedure, the following procedures shall be conducted in accordance with the manufacturer's design, installation, and maintenance manual:

- (1) The system shall be recharged.
- (2) The system shall be placed in the normal operating condition.
- (3) Following a discharge, the piping shall be flushed and blown out with dry air or nitrogen in accordance with the manufacturer's design, installation, and maintenance manual.

7.4.2 Systems shall be recharged in accordance with the manufacturer's design, installation, and maintenance manual.

7.4.3 After any discharge, the system piping shall be flushed and blown out with dry air or nitrogen in accordance with the procedures detailed in the manufacturer's design, installation, and maintenance manual.

7.4.4* **Storage.** Recharging supplies of wet chemical shall be stored in the original closed shipping container supplied by the manufacturer.

7.4.4.1 These containers shall not be opened until the system is recharged.

7.4.4.2 Wet chemical supplies shall be maintained within the manufacturer's specified storage temperature range.

7.5* Hydrostatic Testing.

7.5.1 The following parts of wet chemical extinguishing systems shall be subjected to a hydrostatic pressure test at intervals not exceeding 12 years:

- (1) Wet chemical containers
- (2) Auxiliary pressure containers
- (3) Hose assemblies

Exception No. 1: Auxiliary pressure containers not exceeding 2 in. (0.05 m) outside diameter and less than 2 ft (0.6 m) in length.

Exception No. 2: Auxiliary pressure containers bearing the DOT "3E" marking.

7.5.2 Wet chemical containers, auxiliary pressure containers, and hose assemblies shall be subjected to a hydrostatic test pressure equal to the marked factory test pressure or the test pressure specified in the manufacturer's design, installation, and maintenance manual.

7.5.2.1 No leakage, rupture, or movement of hose couplings shall be permitted.

6.4.7 Review of Manual Release Devices. Verification that all manual devices (manual pull stations) are readily accessible and accurately identified shall be required.

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