



INSPECTION AND TESTING OF FIRE PROTECTION SYSTEMS

Engineered fire protection systems are a vital factor in the reduction of potential large fire losses at all properties. Statistical evidence of suppression by properly designed and maintained fire protection equipment has proven these systems to be effective. Unfortunately, reports of uncontrolled large fire losses stemming from fire protection equipment malfunction continue due to insufficient inspection and testing. Some of the recurring problems we continue to experience from inspection deficiencies include:

- Undetected closure of sprinkler system control valves
- Inoperative fire pumps
- Empty water supply tanks
- Malfunctioning special suppression equipment
- Inoperative or blocked fire doors
- Inoperative detection systems
- Inoperative alarms
- Inoperative sprinkler control valves

Plant management must take an aggressive approach in establishing a program for periodic inspection, testing, and maintenance of fire protection equipment in an effort to maintain fire systems operational reliability. Management should address their own need for a documented fire protection inspection program as part of ongoing efficient plant operations. Corporate management should establish a policy calling for a self-inspection program at every location. Global Property has established this fire protection equipment inspection guideline which should serve as a minimum standard. Global Property inspection forms can be used for documentation or as a guide for the insured to develop their own.

This document provides an overview of the major inspection testing and maintenance requirements of the several NFPA Codes that apply to the fire suppression systems. For complete requirements see the applicable NFPA Codes.

This brochure provides an overview of the various inspections that should be completed on a Weekly, Monthly, Quarterly, Semiannual and Annual Basis. Each form is designed to building on the previous one. For example the Annual Inspection Form includes all the inspection requirements for weekly, monthly, quarterly, semiannual and those additional requirements for annual inspection.

The various inspection forms are not included in this document but can be provided by Global Property.

SECTION A – WEEKLY INSPECTION PROCEDURES (Form 691)

1. Fire Protection Water Supply Control Valves

This includes all sprinkler system control valves, water supply and fire pump control valves, standpipe system valves, and sectional control valves.

If individual valves are not locked open or provided with electronic supervision visual valve inspections must be conducted weekly, see Section B Monthly Inspection Procedures for applicable requirements for locked or electronically supervised valves.

2. Diesel Driven Fire Pumps

For records purposed identify each pump by number and/or location.

- a. Each pump should be started automatically by a drop in pressure.

1. Combustion engine driven fire pumps should be run for at least 30 minutes; electric motor driven pumps should be operated a minimum of 10 minutes; steam driven pumps should be operated a minimum of 5 minutes each week.

2. The churn pressure (this is the pressure output with no water discharging) should be recorded.

- b. A weekly & monthly fire pump, pump house and suction source inspection should be completed and document on Form 691 A. This checklist presents a general (self-explained) format and should be customized as necessary for the specific pump installation.

3. Private Water Supply Tanks

Each tank should be identified by location or number.

- a. Tank heating systems equipped with a low temperature alarm the heating system should be inspected weekly during the heating season. For tank heating systems without a low temperature alarm the tank heating system should be inspected **daily**.

- b. For tanks without a low temperature alarms connected to a constantly attended location the tank water temperature shall be inspected and recorded **weekly** during the heating season.

- c. Tanks should be visually examined for leaks or corrosion problems.

4. Public Water Supply

Verify that the public water supply is in full service. The primary concern is to make sure all control valves in the city pit are open and sealed. In a situation where there is a weakness in the city water supply reliability due to major pressure fluctuations on a periodic or seasonal basis, a static pressure gauge should be installed on the public water supply side of the pit check valve assembly. Abnormally low pressure readings should be noted on the report form and the condition should be brought to the attention of the Water Authority or Public Fire Department so that it can be corrected.

If the valves in the city pit are locked in the open position this inspection can be conducted monthly.

5. Sprinkler Systems, Water Spray Systems

Inspect gages on Dry Pipe, Preaction, and Deluge systems to assure proper air pressure and water pressure is provided. Where low air pressure supervision alarm is provided to a constantly attended location gauge inspection can be conducted monthly.

Dry pipe system air pressure should normally be 20 psi (1.4 bar) above the trip pressure of the dry pipe valve, usually in the range of 40-45 psi (2.75 to 3.1 bar). If the pressure is high or low, it should be corrected. Check each pre-action system for proper supervisory air pressure. The Quick Opening Device (QOD) on dry pipe systems should be checked to make sure valves are open and sealed and QOD air pressure should be in the range of system air pressure. Each enclosure for a dry pipe, deluge, or preaction valve should be checked for adequate temperature to prevent freezing. Any problems encountered during the inspection should be noted in the remarks column and promptly corrected.

6. Special Extinguishing Systems

Identify all special extinguishing systems by the system number and hazard protected.

- a. Carbon Dioxide Extinguishing Systems Verify the liquid level gauge of low pressure systems shows minimum quantity of agent is provided in the tank.

- b. Spark Detection and Spark Detection / Suppression Systems should have a physical inspection of the lens and is clear of obstructions. The sensor should be inspected make sure there is no physically damaged.



Note: On "Critical to Production" equipment the spark and detection system should be inspected daily.

7. Standpipe Systems & Inside Hose Stations

None

8. Fire Hydrants, Monitor Nozzles and Private Fire Mains

Fire protection mains exposed to freezing temperatures should be inspected weekly (or more often) to assure heat tracing is functioning correctly and/or insulation lagging is secured and in place.

9. Fire Doors, Fire Shutters and Fire Dampers

- a. Visually inspect all fire doors and shutters to verify they are in good operating condition and there is no blockage (i.e. temporary storage within doorway) which could obstruct the proper closing of the door in a fire emergency.
- b. The metal cladding on the fire doors and all necessary hardware, including latches and guides should be inspected. Fusible links should be inspected to make sure that they are free of paint or other foreign material, which could delay operation.

10. Portable Fire Extinguishers

None

11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems

Weekly inspection and testing of Automatic Detection, Manual Fire Alarm Systems, and Gas Detection Systems should be tested per the requirements of NFPA 72 by qualified personnel.

Housekeeping:

During the weekly tour, the entire facility should be checked for housekeeping problems and control of common hazards such as careless smoking, oily rags, improperly stored flammable liquids, blocked electrical switch gear, storage of combustibles in electrical rooms, etc. Deficiencies should be noted on the report form and corrected.

Impairments:

Any impairment to fire protection discovered during inspections or testing should be immediately reported to Global Property using the Fire Protection Equipment Impairment Program

SECTION B – MONTHLY INSPECTION PROCEDURES (Form 692)

The following testing requirements are in addition to those required for Weekly.

1. Control Valves

This includes all sprinkler system control valves, water supply and fire pump control valves, standpipe system valves, and sectional control valves.

- a. Each individual valve should be visually inspected if sealed. If valves are locked open or provided with electronic supervision inspection can be conducted monthly.
- b. Each valve should be inspected to verify it is "locked" in the open position and the inspection form should be marked accordingly.
- c. When a control valve is found unlocked, it should be physically tried by turning it to the fully open position then a main drain, commonly a 2" (5.08 mm) test should be conducted downstream of the valve to verify it is fully opened. The valve should then be locked. Remember, all valves should be sealed if they are not provided with a lock.
- d. If a control valve is found shut, the reason should be determined. If no problems are determined, the valve should be opened, a 2" (5.08 mm) drain test performed, and the valve locked. The reason for the valve being shut should be investigated and Global Property should be immediately notified using the Impairment Notification procedures.

NOTE: Curb box valve key wrenches should be readily available at the plant site in an accessible location.

2. Electric Driven Fire Pumps

For records purposed identify each pump by number and/or location. Diesel Driven Fire Pumps should also be tests at these units are tested weekly.

- a. Each pump should be started automatically by a drop in pressure.
 - 1. Combustion engine driven fire pumps should be run for at least 30 minutes; electric motor driven pumps should be operated a minimum of 10 minutes; steam driven pumps should be operated a minimum of 5 minutes each week.

- 2. The churn pressure (this is the pressure output with no water discharging) should be recorded.
 - b. A weekly & monthly fire pump, pump house and suction source inspection should be completed and document on Form 691 A. This checklist presents a general (self-explained) format and should be customized as necessary for the specific pump installation.
3. Private Water Supply Tanks
- a. For tanks **not** equipped with supervised water level alarms that are connected to a constantly attended location the tank water level of each tank should be verified by checking the level gauge or by overflowing the tank. For tanks provided with water level alarms to a constantly attended location the tank level inspection can be conducted quarterly.
 - b. For tanks equipped with low temperature alarms connected to a constantly attended location the tank water temperature shall be inspected and recorded monthly during the heating season.

4. Public Water

Verify that the public water supply is in full service. The primary concern is to make sure all control valves in the city pit are open and **locked**. In a situation where there is a weakness in the city water supply reliability due to major pressure fluctuations on a periodic or seasonal basis, a static pressure gauge should be installed on the public water supply side of the pit check valve assembly. Abnormally low pressure readings should be noted on the report form and the condition should be brought to the attention of the City Water or Public Fire Department so that it can be corrected.

5. Sprinklers, Water Spray Systems

- a. Wet pipe sprinkler systems should be inspected for that proper water pressure is being maintained on the system(s).
- b. Dry Pipe System, Preaction Systems, and Deluge Systems water and air pressure gauges should be inspected monthly when air pressure supervision alarms to a constantly attended location is provided. When air pressure alarms are not provided then weekly inspection of the gauges is required.
- c. Ultra High Speed Water Spray Systems detectors should be inspected monthly for

physical damage, and accumulations on detector lenses.

6. Special Extinguishing Systems

a. Carbon Dioxide Extinguishing Systems

- 1. Inspect to assure high pressure cylinders are in place and properly secured.
- 2. For low-pressure storage the following should be inspected:
 - a. The pressure gauge shows normal pressure
 - b. The tank shutoff valve is open, and that the pilot pressure supply valve is open.
 - c. The liquid level gauge should be observed. If at any time a container shows a loss of more than 10 percent, it should be refilled, unless the minimum gas requirements are still provided.
- 3. Carbon dioxide storage is connected to discharge piping and actuators.
- 4. All manual actuators are in place and tamper seals are intact.
- 5. Nozzles are connected, properly aligned, and free from obstructions and foreign matter.
- 6. Detectors are in place and free from foreign matter and obstructions.
- 7. The system control panel is connected and showing "normal-ready" condition.

- b. Spark Detection / Suppression Systems should have the system trip (flow tested) to assure the water spray system is operating correctly.

7. Standpipe Systems & Inside Hose Stations

Identify each inside hose connection and location. At each inside hose connection, the adjustable spray nozzle should be attached and the hose should be correctly racked and connected to the supply piping. It is important to determine that all hose connections are in full service, immediately accessible, and the hose and nozzles are in good condition.

NOTE: If the plant emergency organization will not use the inside hose station this equipment may be removed from service with the approval of the local authority having jurisdiction, typically the fire department.



8. Fire Hydrants, Monitor Nozzles and Private Fire Mains

See NFPA Standards for any additional requirements.

9. Fire Doors, Fire Shutters and Fire Dampers

See NFPA Standards for any additional requirements.

10. Portable Fire Extinguishers (Form 392 A)

Hand and wheeled portable fire extinguishers should be inspected to make certain they are accessible, properly placed, and maintained. Each extinguisher should be properly charged and a tag should be attached indicating that it has been serviced within the last year. It is advisable to provide a plan showing the location and type of units to make certain each unit is inspected.

11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems

Monthly inspection and testing of Automatic Detection, Manual Fire Alarm Systems, and Gas Detection Systems should be tested per the requirements of NFPA 72 by qualified personnel.

SECTION C – QUARTERLY INSPECTION PROCEDURES (Form 693)

The following testing requirements are in addition to those required for Weekly or Monthly.

1. Fire Protection Water Supply Control Valves

See NFPA Standards for any additional requirements.

2. Fire Pumps

See NFPA Standards for any additional requirements.

3. Private Water Supply Tanks

- a. For tanks equipped with supervised water level alarms that are connected to a constantly attended location the tank water level of each tank should be verified by checking the level gauge or by overflowing the tank.
- b. Tank exterior, supporting structure, vents foundation and catwalks or ladders where provided should be visually inspected for signs of damage, weakening, or rust.

1. The tank should be clear of storage, trash brush or other fire hazards.

2. The tank should be free of ice building up.

3. The tops of embankment supported coated fabric tanks are free of erosion.

4. Public Water Supply

See NFPA Standards for any additional requirements.

5. Sprinkler Systems, Water Spray Systems

- a. Inspect all water flow alarms devices to assure they are free of physical damage
- b. Test mechanical waterflow devices (water motor gongs).
- c. Test Dry Pipe Valve priming water for the correct level.
- d. Conduct one (1) Main Drain Tests when the sole water supply is provided with a backflow preventer.

6. Special Extinguishing Systems

a. Explosion Prevention Systems should be inspected and tested by qualified personnel as follows:

1. Review that the hazard has not changed.
2. The explosion suppression system was properly installed per the manufactures instruction and NFPA 69.
3. Systems components are not corroded or physically damaged from process, acts of nature or debris.
4. Operation instructions are provide near the control panel.
5. System components clearly identified as an Explosion Suppression System.
6. System components are not painted or coated without approval of the equipment manufacture.
7. System components are not blocked by process materials.
8. System components have not been tampered with. System seals tamper

- indicators or discharge indicators if provided are in place and operating.
9. System has not discharged.
 10. System control panel is in service, functioning correctly with no trouble alarms. Control panels display normal.
 11. System wiring is free from ground faults.
 12. System suppressors and valve actuators are pressurized and operational.
 13. System interlocks are verified for correct sequencing and function.
 14. Mechanical isolation if used (rotary valves etc) is maintained per the manufactures requirements and NFPA 69.
 15. System sequence of operation is verified by simulated operation.
- b. Spark Detection and Spark Detection / Suppression Systems sensor should be calibrated

See NFPA Standards for any additional requirements.

7. Standpipe Systems & Inside Hose Stations
 - a. Inspect all water flow alarms devices to assure they are free of physical damage
 - b. Test mechanical waterflow devices (water motor gongs).
8. Fire Hydrants, Monitor Nozzles and Private Fire Mains
 - a. House houses should be inspected for proper working order and that the equipment is in place and in good condition.
 - b. Fire Department Connections (FDC) should be inspected for the following:
 1. FDC is visible and accessible.
 2. FDC couplings or swivels are not damage and rotate freely.
 3. FDC plugs or caps are in place and not damaged. (FDC utilizing caps, the caps should be removed and the interior of the FDC inspected for obstructions.

4. FDC gaskets are in place and are in good condition.
5. FDC identification signs are in place.
6. Check valve is not leaking.
7. Automatic drain is in place and operating properly.
8. FDC fire department clappers are in place and operating correctly.
9. Fire Doors, Fire Shutters and Fire Dampers
See NFPA Standards for any additional requirements.
10. Portable Fire Extinguishers
See Monthly Requirements.
11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems
Quarterly Inspection and testing of Automatic Detection, Manual Fire Alarm Systems, and Gas Detection Systems should be tested per the requirements of NFPA 72 by qualified personnel.

SECTION D – SEMIANNUAL INSPECTION PROCEDURES (Form 694)

The following testing requirements are in addition to those required for Weekly or Monthly or Quarterly.

1. Fire Protection Water Supply Control Valves
Water Supply Valve Tamper Supervisory Alarms should be tested.
2. Fire Pumps
See NFPA Standards for any additional requirements.
3. Private Water Supply Tanks
Supervisory alarms should be tested. This would include:
 - a. Low water level alarms.
 - b. Low water temperature.
 - c. Low air pressure on pressure tanks.
4. Public Water Supply
See Monthly Requirements.



5. Sprinkler Systems, Water Spray Systems

Test vane type and pressure switch type water flow devices.

6. Special Extinguishing Systems

a. Carbon Dioxide Extinguishing Systems high pressure carbon dioxide tanks should be weighed and the date of the last hydrostatic test noted.

b. Halon Extinguishing Systems should be inspected and tested by qualified personnel per the Requirements of NFPA 12A.

c. Clean Agent Extinguishing Systems should be inspected and tested by qualified personnel per the Requirements of NFPA 2001.

d. Dry Chemical Extinguishing Systems should be inspected and tested by qualified personnel for the following

1. Review that the hazard has not changed.
2. Inspection of all detectors, expellant gas containers, agent containers, releasing devices, piping, hose assemblies, nozzles, alarms, and interlocks.
3. Inspection of agent discharge piping to assure it is properly secured and not disturbed.
4. Inspection of the dry chemical agent for signs of caking. If caking is observed the agent should be discharged and the system recharged.
5. Testing of alarm system, release devices including manual pull stations.
6. Replacement of fixed temperature, fusible element, and heat detection sensors should be replaced.

e. Wet Chemical Extinguishing Systems should be inspected and tested by qualified personnel for the following

1. Review that the hazard has not changed.
2. Inspection of all detectors, expellant gas containers, agent containers, releasing devices, piping, hose assemblies, nozzles, alarms, and interlocks.

3. Inspection of agent discharge piping to assure it is properly secured and not disturbed.

4. Testing of alarm system, release devices including manual pull stations.

5. Replacement of fixed temperature, fusible element, heat detection sensors should be replaced.

f. Spark Detection and Spark Detection / Suppression Systems panels should be inspected including the batteries by qualified personnel.

7. Standpipe Systems & Inside Hose Stations

Test vane type and pressure switch type water flow devices.

8. Fire Hydrants, Monitor Nozzles and Private Fire Mains

Monitor Nozzles should be inspected for leakage, physical damage and corrosion. Any necessary repairs should be completed.

9. Fire Doors, Fire Shutters and Fire Dampers

See NFPA Standards for any additional requirements.

10. Portable Fire Extinguishers

See Monthly Requirements.

11. Automatic Detection, Manual Fire Alarm Systems

Semiannual inspection and testing of Automatic Detection, Manual Fire Alarm Systems, and Gas Detection Systems should be tested per the requirements of NFPA 72 by qualified personnel.

SECTION E – ANNUAL INSPECTION PROCEDURES (Form 695)

The following testing requirements are in addition to those required for Weekly or Monthly, Quarterly or Semiannual.

1. Fire Protection Water Supply Control Valves

a. All Fire Protection System Valves should be physically operated by fully closing each valve and then fully reopening the valve slowly and then back off one-quarter turn. Relock the valve and perform a drain test for valves controlling sprinkler risers.

- b. Outside Screw & Yoke (OS&Y) valves should be lubricated annually.
2. Fire Pumps
- a. Fire Pump Annual Performance Test should be conducted for each fire pump and booster pump.
 - b. Test each pump controller supervisory alarms such as power failure and or controller main switch has been turned to "off" or "manual position".
 - c. Test Combustion Engine Drive Controller trouble alarms:
 - 1. Failure to start
 - 2. Engine over-speed
 - 3. Low oil pressure
 - 4. High water cooling temperature
 - 5. Battery failure

NOTE: Reference the Controller Manufacturer's Operating Manual for alarm test methods.
 - d. Fire Pump Maintenance should be per the requirements of NFPA 20, the pump manufacture and the pump controller manufacture.
3. Private Water Supply Tanks
- a. Tank Expansion joints should be inspected for cracks or leaks.
 - b. Hoops and Grillage of wooden tanks should be inspected.
 - c. Exterior painted or insulated surfaces should be inspected for any signs of deterioration.
4. Public Water Supply
- Conduct inspection and testing of backflow preventer(s).
5. Sprinkler Systems, Water Spray Systems
- a. 2" (5.08 mm) Main Drain Tests should be conducted on all sprinkler and water spray systems.

To verify that system control valves are in the fully opened position, the 2" system drain valve should be opened and pressure should be recorded. The drain valves should then be slowly closed to avoid creating water hammer due to a high pressure surge. The static pressure at the riser should then be recorded. Static pressure may vary slightly from the pressure of previous tests due to normal fluctuations in water supply usage. The difference between the recorded static and flowing pressures represent the pipe friction loss between the water supply and the riser gauge connection with water discharging through the fully open 2" (5.08 mm) drain valve.

When the static pressure does not return to normal or the differential pressure increases materially from previous records, the cause should be determined and corrective action taken immediately. The reasons for this type of situation may be a partially shut control valve or an obstruction in the underground piping.

- b. Dry Pipe Valves should have a throttled trip test with the control valve partially open and cleaned and reset. The shutoff valve should be kept open at least far enough to permit full flow of water at good pressure through the main drain when it is fully open. Document test results on Form 695 A.

Where a Dry Pipe Valve protects a freezer the trip tests should be conducted such that water or moisture is not introduced into the piping within the freezer.

- c. Deluge Valves should have a full flow trip test annually. Where the deluge system can not be tested without shutting down equipment or processes (de-energizing electrical equipment) the test should be conducted at the next plant shut down. The maximum frequency of full trip tests should not exceed 3 years. (Form 695 B)

Where a Deluge Valve protects a freezer the trip tests should be conducted such that water or moisture is not introduced into the piping within the freezer.

NOTE: Notify the responding Fire Department and the central, remote, or proprietary station alarm service as necessary before conducting tests.

- d. Test each antifreeze system solution freezing point by measuring the specific gravity with a hydrometer or refractometer and adjust the solution if necessary.



- e. Nozzles on Water sprays systems should be visually inspected for the correct orientation and proper flow during annual full flow tests. Where the deluge valve can not be tripped tested without shutting down the equipment (de-energizing electrical equipment) the test should be conducted at the next plant shut down. The maximum frequency of full trip tests should not exceed 3 years.
 - f. System strainers should be removed visually inspected. Any corroded or damaged parts should be replaced prior to returning the strainer to service.
 - g. Ultra High Speed Water Spray Systems should have a full operational tests including measurement of response time.
 - h. Inspect Foam Sprinkler Systems including the proportioning systems should have annual operational tests per the requirements of NFPA 25.
 - i. Samples of foam concentrate should be sent to the manufacture or other authorized testing laboratory for foam concentrate quality testing.
 - j. Samples of Wetting Agents should be sent to the manufacture or other authorized laboratory for concentrate quality testing.
6. Special Extinguishing Systems
- a. Carbon Dioxide Extinguishing Systems
 1. Check and test the carbon dioxide system for operation.
 2. Check that there have been no changes to the size, type, and configuration of the hazard and system.
 3. Check and test all time delay for operation is functioning correctly.
 4. Check and test all audible alarms for operation are functioning correctly.
 5. Check and test all visible signals for operation are functioning correctly.
 6. Check that all warning signs are installed and visible per the requirements of NFPA 12
 7. Check to ensure that the predischage alarms to alert personnel not to enter or to evacuate the area are functional.
 8. Check and test each detector using methods specified in NFPA 72.
 - b. Spark Detection and Spark Detection / Suppression Systems
 1. Main strainers & individual system strainers should be inspected, cleaned.
 2. Freezer protection systems should be inspected prior to the freezing season to assure heat tracing and / or insulation is functional.
 - c. Halon Extinguishing Systems

Enclosure for total flooding systems should be inspected for penetrations that have occurred that could result in the concentration of the agent within the enclosure. All discovered penetration should be enclosed to maintain the closure integrity.
 - d. Clean Agent Extinguishing Systems

Enclosure for total flooding systems should be inspected for penetrations that have occurred that could result in the concentration of the agent within the enclosure. All discovered penetration should be enclosed to maintain the closure integrity.
7. Standpipe Systems & Inside Hose Stations
- a. 2" (5.08 mm) Main Drain Tests should be conducted on all wet and dry standpipe systems.
 - b. Pressure test lined fire hoses. Use the highest pressure available for fire fighting plus 50 psi (3.4 bar) not to exceed 250 psi (17.2 bar). Bleed air from the hoses before building up pressure. CAUTION: Hoses, especially unlined, may be susceptible to rupture (Form 695 C).
8. Fire Hydrants, Monitor Nozzles and Private Fire Mains (Form 695 D)
- a. Fire Hydrants should open fully and flushed, hose threads lubricated with graphite and missing hydrant caps replaced.
 - b. Monitor Nozzles should open fully and flushed. The monitor nozzles should be oscillated and
9. Enclosure for total flooding systems should be inspected for penetrations that have occurred that could result in the concentration of the agent within the enclosure. All discovered penetration should be enclosed to maintain the closure integrity.

moved throughout its full range of operation to assure proper working order.

- c. Hydrants and Monitor Nozzles should be fully lubricated.
- d. Main Line Strainers should be removed and inspected. Any corroded or damaged parts should be replaced prior to returning the strainer to service.
- e. Prior to the heating season inspection heat tracing and/or insulation of fire mains exposed to potential freezing temperatures to assure the heat tracing system is function and or insulation is in place and secured.

9. Fire Doors, Fire Shutters and Fire Dampers

- a. Fire Door testing should be conducted for each automatic closure of fire door by physically lifting door weights, disconnecting or cutting fusible links, and/or testing of automatic detection release mechanisms. This test is commonly referred to as a "Drop Test".
- b. Fire Dampers should be inspected one (1) year after installation per the requirements of NFPA 80. Subsequent fire damper tests should be conducted ever four (4) years there after.

10. Portable Fire Extinguishers

Portable Fire Extinguishers should have annual servicing conducted by authorized personnel. A tag should be attached to each unit indicating the date of the annual maintenance service and date of the next required hydrostatic test.

11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems

Annual inspection and testing of automatic fire detection and notification systems, manual fire alarm systems, and gas detection systems should be tested per the requirements of NFPA 72 by qualified personnel.

COLD WEATHER PRECAUTIONS

1. Before and during freezing weather in cold climates, all low points and "drum drip" chambers on all dry pipe automatic sprinkler systems should be properly drained as frequently as required to remove all moisture.
2. Once each shift during freezing weather, the temperature of fire protection water storage tanks should be checked to make sure heaters are working. Also, temperatures should be

checked in areas where wet pipe sprinklers may be subject to freezing. Heat tracing should be checked to assure it is functioning correctly.

3. Immediately following snow storms make sure that all hydrants, fire protection control valves, monitor nozzles, and hose houses are accessible. Clear any obstructed passageways as necessary.

SECTION F – 2 YEAR; 3 YEAR & 5 YEAR INSPECTION PROCEDURES

The following testing requirements are in addition to those required for Weekly or Monthly, Quarterly, Semiannual or Annual.

1. Fire Protection Water Supply Control Valves

See NFPA Standards for any additional requirements.

2. Fire Pumps

Fire Pump Pressure Reducing Valves should have a full flow test conducted every five (5) years

3. Private Water Supply Tanks

- a. Tanks **without** corrosion protection should be internally inspected every three (3) years.
- b. Tanks provided with corrosion protection should be internally inspected every five (5) years.
- c. Tank level indicators should be tested every five (5) years.

4. Public Water Supply

See NFPA Standards for any additional requirements.

5. Sprinkler Systems, Water Spray Systems

- a. Sprinkler System Gauges should be tested for accuracy or replace the gauges every five (5) years. Gauges not accurate to within 3% of the full scale should be recalibrated or replaced.
- b. Extra High temperature rated 325⁰ F (163⁰ C) **or greater** sprinkler heads of solder type element exposed to semicontinuous or continuous maximum ambient ceiling temperature of 300⁰ F (149⁰ C) or greater should be replace or a representative sample tested ever five (5) years. A representative sample per sprinkler system is a minimum of four (4) sprinklers or 1% of the sprinklers which ever is greater.

- c. Preaction Valves should be full flow trip test of each preaction system valve every three (3) years. Where a preaction valve protects a freezer the trip tests should be conducted such that water or moisture is not introduced into the piping within the freezer.
 - d. Alarm valves, strainers, filters, and restriction orifices should be inspected internally every five (5) years.
 - e. Sprinkler System Pressure Reducing Valves should have a full flow test conducted every five (5) years.
 - f. Obstruction Inspection should be conducted every five (5) years by opening a flushing connection at the end of one main and by removing sprinkler toward the end of one branch line. If sufficient material is noted within the piping that could obstruct the system a complete flushing should be conducted qualified personnel.
6. Special Extinguishing Systems
- a. Carbon Dioxide Extinguishing Systems

High Pressure Carbon Dioxide cylinder should be hydrostatically tested every five (5) years.
 - b. Dry Chemical Extinguishing Systems

Dry chemical agent containers, expellant gas containers and hoses should be hydrostatically tested per the requirements of NFPA 17 every twelve (12) years.
 - c. Wet Chemical Extinguishing Systems

Wet chemical agent containers, expellant gas containers and hoses should be hydrostatically tested per the requirements of NFPA 17A every twelve (12) years.
7. Standpipe Systems & Inside Hose Stations
- a. Hydrostatically tests manual standpipe and dry standpipe systems at a minimum of 200 psi (13.7 bar) for two (2) hours or 50 psi (3.4 bar) above the maximum working pressure. The test should be conducted every five (5) years.
 - b. Standpipe system flow test should be conducted at the most remote outlets every five (5) years.
 - c. Standpipe Hose Connection Pressure Reducing Valves should have a full flow test conducted every five (5) years.
- d. Hose Rack Pressure Reducing Valves should have a full flow test conducted every five (5) years
 - e. Lined Occupant Fire Hose should be hydrostatically tested five (5) years after the date of manufacture and every three (3) years thereafter, per the requirements of NFPA 1962 Standard for the Inspection, Care and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose .

Occupant Fire hose is Fire hose designed to be used by the building's occupants to fight incipient fires prior to the arrival of trained fire fighters or fire brigade members.
 - f. Unlined Occupant Fire hose should not be tested as it must be replaced (5) years after the date of manufacture and every three (3) years thereafter, per the requirements of NFPA 1962 Standard for the Inspection, Care and use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.
 - g. Attack Fire Hose should be hydrostatically tested annually per the requirements of NFPA 1962 Standard for the Inspection, Care and use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.

This applies to hose that is used in hose houses, reels, hangers or vehicles that is used by the plants fire brigade or emergency organization.
8. Fire Hydrants, Monitor Nozzles and Private Fire Mains
- Private fire water mains should have a flow test conducted every five (5) years with results compared to prior flow test results to determine if any deterioration in the water supply has occurred.
9. Fire Doors, Fire Shutters and Fire Dampers
- See NFPA Standards for any additional requirements.
10. Portable Fire Extinguishers
- See NFPA Standards for any additional requirements.
11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems
- See NFPA Standards for any additional requirements.

SECTION G – 10 YEAR AND GREATER FREQUENCY INSPECTION PROCEDURES

The following testing requirements are in addition to those required for Weekly or Monthly, Quarterly, Semiannual, Annual, 2 Year, 3 Year, or 5 Year.

1. Fire Protection Water Supply Control Valves
See NFPA Standards for any additional requirements.
2. Fire Pumps
See NFPA Standards for any additional requirements.
3. Private Water Supply Tanks
See NFPA Standards for any additional requirements.
4. Public Water Supply
See NFPA Standards for any additional requirements.
5. Sprinkler Systems, Water Spray Systems
 - a. Dry sprinklers should be replaced every ten (10) years or a representative sample tested. A representative sample per sprinkler system is a minimum of 4 sprinklers or 1% of the sprinklers which ever is greater.
 - b. Sprinkler using fast response elements that have been in service for twenty (20) years should be replaced or tested every twenty (20) years. A representative sample per sprinkler system is a minimum of four (4) sprinklers or 1% of the sprinklers which ever is greater.
 - c. All sprinklers in service for fifty (50) years should be replaced or a representative sample should be tested. A representative sample per sprinkler system is a minimum of 4 sprinklers or 1% of the sprinklers which ever is greater.
 - d. Foam Concentrate Tank should be hydrostatically tested to the working pressure every ten (10) years.

6. Special Extinguishing Systems
Carbon Dioxide Extinguishing Systems low pressure cylinder should be hydrostatically tested every five (5) years.
7. Standpipe Systems & Inside Hose Stations
See NFPA Standards for any additional requirements.
8. Fire Hydrants, Monitor Nozzles and Private Fire Mains
See NFPA Standards for any additional requirements.
9. Fire Doors, Fire Shutters and Fire Dampers
See NFPA Standards for any additional requirements.
10. Portable Fire Extinguishers
See NFPA Standards for any additional requirements.
11. Automatic Fire Detection, Gas Detection and Fire Alarms Systems
See NFPA Standards for any additional requirements.

REPORT FORMS

Global Property can provide our insured facilities with weekly monthly, quarterly, semiannual, and annual fire protection equipment inspection report forms. Due to the varied nature of fire equipment installations, the Global Property forms were designed to be general, with the purpose of providing a format which could be custom tailored and refined to fit specific facility inspection needs.

COM-CG-13-0060 Form 691 Weekly Inspections
COM-CG-13-0064 Form 691A Weekly Fire Pump Inspections
COM-CG-13-0068 Form 692 Monthly Inspections
COM-CG-13-0072 Form 692A Monthly Fire Extinguishers Inspections
COM-CG-13-0076 Form 693 Quarterly Inspections
COM-CG-13-0080 Form 694 Semiannual Inspections
COM-CG-13-0084 Form 695 Annual Inspections
COM-CG-13-0088 Form 695A Annual Dry Pipe Valve Trip Tests
COM-CG-13-0092 Form 695B Annual Deluge Valve Trip Tests
COM-CG-13-0096 Form 695C Annual Fire Hose Tests
COM-CG-13-0100 Form 695D Annual Hydrant and Monitor Nozzle Tests



RECORDS

Management should review completed forms for thoroughness and consistency. Deficiencies may exist that require management action to solve or expedite. To minimize any potential detrimental impact, deficiencies should be promptly resolved. Documenting action taken helps manage the resolution of the problem. Completed forms and guard round records (where applicable) should be available for review by the next visiting Global Property Loss Control representative.

NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS FOR FIRE PROTECTION EQUIPMENT

- NFPA 10 Standard for Portable Fire Extinguishers
- NFPA 11 Standard for Low, Medium- and High-Expansion Foam
- NFPA 12 Standard on Carbon Dioxide Extinguishing Systems
- NFPA 12A Standard on Halon 1301 Fire Extinguishing Systems
- NFPA 17 Standard for Dry Chemical Extinguishing Systems
- NFPA 17A Standard for Wet Chemical Extinguishing Systems
- NFPA 18 Standard on Wetting Agents
- NFPA 68 Standard on Explosion Protection by Deflagration Venting
- NFPA 69 Standard on Explosion Prevention Systems
- NFPA 72 National Fire Alarm and Signaling Code
- NFPA 80 Standard for Fire Doors and Other Openings Protectives
- NFPA 600 Standard on Industrial Fire Brigades
- NFPA 750 Standard for Water Mist Fire Protection Systems
- NFPA 1962 Standard for the Inspection, Care and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose
- NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems



Bring on tomorrow