

FIRE PROTECTION SYSTEM, INSPECTION, TESTING, MAINTENANCE, AND DISCREPANCIES MANAGEMENT	Manual Document Page Issue Date Effective Date	TFC-ESHQ-FP-STD-04, REV B-1 December 7, 2010 December 7, 2010	USQ #N/A ESHQ 1 of 28
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**FIRE PROTECTION SYSTEM
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1.0 PURPOSE AND SCOPE

(5.1.1, 5.1.2, 5.1.3)

This standard provides the minimum requirements for fire protection system testing, inspection, and maintenance in government-owned facilities under the Washington River Protection Solutions LLC (WRPS) contract. This document also defines facility management responsibilities regarding fire protection system reporting, tracking and compensatory measures to address system deficiencies. The requirements are from the National Fire Protection Association (NFPA) Codes and Standards, which are mandatory under the Tank Operations Contract (TOC) as amended by Department of Energy (DOE) approved exemptions and equivalencies.

Although support in achieving the requirements of this section is provided by the Hanford Fire Department (HFD), the final responsibility for ensuring full compliance with this section shall belong to the facility management.

The Building Manager is completely responsible for completing the inspection/testing activities identified with an asterisk (*). All other activities are performed by the HFD and scheduled in concert with facility management

This standard establishes the minimum operability specifications for fire protection features in TOC facilities. Compliance with the inspection and testing requirements will provide the required assurance that the systems are available and reliable.

2.0 IMPLEMENTATION

This standard is effective on the date shown in the header.

3.0 STANDARD

All fire protection systems shall be inspected, tested, and maintained in accordance with the requirements described in the tables in this standard. Management shall provide all necessary support for the inspection, testing, and maintenance of fire protection systems.

NOTE: The building manager is responsible for completing the inspection/testing activities identified in the following tables with an asterisk (*) in the device column. All other activities are scheduled and performed by the Hanford Fire Department.

**FIRE PROTECTION SYSTEM
INSPECTION, TESTING,
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3.1	REQUIREMENT	SOURCE
1.	Management shall provide all necessary support for the inspection, testing, and maintenance of all in-service fire protection systems under their responsibility as provided in this document.	DOE O 420.1B, ENS-ENG-IP-05 R0
2.	<p>a. Scheduling of inspections, testing, and maintenance activities specified in this document shall comply with the following and the criteria defined in Appendix A.</p> <p>NOTE: Facility Management is ultimately responsible for assuring that all inspection, testing, and maintenance (ITM) activities, including those scheduled by the HFD, are completed as required.</p> <p>b. If a fire system or system component is overdue for its test as required by this document, the building manager shall implement appropriate compensatory measures after consultation with the TOC Fire Protection Engineer (FPE).</p> <p>c. No grace period to complete fire system testing is recognized by the TOC.</p>	DOE O 420.1B, ENS-ENG-IP-05 R0
3.	All ITM activities conducted on fire protection systems shall be performed by trained personnel in accordance with NFPA 25 and NFPA 72.	DOE O 420.1B, ENS-ENG-IP-05 R0
4.	<p>Any fire protection system discrepancies identified shall require the following:</p> <p>a. Immediately notify the Fire Department.</p> <p>b. Inform the TOC FPE.</p> <p>c. As necessary, brief the building occupants affected by the discrepancy.</p> <p>d. Ensure the discrepancies are tracked and proper corrective actions and compensatory measures are implemented.</p>	DOE O 420.1B, ENS-ENG-IP-05 R0

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3.1	REQUIREMENT	SOURCE
	<p>5. When fire surveillance is required as determined by facility management and the TOC FPE, the facility manager shall ensure the following surveillance requirements are implemented.</p> <ul style="list-style-type: none"> a. Notify occupants of the building when a fire protection system is out of service and the proper actions to take in an emergency. b. Instruct each fire surveillance person on the following: <ul style="list-style-type: none"> (1) The areas to be surveyed (2) Frequency of tours required (3) The specifics of the fire protection impairment (4) Appropriate emergency procedures and actions (5) Methods for sounding the alarm(s) (6) Procedure for manually activating fire suppression systems (if applicable) (7) Methods for recording tours c. Implement the surveillance as follows: <ul style="list-style-type: none"> (1) Continuously, if required by facility process standards/controls. (2) Hourly, when fire protection systems are out of service. <p>NOTE: Occupied areas do not require fire surveillance, and Criteria c.(1) & c.(2), above, may be modified by the TOC FPE using a graded approach.</p> <ul style="list-style-type: none"> d. Document the surveillance on Hanford Site Fire Surveillance Log form (A-6001-431 or equivalent). 	<p>DOE O 420.1B, ENS-ENG-IP-05 R0</p>

3.2 Fire System Discrepancy Requirements

3.2	REQUIREMENT	SOURCE
1.	Any employee identifying a fire protection system discrepancy must notify the facility management immediately.	DOE O 420.1B, ENS-ENG-IP-05 R0
2.	The TOC FPE will assist the HFD with the priority designation and provide email notification as a corrective action plan to the Hanford Fire Marshal	DOE O 420.1B, ENS-ENG-IP-05 R0
3.	<p>Emergency Impairments</p> <p>a. Emergency impairments shall be repaired in 24 hours or less by the HFD.</p> <ul style="list-style-type: none"> • If not restored within 24 hours, a PER shall be generated. The PER shall indicate the corrective actions and compensatory measures required to correct the Emergency Impairment. The PER shall be assigned to facility management as a TUF. <p>b. As soon as an emergency impairment is recognized, Facility Management must implement the applicable compensatory measures noted below (items e - i) and obtain concurrence from the TOC FPE. When compensatory measures involve or affect the Fire Department, obtain their concurrence.</p> <p>NOTE: Compensatory-measure procedures pre-approved by the Hanford Fire Marshal meet the intent of this requirement.</p> <p>c. Establish fire surveillance throughout areas affected by emergency impairments in accordance with this document.</p> <p>NOTE: Fire surveillance does not provide protection equivalent to a fire protection system. Fire surveillance durations must be minimized.</p> <p>d. Evaluate the need to terminate hazardous production or maintenance operations protected by the fire system.</p> <p>e. Arrange for HFD standby or alternate water supplies.</p> <p>f. Maintain as much of the fire protection system in service as possible.</p> <p>NOTE: Often sprinkler systems can be kept in service using temporary hose connections to hydrants or nearby sprinkler systems.</p> <p>g. Verify emergency vehicle access to the facility is not obstructed.</p>	DOE O 420.1B, ENS-ENG-IP-05 R0

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3.2	REQUIREMENT	SOURCE
4.	<p>System Restrictions</p> <ul style="list-style-type: none"> a. System restrictions shall be repaired within 15 business days by the HFD. b. As soon as it is determined the HFD cannot repair a system restriction within 15 business days, a PER shall be generated. The PER shall indicate the corrective actions and compensatory measures required to correct the System Restriction. The PER shall be assigned to facility management as a TUF. c. Fire alarm panels locked in TROUBLE due to a malfunctioning supervisory/trouble condition shall be subject to a surveillance program as defined in Item 3 above. Surveillance frequency shall be determined by the TOC FPE using a graded approach but shall not be less than once per shift. 	DOE O 420.1B, ENS-ENG-IP-05 R0
5.	<p>Planned Impairments</p> <ul style="list-style-type: none"> a. Notify the Hanford Fire Systems Testing group at least 24 hours in advance of planned impairments. b. Only one planned impairment should be scheduled at a time in a given facility. It is understood that at times conditions may not support this, and it may be necessary to have more than one impairment at a time. c. Compensatory measures shall be in place to mitigate the potential consequences of a fire and to minimize the length of the impairment. 	DOE O 420.1B, ENS-ENG-IP-05 R0
6.	<p><u>Special Conditions</u></p> <p>Freeze Protection Discrepancies:</p> <ul style="list-style-type: none"> a. Categorize, track, and repair systems impaired due to unexpected freeze conditions as either system restrictions or emergency impairments, as appropriate. b. Track systems removed from service on a preplanned basis to prevent freeze damage as deactivations. 	DOE O 420.1B, ENS-ENG-IP-05 R0

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3.2	REQUIREMENT	SOURCE
7	<p><u>Utility Outages:</u></p> <p>a. Treat fire protection systems impaired as a result of either an unexpected or planned outage of a utility system as either a system restriction or emergency impairment, as appropriate.</p> <p>b. If more than one structure is affected by the outage, implement compensatory measures for each affected structure. Write the impairment against the most significant of the affected facilities, and list all affected facilities on the impairment report.</p>	DOE O 420.1B, ENS-ENG-IP-05 R0
8.	Nonfunctioning fire protection components that provide an interface with facility occupants (e.g., manual pull stations, bells, strobes) shall be affixed with a HFD "Out of Service" tag.	NFPA 1 13.3.4.3

3.3 Fire Protection System Winterization Requirements

3.3	REQUIREMENT	SOURCE
1.	The facility management responsible for the maintenance of each facility provided with fire protection systems/components shall ensure a documented winterization program is in place for their facilities.	DOE O 420.1B, ENS-ENG-IP-05 R0
2.	Document any deficiencies identified and initiate corrective action to repair or resolve the condition.	DOE O 420.1B, ENS-ENG-IP-05 R0
3.	Maintain winterization inspection records.	DOE O 420.1B, ENS-ENG-IP-05 R0
4.	Provide all areas where fire systems are installed with sufficient heat and/or noncombustible insulation to prevent freezing and/or equipment damage.	DOE O 420.1B, ENS-ENG-IP-05 R0
5.	Use permanent freeze protection such as forced hot air, fixed radiant heaters, insulation. Do not use temporary measures such as portable heaters for freeze protection of fire systems	DOE O 420.1B, ENS-ENG-IP-05 R0

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3.3	REQUIREMENT	SOURCE
6.	<p>Use heat tape and portable heaters to winterize existing fire protection systems only if engineered protection measures are not readily available or feasible. If such measures must be used, the following restrictions apply:</p> <ol style="list-style-type: none"> 1. The portable heaters must comply with TFC-ESHQ-FP-STD-09. 2. Heat Tape installation must comply with the following: <ol style="list-style-type: none"> a. All new and/or replacement heat tape installed must be Underwriter's Laboratory (UL) listed for its intended use (that is, specifically tested for use on fire protection systems as well as the piping material being protected). b. The heat tape must be self-regulating. c. Noncombustible insulation shall be used over the pipe and heat tape. d. The fire system pipe temperature shall be monitored by a system including a mechanism to transmit a trouble alarm to the HFD if the pipe temperature drops below 40° F. e. Heat tape may not be used to prevent freezing of sprinkler system branch lines. f. Heat tape shall not be used for new system designs. <p>NOTE: An exception to rule 2.f is heat tape that is in compliance with the other requirements of this standard may be used to protect fire system risers in unheated trailer crawl spaces from freezing.</p> <ol style="list-style-type: none"> g. All heat tape installations shall be approved by the TOC FPE. 	DOE O 420.1B, ENS-ENG-IP-05 R0

3.4 Alarm System Testing/Inspection and Maintenance

NOTE: Frequencies specified in the table below are minimum frequencies. More frequent ITM may be performed as needed.

3.4	Device	Frequency/Test	Source
1.	Panel lamps, light emitting diodes (LEDs)	Annually: Verify all illuminating devices have the capability to light and to provide the correct indications.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
2.	Fuses	ATP & Annually: Remove any unlacquered fuses and verify they are the correct style and rating. Verify the appropriate supervisory signals are received. Apply inspector's lacquer. Inspect visible fuses for untampered lacquer.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
3.	Circuit Interface Verification	Annually: Initiate an alarm condition for each initiation circuit or zone. Verify the signal is transmitted to the computer-aided dispatch system	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
4.	Audible and Visible Trouble Signal	Annually: Verify operation of panel trouble signals and ring-back feature for systems using a trouble-silencing switch, which requires resetting.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
5.	Bypass Disconnect Switches	Annually: When control unit (panel) has zone disconnect or bypass switches, verify each switch performs the intended function and a trouble signal is received when a zone is disconnected.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
6.	Ground-Fault Monitoring Circuit	Annually: If system has ground detection feature, verify a ground-fault indication is given whenever any installation conductor is grounded.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
7.	Power Supply Monitoring Circuits	Annually: Verify proper supervision for both primary and secondary power supplies. Verify battery transfer and charging features. Operate direct current bells and panel in an alarm condition for a minimum of 5 minutes on batteries.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
8.	Non-restorable Spot Detector	Replace the detectors with restorable heat detector(s) having the correct temperature rating.	NFPA 72; Table 10.4.2.2, 14.d.3

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3.4	Device	Frequency/Test	Source
9.	Restorable Heat and Wire-Type Detectors	<p>Annually: Inspect all detectors to ensure they are in good condition and there is nothing to impair proper operation. Test a minimum of two detectors on each initiation circuit each year, so <u>all</u> detectors are tested every 5 years;</p> <p>Taking care not to overheat and damage the detector or surrounding environment, test detectors with <u>one</u> of the following:</p> <ul style="list-style-type: none"> • A heat gun or similar apparatus, or • The built-in heating coil (supplied with the detector in some inaccessible areas.) 	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
10.	Smoke Detectors (Ionization or Photoelectric)	<p>Annually: Inspect all detectors to ensure they are in good condition and there is nothing to impair proper operation.</p> <p>Ensure each smoke detector is operative and produces the intended response. Initiate an alarm at the installed location with smoke or other aerosol acceptable to the manufacturer.</p> <p>For sampling air duct detector, verify the device will sample the air stream in accordance with manufacturer's instructions.</p> <p>Semi-Annually: Inspect sampling air duct detectors to ensure they are secure, not damaged, and operational.</p>	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
11.	Smoke Detectors (Ionization or Photoelectric)	<p>Biennially (5 yrs. if sensitivity is remaining stable.): Perform a sensitivity check using manufacturer's approved testers or listed control panel equipment. Visually inspect all detectors in place, wherever possible.</p> <p>Perform sensitivity check 1 year after new installation and biennial thereafter.</p> <p>NOTE: Item 3.4.11 does not apply to detectors with "self-check" feature.</p>	NFPA 72; 10.4.4

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3.4	Device	Frequency/Test	Source
12.	Flame/Radiant Energy	Semi-Annually: Inspect all detectors to ensure they are in good condition and there is nothing to impair proper operation. Perform a test using the equipment manufacturer recommended technique.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
13.	Fire/ Gas Detector	Annually: Inspect all detectors to ensure they are in good condition, and there is nothing to impair proper operation. Perform a test using the equipment manufacturer recommended technique.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
14.	Water Flow Alarm (Flow or Pressure Switch, and Local Flow Alarm)	Semiannually: Flow water through the inspector's test valve(s) or alarm test valve. Monitor the response to ensure a fire alarm signal is generated at the facility fire alarm control panel within 90 seconds and that the local flow alarm sounds.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4 NFPA 25; Table 5.1
15.	Extinguishing System Alarm Initiation Switch (Foam, Halon, dry chemical, CO ₂ , limited water systems, etc.)	Annually: Use the manufacturer's recommended technique to test the system. Send the extinguishing system into a fire alarm condition. Monitor the signal to ensure it will transmit to the HFD.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
16.	Manual Stations (Pull Boxes)	Annually: Actuate each manual station to verify the station transmits an alarm signal to the facility fire alarm control panel.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
17.	Supervisory Signal Initiating Devices	Annually: Verify the alarm set point occurs only at the intended level and is within the limits specified under the appropriate category.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
18.	Post Indicator Valve (PIV)	Annually: Verify a valve closure signal is received within two full turns or one-fifth of the valve travel from the fully open position.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
19.	Butterfly, gate, and OS&Y valve	Annually: Verify a valve closure signal is received within two full turns or one-fifth of the valve travel from the fully open position.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4

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3.4	Device	Frequency/Test	Source
20.	High/Low Tank Level Switch	Annually: Functionally test the device and verify alarm indication is received.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
21.	High/Low Temperature Switch	Annually: Functionally test the device and verify alarm indication is received.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
22.	High/Low Pressure Switch	Annually: Functionally test the device and verify alarm indication is received.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
23.	Batteries	NEW/REPLACEMENT BATTERY: Conduct discharge test preferably at 1 or 2-hour discharge rate. Using manufacturer's data, verify the battery demonstrates at least 100% of rated capacity. Immediately recharge battery.	NFPA 72; Table 10.4.4
24.	Sealed Lead-Acid	Annually: Fire Alarm Control Panel (FACP) and Radio Fire Alarm Reporter (RFAR) Check open-circuit voltage. Under full-load conditions with battery charger disconnected and direct current bells ringing, measure battery voltage. Clean all connections. *NOTE: May be extended up to 4 yrs. for specially designed high quality extended life batteries based on manufacturers' recommendations and results of previous capacity test. 4 Years: (FACP and RFAR) Replace batteries or when testing indicates replacement is necessary.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
25.	Alarm Notification Appliances: Supervised Devices	Annually: Actuate an initiating device to put the system into alarm. Monitor the sound level produced by each audible device to ensure it is clearly audible over the ambient background noise level. Monitor each visual alarm to ensure it can be seen clearly with normal ambient light levels.	NFPA 72; Tables 10.3.1 & 10.4.4

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3.4	Device	Frequency/Test	Source
26.	Alarm Notification Appliances: Unsupervised Devices	2 Months: Actuate an initiating device to put the system into alarm. Monitor the sound level produced by each audible device to ensure it is clearly audible over the ambient background noise level. Monitor each visual alarm to ensure it can be seen clearly with normal ambient light levels. Once per year this test is to be performed using FACP backup power.	NFPA 72; Tables 10.3.1 & 10.4.4
27.	Annunciators	Annually: Send one device into the alarm condition for each annunciator window. Verify the alarm is received at the local annunciator.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
28.	Auxiliary Function Circuits	Annually: Functional test of all automatic initiation circuits to verify proper operation (e.g., door closer, HVAC shutdown, damper closure).	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
29.	Electro-Thermal Links (ETLs)	Annually: Verify operation of the initiating circuitry by tripping the ETL or a simulation device in lieu of the ETL. Verify electrical continuity of the ETL using the manufacturer's instructions.	NFPA 72; Tables 10.4.2.2, 10.3.1 & 10.4.4
30.	Speakers (One-Way Emergency Voice/Alarm System)	Annually: Put the system into an operating mode. Monitor for voice, signal, tone, quality etc., as appropriate. Monitor the sound level to ensure the alarm is clearly audible over the ambient background noise level in all areas of the facility.	NFPA 72; Tables 10.3.1 & 10.4.4
31.	Communications Centers and Fire Stations	Weekly: Operate an emergency power source, other than batteries, to supply the system for a continuous period of 1 hour.	NFPA 72; 10.4.4
32.	Coded Radio Reporting Systems	Annually: Perform a front button test on all RFAR panels. Examine and clean the boxes and test all functions. This test shall include the transmission of a complete message function associated with each box tested.	NFPA 72; Tables 10.3.1 & 10.4.4

3.5 Suppression System Testing/Inspection and Maintenance

NOTE: Frequencies specified in the table below are minimum frequencies. More frequent ITM may be performed as needed.

3.5	Device	Frequency/Test	Source
1.	Riser Flow Test	<p>Annually: Conduct a main-drain water flow test to verify that the system is fully operable.</p> <p>Quarterly: Conduct a main drain test on at least one riser downstream of a backflow preventer or pressure reducing device</p>	NFPA 25; 12.2.6
2.	Gauges	<p>*Monthly: Check gauges to verify indicated pressure is in the normal range.</p>	NFPA 25; 5.2.4
		<p>5 Years: Check all gauges with a calibrated gauge, or replace them with a new accurate gauge of the type, style, and range required for the application.</p>	NFPA 25 5.3.2
3.	Piping, etc.	<p>2 Years: Visually inspect physical condition of piping, hangers and braces, alarm devices, sprinkler heads, and fittings,</p>	NFPA 25; 5.2.2
		<p>5 Years: Examine internal condition of piping where conditions exist that could cause obstructions.</p>	NFPA 25; 13.2.2
4.	Sprinkler Heads	<p>5 Years: For solder type sprinklers of extra high temperature class, test heads in accordance with the reference.</p>	NFPA 25; 5.3.1.1.1.3
		<p>10 Years: For sprinklers on wet systems for more than 50 years, test or replace heads in accordance with the reference.</p>	NFPA 25; 5.3.1.1.1
		<p>For fast response sprinklers in service for 20 years, test heads in accordance with the reference.</p>	NFPA 25; 5.3.1.1.1.2
		<p>For sprinklers on dry systems for 10 years, test or replace heads in accordance with the reference.</p>	NFPA 25; 5.3.1.1.1.5

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3.5	Device	Frequency/Test	Source
		Annually: Replace sprinkler heads for commercial cooking equipment and for ventilation systems.	NFPA 25 5.4.1.9
5.	Wet Systems (Alarm check valves & non-alarm valve risers, i.e. "shotgun" risers)	Quarterly: Perform external riser inspection.	NFPA 25; 12.4.1.1
		5 Years: Conduct open faceplate inspection. Clean and inspect trim strainers and check valves, filters, and restriction orifices. Repair as necessary.	NFPA 25; 12.4.1.2 RL letter 96-OSH-068, dated 10/19/2000
6.	Antifreeze Systems	Annually (Fall): Inspect all antifreeze systems each year before cold weather. Verify antifreeze solution meets NFPA 13 requirements. Drain sprinkler system drip lines, fire pump hose headers, dry pipe sprinkler system air compressors, and dry system drum drip auxiliary drains.	NFPA 25; 5.3.4
7.	Deluge and Preaction Systems	<p>*Daily: During cold weather, if not provided with low temperature alarm, inspect valve enclosure heating equipment to ensure at least 40°F can be maintained.</p> <p>*Monthly: During cold weather if provided with low temperature alarm, inspect valve enclosure heating equipment to ensure at least 40°F can be maintained.</p> <p>4 Months: Perform external riser inspection. Check and adjust priming water. Test air supervisory alarms.</p> <p>Annually: Trip test the system with the control valve opened enough to cause the valve to latch in the open position. Test both the manual trip mechanism and automatic trip mechanism, where applicable. Visually inspect and clean interior during reset.</p> <p>3 Years: Trip test deluge valve under full flow conditions. Provide water diversion as required.</p> <p>5 Years: Visually inspect interior of deluge/pre-action valves, which can be reset without removing the faceplate. Inspect strainers, filters, orifices, and diaphragm chambers.</p>	NFPA 25; 12.4.3

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3.5	Device	Frequency/Test	Source
8.	Dry Systems (Dry Valves, Accelerators, Exhausters)	<p>*Daily: (during cold weather if not provided w/low temperature alarm)</p> <p>*Monthly: (during cold weather if provided w/low temperature alarm) Inspect valve enclosure heating equipment to ensure at least 5°C (40°F) can be maintained.</p> <p>Quarterly: Externally inspect the valve and trim. Inspect the priming water level to ensure that the proper water levels are being maintained as recommended by the dry valve manufacturer.</p> <p>Quarterly: Test high/low air pressure alarms on system to verify operation.</p> <p>Annually (Spring or Summer): Trip test each dry-pipe valve, including quick opening device if installed, with the control valve partially open. Clean, inspect, and reset the valve. Inspect check valves and drip valves. Ensure water does not enter overhead piping.</p> <p>3 Years: Once every 3 years or when the system is altered, trip test each dry-pipe valve with the control valve wide open. Verify/adjust set points on all switches as necessary.</p> <p>5 Years: Inspect strainers, filters, and restricted orifices.</p>	NFPA 25; 12.4.4
9.	Air Compressors Air Dryers	<p>Annually: Check air dryers/desiccant in accordance with manufacturer's instructions.</p> <p>Perform maintenance on compressors in accordance with manufacturer's instructions.</p>	NFPA 25; 5.4.2
10.	Water Spray Fixed Systems	<p>Annually: Sprinkler heads shall be inspected to verify spray pattern. Piping and hangers to be inspected.</p> <p>Annually: The spray system shall be fully operated (including manual release device) to provide a system flush and verify water flow in accordance with NFPA 25, 7-4. Nozzle strainers shall be cleaned after each flow/flush. Confirm drainage area is not blocked or damaged.</p>	NFPA 25; 10.2 10.3

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3.5	Device	Frequency/Test	Source
11.	Halon Systems	<p>Semi-Annually: Check the agent quantity and pressure of refillable containers.</p> <p>Visually inspect the total system.</p> <p>Annually: Examine all system hoses for damage.</p> <p>Thoroughly inspect and test system for proper operation (including manual trip stations).</p> <p>5 Years: Inspect all hoses for integrity, and subject hoses to a pressure test. Visually inspect exterior of container for integrity in accordance with the Compressed Gas Association pamphlet C-6.</p>	NFPA 12A; 6.1; 6.2;6.3
12.	Dry Chemical Systems (Fixed)	<p>*Monthly: Inspect system and components in accordance with manufacturer's instructions.</p> <p>Semi-Annually: Inspect and functionally test releasing devices and system operation in accordance with manufacturer's instructions. (Do not discharge chemical agent.)</p> <p>Annually: Replace fusible link temperature sensing devices.</p> <p>12 Years: Hydrostatically test the chemical container and hose assembly.</p>	NFPA 17; 9-2; 9-3; 9-5
13.	Control Valves	<p>*Weekly: (valves without locks or tamper switches)</p> <p>Inspect the installation and verify control valves are in the open position.</p> <p>*Monthly: (valves with locks or tamper switches)</p> <p>Inspect the installation and verify control valves are in the open position.</p> <p>Annually: Perform the following on each primary, sectional, and control valve:</p> <ul style="list-style-type: none"> • Oil or grease sprinkler system OS&Y valve stems. • Operate all valves the full travel of their mechanism to ensure they operate easily. 	NFPA 25; 12.3

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3.5	Device	Frequency/Test	Source
		<p>Maintain a record of the number of turns required to operate each valve from the fully open to the fully shut position. Reopen the valve and check to see if the number of turns to close equals the number to open.</p> <ul style="list-style-type: none"> Open each PIV until spring or torsion is felt in the rod, indicating the rod <u>has not</u> become detached from the valve. Valves should be backed off one-quarter turn from wide open to prevent jamming. 	
14.	Check Valves	5 Years: Perform internal inspection. Repair as required.	NFPA 25; 12.4.2.1
15.	Pressure Regulating Valves (sprinklers)	<p>4 Months: Inspect condition and verify there are no leaks, and all hardware is in place.</p> <p>5 Years: Perform flow test, compare to previous test data and adjust device if necessary.</p>	NFPA 25; 12.5.1
16.	Water Tanks	<p>*Daily: (during cold weather)</p> <p>When the temperature of the environment that surrounds the tank is 40°F or below, inspect the tank level, the water temperature, and the heating system to ensure it is operational and adequate to meet the conditions.</p> <p>*Monthly: Inspect water level. Inspect air pressure in pressure tanks. Test cold temperature alarms.</p> <p>*3 Months: Inspect support structure and general surroundings.</p> <p>*Semi-Annually: Test water level alarm. Test each relief valve on pressure tanks.</p> <p>*Annually: Inspect exterior conditions and expansion joints. Test heating systems and high water temperature limit switches. Maintain cathodic protection, cycle drain valves, and clean vents.</p> <p>*3 Years: Inspect interior of steel tanks without cathodic protection and pressure tanks.</p>	NFPA 25; 9.2; 9.3

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3.5	Device	Frequency/Test	Source
		* 5 Years: Inspect interior of tanks with cathodic protection. Test level gauges.	
17.	Standpipes	2 Years: Inspect general condition of piping and appurtenances. 5 Years: Dry standpipe hydrostatic test.	NFPA 25; 6.1; 6.3
18.	Hose and Hose Stations	Quarterly: Inspect hose connections for general condition of components. Annually: Inspect to ensure: <ul style="list-style-type: none"> • All equipment is in place and in good condition. • Hose station valves are not leaking. • Hose racks or reels and nozzles are free from mechanical damage. 5 Years (initial); 3 Years (subsequent): Remove and service-test hose stored on racks and reels and in hose houses at intervals not exceeding 5 years after installation and every 3 years afterwards.	NFPA 25; Table 6.1 NFPA 1962; 4.3.2
19.	Fire Department Connections	Quarterly: Inspect and verify Fire Department connections are accessible and free from obstructions.	NFPA 25; 12.7.1
20.	Mainline Strainers	Annually: Clean strainer. 5 Years: Perform internal inspection of strainer.	NFPA 25; 12.4
21.	Fire Hydrants	Annually: Cycle each ground valve over its full travel. Maintain a record of the number of turns for both the open and close directions. Verify the number of turns in each direction is the same. Annually: Lubricate and operate thread mechanisms. Annually: Hydrant shall be opened fully and flushed for at least one minute. Hydrant operation and proper draining shall be verified.	NFPA 25; 7.2 7.3; 7.4

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3.5	Device	Frequency/Test	Source
		<p>5 Years: Flow test each hydrant to determine hydrant and distribution system flow characteristics. Verify against known system performance.</p>	
22.	Fire Pumps	<p>*Weekly: Test automatic starting on a pressure drop. Run 30 minutes minimum for diesel pumps, 10 minutes minimum for electric. Perform inspections specified in Paragraph 8.2.2 of the source document.</p> <p>Verify proper operation of circulation relief valves and pressure relief valves.</p> <p>*Annually: Conduct performance test of pump in accordance with 5-3.3 of the reference.</p> <ul style="list-style-type: none"> • Check controller timer. • Check for proper indication of controller lights. • Check all valves to make sure they are in the correct position (open or closed). <p>Pump performance test:</p> <ul style="list-style-type: none"> • Verify pump speed at each flow. • Record suction and discharge pressure at each flow. • Check water-flow and alarm switches. • Test relief valve setting. • Calibrate gages. • Operate speed trip (internal combustion) <p>*As Required: A preventive maintenance program shall be established in accordance with the driver and pump manufacturer's recommendation.</p>	NFPA 25 8.3; 8.5

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3.5	Device	Frequency/Test	Source
23	Winterization	<p>*Annually</p> <p>Inspect each facility by the end of October to ensure all areas are winterized to protect the installed fire protection systems. Ensure the following (as a minimum):</p> <ul style="list-style-type: none"> a. Condition/operation and adequacy of heating systems (e.g., forced air, radiant heaters, portable heaters, etc.) b. Condition/operation of thermostats and filters. c. Condition/operation/installation of heat tape systems. 	NFPA 25; 5.3.4

3.6 Miscellaneous System Testing/Inspection and Maintenance

NOTE: Frequencies specified in the table below are minimum frequencies. More frequent ITM may be performed as needed.

3.6	Device	Frequency/Test	Source
1.	Fire/Smoke Dampers	<p>*4 Years: Carefully disconnect the actuating device, and verify the damper closes without any additional force being required. Inspect the damper, giving attention to hinges and other moving parts, to see the damper is in good operable condition. Check the latch, if provided, and lubricate moving parts, if necessary. Dampers listed for "dynamic air flow" shall be tested under airflow conditions only if the system is designed for dynamic flow operation of the damper.</p> <p>Verify the damper force will totally close and latch the damper under normal operating conditions.</p>	NFPA 90A 5.4.7
2.	Fire and Smoke Barriers	<p>*2 Years: Inspect all fire and smoke barriers within the building or facility to ensure they are capable of providing the necessary control of smoke or fire (i.e., have not been penetrated, seals in acceptable condition). Any questionable findings shall be resolved with approval of the area FPE.</p>	NFPA 90A; App. B
3.	Fire Doors	<p>*Annually: Examine hardware and replace any parts found to be inoperative. Inspect Tinclad and Kalamein</p>	NFPA 80; 15.2.1

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3.6	Device	Frequency/Test	Source
		<p>doors for dry rot. Inspect chains or cables used on suspended doors for excessive wear and stretching.</p> <p>Check chains or cables on counter-balanced doors, and make adjustments to ensure proper latching and to keep the doors in proper relation to the opening. Keep guides and bearings well lubricated to facilitate operation. Keep self-closing devices in proper working condition at all times. Test doors normally held in the open position and equipped with automatic closing devices to ensure proper operation. Test all doors for proper operation and full closure.</p>	
4.	Ventilation	<p>*Annually: (Increase frequency if necessary. Does not apply to radiological contaminated ducts.)</p> <p>For building ventilation, exhaust, blower and duct systems where flammable/combustible vapors, residues, lint, and/or fibers may accumulate, perform, as a minimum, a documented inspection with cleaning, calibration, and replacement of components as required. Ensure the following:</p> <ul style="list-style-type: none"> • grill plates are clean • Replace filter media (if design permits) • Remove any buildup of foreign material from the duct interior, if conditions warrant. <p>NOTE: The extent of inspection and maintenance necessary depends on many factors, including the environment being ventilated, material exhausted, equipment type, and operating pattern. All components exposed to the airflow should be included in the inspections. Combustible dust buildup (thick enough to obscure the surface of the duct) is a hazard. Similarly, exhaust systems for areas where combustible liquids are used (such as lubricants and solvents) can be coated with a highly combustible finish and be a hazard.</p>	NFPA 90A; App. B

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3.6	Device	Frequency/Test	Source
5.	Portable Fire Extinguishers (All)	<p>*Monthly: Inspect each extinguisher for:</p> <ul style="list-style-type: none"> • Proper location • Accessibility • Seals not broken • Pressure gage in operable range (if provided) • For extinguishers without a gauge, check fullness by "hefting." • Physical condition <p>NOTE 1: Form A-6001-525 may be used to document the inspection.</p> <p>NOTE 2: Facility personnel are responsible for initialing the inspection tag during the monthly inspection. If facility personnel install new tags on the extinguishers, they must transfer the extinguisher data from the top of the old tag to the new tag.</p> <p>NOTE 3: An electronic bar-coding system may be used for recording the monthly inspection in lieu of the inspection tag.</p> <p>NOTE 4: The HFD annual inspection does not replace the facility monthly inspection.</p>	NFPA 10; 7.2.2
	Dry chemical extinguishers	Annually: Inspect to ensure that physical condition is unimpaired, pressure gage is in operable range, and dry chemical is not compacted. Perform internal inspection on non-stored pressure extinguishers.	NFPA 10 7.3.1.1.2
	Stored pressure extinguishers	Annually: Inspect for unimpaired physical condition and pressure gage in operable range. Weigh extinguishers.	NFPA 10 7.2.3
	Carbon Dioxide & Pressurized Water	*5 Years: Hydrostatically test and perform maintenance	NFPA 10; 7.3.1.1

3.6	Device	Frequency/Test	Source
	Stored Pressure (having a 12yr. hydrostatic test)	*6 Years: Disassemble and perform maintenance on units	NFPA 10; 7.3.1.2
	Non-rechargeable Extinguishers	*12 Years: Remove from service.	NFPA 10; 7.3.1.2
	Halon, dry chemical, and stored pressure extinguishers (not including pressurized water and CO ₂ .)	*12 Years: Hydrostatically Test	NFPA 10; 7.3.1.2
6.	Exit Signs	<p>*Monthly: Inspect exit signs with internal electrical lighting source to ensure all lamps are functional.</p> <p>*Annually: Inspect tritium gas-powered exit signs to ensure the tritium gas tubes are not damaged, the signs are in place and are not obstructed. Replace the signs before their expiration date as noted on the individual signs.</p> <p>*Annually: Exit signs equipped with standby batteries shall be operationally tested for a minimum of 1-1/2 hours.</p>	NFPA 101; 7.10.9.1
7.	Building Emergency Lights	<p>*Monthly: Operationally test lights for a minimum of 30 seconds. During this test, it is suggested the following items be verified also:</p> <ul style="list-style-type: none"> • Lamps are not cracked or damaged • Units are securely mounted • Lamps are properly positioned to provide illumination for the required areas • Lamps illuminate within 10 seconds of switching to the backup power supply. <p>*Annually: Operationally test lights for a minimum of 1-1/2 hours.</p>	NFPA 101; 7.9.3

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3.6	Device	Frequency/Test	Source
		NOTE: When Emergency Generators are used to satisfy the emergency light requirements, the generators/ systems shall be tested per NFPA 110, "Standard for Emergency and Standby Power Systems." The items above do not apply.	

3.7 Records

The following records are generated during the performance of this standard:

- Emergency Impairment Status Report
- Hanford Site Fire Surveillance Log, A-6001-431
- Inspection – Fire Extinguishers, A-6001-525
- System Restriction corrective action plan
- System Restriction, Emergency Impairment Tracking.

The record custodian identified in the Company Level Records Retention and Disposition Schedule (RIDS) is responsible for record retention in accordance with [TFC-BSM-IRM DC-C-02](#). Other records generated from the referenced surveillance and maintenance procedures and the problem evaluation reporting process are controlled in accordance with the process that generated the record.

4.0 DEFINITIONS

Compensatory Measures. Actions taken to mitigate the potential consequences of a fire protection system discrepancy until the fire system is restored to service.

Continuous Fire Surveillance. Surveillance established in an area where the individual continuously occupies the affected area, and there are no physical barriers (i.e., walls) between the individual and the area with the impairment.

Corrective Action Plan. A written communication (such as an electronic mail message, internal memo, letter, or work package reference) that, at a minimum, includes an estimated completion date.

Corrective Actions. Actions taken to repair/restore a fire system or to correct a design/installation deficiency. Repairs and restoration are typically done using work packages. Design/installation deficiencies frequently require design changes and/or project attention.

Discrepancy Types. Regularly scheduled fire protection system testing/preventive maintenance activities do not constitute a discrepancy if the activity is conducted using approved procedures.

- Deficiency A system design condition that does not prevent a fire protection system from operating as designed (not an impairment) but is characterized by a problem such as a code

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noncompliance, potential for failure, misapplication, inadequate coverage, or similar condition.

- System restriction A condition that restricts or otherwise impairs any fire protection system but does not preclude it from operating and/or transmitting a fire alarm.
- Planned impairment A planned outage that causes all or part of a fire protection system to become inoperable, normally for modification and/or correction of deficiencies.
- Emergency impairment Any unplanned condition that causes all or part of a fire protection system to be inoperable (unable to perform its intended function).

NOTE: A single device out of service in an area having many devices of the same kind would not necessarily constitute an emergency impairment. For example, a single smoke detector out of service in an open bay area covered by other functional smoke detectors may not be an emergency impairment. This decision is by agreement of the facility FPE and the HFD.

Fire Protection System. A fire suppression system, fire alarm system, or fire barrier installed to prevent or mitigate fire damage or threat to life.

Fire Surveillance. In the context of this document, a fire surveillance is performed by a person assigned to survey the area(s) affected by an impairment, for the purpose of identifying fires and initiating emergency action (i.e., notify fire department, sound building alarm/notify building occupants to evacuate).

Fire surveillance is an interim compensatory measure to be used only when fire protection systems are inoperable (impaired), as provided in this document. Compensatory measures are intended to reduce fire risk during the short period of time the fire protection systems are impaired. Compensatory measures are not equivalent to operable fire protection systems.

Hourly Fire Surveillance. A roving surveillance that will inspect each portion of an affected area at least once per hour.

Occupied Area. An area where personnel normally report and remain during a designated work shift, and the area is not normally left unoccupied during the shift for longer than one hour. In addition, there are no physical barriers (i.e., walls) between the individual and the area with the impairment.

5.0 SOURCES

5.1 Requirements

1. [DOE O 420.1B](#), "Facility Safety."
2. [ENS-ENG-IP-05 R0](#), "ORP Fire Protection Program."
3. 29 CFR 1910, "General Industry," Subsection L, "Fire Protection."

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5.2 References

1. NFPA[®] 1, “Fire Code.”
2. NFPA 10, “Standard for Portable Fire Extinguishers.”
3. NFPA 12A, “Standard on Halon 1301 Fire Extinguishing Systems.”
4. NFPA 17, “Standard for Dry Chemical Extinguishing Systems.”
5. NFPA 25, “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.”
6. NFPA 72[®], “National Fire Alarm Code.”[®]
7. NFPA 80, “Standard for Fire Doors and Other Opening Protectives.”
8. NFPA 90A, “Standard for the Installation of Air-Conditioning and Ventilating Systems.”
9. NFPA 101[®], “Life Safety Code.”[®]
10. NFPA 110, “Emergency and Standby Power Systems.”
11. NFPA 1962, “Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose.”
12. TFC-BSM-FPM_PR-C-11, “Winterization Plan for 200 Area Tank Farm Facilities.”
13. [TFC-ESHQ-FP-STD-09](#), “Fire Protection System Winterization and Portable Heater Use.”

ATTACHMENT A – RECALL FREQUENCY PROTOCOL

Recurring frequencies expressed in this standard are to be applied using the following criteria.

- a. Test frequencies may not be extended for operational/scheduling conflicts. Compensatory measures will be put into place as agreed to by the TOC Fire Protection Engineer.
- b. Specific calendar dates are not to be used for determining the next scheduled due date nor late date. Any activity performed within the specified frequency (e.g., monthly, annually, semiannually) complies with the requirements established by this standard.
- c. Inspection, test, and maintenance activities with frequencies longer than a month shall be scheduled to occur during the last month of the frequency specified for the given activity within this standard. The activity shall not be considered delinquent until the first day of the month following the scheduled month. For example, if an annual activity is originally to be performed in January, it shall next be scheduled for performance during January of the following year and shall comply with these criteria if performed on or before January 31.
- d. Scheduling of these activities that are performed in the delinquent period, shall continue to be scheduled using the original by-month sequence. For example, an annual activity scheduled for March but actually performed in June shall next be scheduled for performance the following March. Likewise, an annual activity scheduled for performance in August but performed in July would continue to be scheduled for performance during August of subsequent years.