

Water-Based Fire Protection System Inspection Guidelines for Tagging

Inspector Deficiencies, Non Testing and Testing Deficiencies

Item	Deficiency	Tag	Action	Reference
FOAM-WATER SPRINKLER SYSTEM				NFPA #25
Foam-water discharge devices	Discharge devices missing, not properly positioned or pointed in design direction, loaded or corroded	Red	30 day notice	11.2.5.1
	Missing caps or plugs if required or not free to operate as intended.	Red	30 day notice	11.2.5.2
	Discharge devices not listed for use with foam concentrate	Red	30 day notice	11.2.5.4
Foam concentrate strainers	Blow-down valve open or not plugged	Red	30 day notice (close valve)	11.2.7.2
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	Red	30 day notice	11.2.8
Proportioning systems (all)	Proportioning system valves not in correct open/closed position in accordance with specified operating conditions	Red	30 day notice (24 hour notice if inspector cannot get corrected)	11.2.9.3
	Concentrate tank does not have correct quantity required by original design	Red	30 day notice (24 hour notice if no reserve supply)	11.2.9.4
Standard pressure proportioner	Automatic drains (ball drip valves) not free or open, external corrosion on foam concentrate tanks	Red	30 day notice	11.2.9.5.1
Bladder tank proportioner	Water control valve to foam concentrate in "closed" position, external corrosion on foam concentrate tank, foam in water surrounding bladder	Red	24 hour notice unless hydraulically actuated ball valve (30 day notice for external corrosion)	11.2.9.5.2
Line proportioner	Strainer damaged, corroded, plugged or fouled, pressure vacuum vent not operating freely, external corrosion on foam concentrate tank	Red	30 day notice	11.2.9.5.3
Standard balanced pressure proportioner	Strainer damaged, corroded, plugged or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures, sensing line valves not open, no power to foam liquid pump	Red	30 day notice (24 hour notice if system will not function)	11.2.9.5.4
In-Line balanced pressure proportioner	Strainer damaged, corroded, plugged or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures, sensing line valves at pump unit or individual proportioner stations not open, no power to foam liquid pump	Red	30 day notice (24 hour notice if system will not function)	11.2.9.5.5
Orifice plate proportioner	Strainer damaged, corroded, plugged or fouled, pressure vacuum vent not operating freely, gauges damaged or not showing proper pressures, no power to foam liquid pump	Red	30 day notice (24 hour notice if system will not function)	11.2.9.5.6
Foam concentrate	Samples not taken and submitted for test	Red	30 day notice	11.2.10
Pipe and fittings	Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location or poor condition of rubber-gasketed fittings	Red	30 day notice	11.2.3
Hangers & seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded.	Red	30 day notice	11.2.4
Automatic detection equipment	Missing detectors, loose, not protected from corrosion or weather, damaged, communication wiring, control panels or pneumatic tubing system non functional	Red	30 day notice (24 hour notice if detection system will not function)	NFPA #72

Operational Test	Test not done after 1 year, fire detection system did not operate within requirements of NFPA #72	Red	30 day notice (24 hour notice if detection system will not function)	11.3 11.3.3.4
	Nozzles are plugged or not correctly positioned	Red	30 day notice	11.3.3.6.1
	Pressure readings are not comparable to original design requirements	Red	30 day notice (24 hour notice if substantial difference)	11.3.3.7.3
	Manual actuation devices did not work properly	Red	30 day notice	11.3.5
	Foam sample did not pass concentration test	Red	30 day notice	11.3.6
WATER SPRAY FIXED SYSTEMS				NFPA #25
Water spray nozzles	Discharge devices missing, not properly positioned or pointed in design direction, loaded or corroded	Red	30 day notice	10.2.5.1
	Missing caps or plugs if required or not free to operate as intended.	Red	30 day notice	10.2.5.2
Strainers	Strainer damaged, corroded, plugged or fouled	Red	30 day notice	10.2.7
Drainage	Trap sumps and drainage trenches blocked, retention embankments or dikes in disrepair	Red	30 day notice	10.2.8
Pipe and fittings	Mechanical damage, missing or damaged paint or coating, rusted or corroded, not properly aligned or trapped sections, low point drains not functioning, improper location of rubber-gasketed fittings	Red	30 day notice	10.2.4.1
Hangers & seismic braces	Damaged or missing, not securely attached to structural or piping, missing or damaged paint or coating, rusted or corroded.	Red	30 day notice	10.2.4.2
Automatic detection equipment	Missing detectors, loose, not protected from corrosion or weather, damaged, communication wiring, control panels or pneumatic tubing system non functional	Red	30 day notice (24 hour notice if detection system will not function)	NFPA #72
Ultra-High-Speed	Detectors have physical damage or deposits on lenses of optical detectors	Red	30 day notice (24 hour notice if detectors will not function)	10.4.2
	Controllers found to have faults	Red	24 hour notice	10.4.3
Operational test	Test not done after 1 year, heat detection system did not operate within 40 seconds, flammable gas detection system did not operate within 20 seconds	Red	30 day notice (24 hour notice if system did not operate within time allowed)	10.3.1.1 10.3.4.1.1
	Nozzles are plugged or not correctly positioned	Red	30 day notice	10.3.1.3.1
	Pressure readings are not comparable to original design requirements	Red	30 day notice (24 hour notice if substantial difference)	10.3.4.4
	Manual actuation devices did not work properly	Red	30 day notice	10.3.6
Ultra-High-Speed Operational test	Test not done after 1 year, response time was more than 100 milliseconds	Red	24 hour notice	10.4.5

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Item	Deficiency	Tag	Action	Reference
FIRE PUMP				NFPA #25
Pump house/room	Heat not adequate, temp. less than 40 (less than 70 for diesel pumps without engine heaters)	Red	30 day notice (24 hour notice when potential for freezing weather)	8.2.2
	Ventilating louvers not free to operate	Red	30 day notice	8.2.2
Pump system	Suction, discharge and bypass valves not fully open, pipe leaking, suction line & system line pressure not normal, suction reservoir not full, wet pit suction screens obstructed or missing	Red	30 day notice (24 hour notice if pump system would not be able to function)	8.2.2
Electrical system	Controller pilot light not illuminated, transfer switch pilot light not illuminated, isolating switch not closed, reverse phase alarm pilot light on or normal phase light is off, oil level in vertical motor sight glass not normal, circuit breakers and fuses over two years old.	Red	30 day notice (24 hour notice if pump system would not be able to function)	8.2.2 8.5.3
Diesel engine system	Fuel tank less than two-thirds full, controller selector switch not in auto position, battery voltage readings not normal, battery charging current not normal, battery pilot lights off or battery failure pilot lights on, alarm pilot lights are on, engine running time meter not reading, oil level in right angle gear drive not normal, crankcase oil level not normal, cooling water level not normal, electrolyte level in batteries not normal, battery terminals corroded, water-jacket heater not operating	Red	30 day notice (24 hour notice if pump system would not be able to function)	8.2.2
Steam system	Steam pressure gauge reading not normal	Red	30 day notice	8.2.2
Fire pump weekly test	Pump did not start automatically, electric pump did not run 10 minutes, diesel pump did not run 30 minutes	Red	30 day notice (24 hour notice if pump will not start automatically)	8.3.1
pump system	System suction and discharge gauge reading, pump starting pressure and pump packing gland discharge not acceptable, unusual noise or vibration, packing boxes, bearings or pump casing overheating	Red	30 day notice (24 hour notice if pump in danger of failure)	8.3.2.2
electrical system	Time for motor to accelerate to full speed, time controller is on first step or time pump runs after starting not acceptable	Red	30 day notice	8.3.2.2
diesel engine system	Time for engine to crank and time for engine to reach running speed not acceptable, low rpm, low oil pressure, high temperature, high cooling water pressure	Red	30 day notice (24 hour notice if diesel engine in danger of failure)	8.3.2
steam system	Gauge reading and time for turbine to reach running speed not acceptable	Red	30 day notice	8.3.2
Fire pump annual test	Churn condition not maintained for 30 minutes, circulation relief valve and/or pressure relief valve did not work properly	Red	30 day notice	8.3.3.2
	Pressure relief valve did not work properly at each flow condition	Red	30 day notice	8.3.3.3
	Flow test results are not within 5% of acceptance test or nameplate	Red	30 day notice (24 hour notice if results below system demand)	8.3.5.4
	Voltage readings at the motor are not within 5% below or 10% above the rated (nameplate)	Red	30 day notice	8.3.5.5
	Alarms did not properly operate	Red	30 day notice	8.3.3.5

Fire pump annual test (with transfer switch)	Overcurrent protective devices opened when simulating a power failure condition at peak load, power not transferred to alternate source, pump did not continue to perform at peak load, pump did not reconnect to normal power after removing power failure condition	Red	24 hour notice	8.3.3.4
	Parallel or angular alignment was not correct	Red	30 day notice	8.3.4.4
Pump house/room	Heating, lighting, ventilating systems did not pass test	Red	30 day notice	8.3.4.3
WATER STORAGE TANK				NFPA #25
Water level	Water level and/or condition not correct	Red	30 day notice (24 hour notice if level is 3"-4" below designated fire service level)	9.2.1
Air pressure	Air pressure in pressure tanks not correct	Red	30 day notice (24 hour notice if sole source of water)	9.2.2
Heating system	Heating system not operational, water temperature below 40	Red	30 day notice (24 hour notice if potential for freezing weather)	9.2.3
Exterior	Tank exterior, supporting structure, vents, foundation, catwalks or ladders where provided damaged	Red	30 day notice	9.2.5.1
	Area around tank has fire exposure hazard in form of combustible storage, trash, debris, brush or material	Red	30 day notice	9.2.5.2
	Accumulation of material on or near parts that could result in accelerated corrosion or rot	Red	30 day notice	9.2.5.2
	Ice buildup on tank and support	Red	30 day notice	9.2.5.2
	Erosion exists on exterior sides or top of embankments supporting coated fabric tanks	Red	30 day notice	9.2.5.2
	Expansion joints leaking or cracking	Red	30 day notice	9.2.5.3
	Hoops and grills of wooden tanks in poor condition	Red	30 day notice	9.2.5.4
	structure degraded	Red	30 day notice	9.2.5.5
Interior (pressure tanks or steel tanks w/o corrosion protection every 3 years, all others every 5 years)	Pitting, corrosion, spalling, rot other forms of deterioration, waste materials exist, aquatic growth, local or general failure of interior coating	Red	30 day notice	9.2.6.3
	Voids beneath floor with sand in the middle of tanks on ring type foundations	Red	30 day notice	9.2.6.5
	Heating system components or piping in poor condition	Red	30 day notice	9.2.6.6
	Deterioration or blockage of anti-vortex plate	Red	30 day notice (24 hour notice if blocked)	9.2.6.7
Testing	Low water temperature alarm did not pass test	Red	30 day notice	9.3.3
	High water temperature limit switch did not pass test	Red	30 day notice	9.3.4
	High and low water level alarms did not pass test	Red	30 day notice	9.3.5
	Level indicator not tested after 5 years, lacked freedom of movement or not accurate	Red	30 day notice	9.3.1
Interior testing	Tank coating did not pass adhesion, coating thickness or wet sponge test	Red	30 day notice	9.2.7
	Tank walls and bottoms did not pass ultrasonic test	Red	30 day notice	9.2.7
	Tank bottom seams did not pass vacuum-box test	Red	30 day notice	9.2.7

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Inspector Deficiencies

Item	Deficiency	Tag	Action	Reference
SPRINKLER SYSTEMS				NFPA #25
Sprinklers	Leaking, corroded, painted, loaded, foreign materials, improper orientation, empty glass bulb	Red	30 day notice (unless an entire area of painted sprinklers - 24 hour notice) Lightly corroded sprinklers - observation form note and five year test required	5.2.1.1.1
	Spray pattern obstructed - less than 18" below deflector (storage, signs, banner, etc.)	Red	30 day notice (unless an entire area of storage - 24 hour notice)	5.2.1.2
	Spray pattern obstructed - greater than 18" below deflector (ducts, decks, etc. over 4' wide, overhead doors)	Red	30 day notice	5.2.1.2
	No sprinklers in an area		Observation form note	
	Walls relocated, spacing issues		Observation form note	
Escutcheons	Missing, painted or rusted	Red	30 day notice (painted or rusted observation form note)	
Spare sprinkler cabinet	Cabinet missing, temp. over 100°F, not proper number and type, missing wrench for each type,	Red	30 day notice	5.2.1.3 5.4.1.4
Pipe and fittings	Poor condition/ external corrosion, mechanical damage, leaking, not properly aligned, external loads	Red	30 day notice	5.2.2
Hangers & seismic braces	Missing, damaged or loose	Red	30 day notice	5.2.3
Gauges	Damaged, not showing normal water/air pressure	Red	30 day notice	5.2.4
	Freezer - system pressure lower than compressor	Red	30 day notice	5.2.4.4
Building	Prior to winter - exposed piping exposed to freezing	Red	30 day notice	5.2.5
Valve enclosure	Not maintaining minimum 40° F temp.	Red	30 day notice (24 hour notice when potential for freezing weather)	12.4.3.1 12.4.4.1
Alarm devices	Physical damage apparent	Red	30 day notice	5.2.6
Hydraulic nameplate	Not legible or missing	Red	30 day notice	5.2.7
Inspection reports	No previous inspection reports on site		Observation form note	
VALVE, COMPONENTS & TRIM				NFPA #25
Control valve	Improper open or closed position, not sealed, locked or supervised, not accessible, no appropriate wrench if required, leaking and no identification	Red	30 day notice (24 hour notice if control valve cannot be fully opened)	12.3.2.2
Alarm valve	External physical damage, trim valves not in appropriate open or closed position, retard chamber or alarm drain leaking	Red	30 day notice	12.4.1.1
	Alarm valve, strainers, filters and restricted orifices not internally inspected after 5 years	Red	30 day notice	12.4.1.2
Check valve	Check valve not internally inspected after 5 years	Red	30 day notice	12.4.4.1.4
Dry pipe valve/Quick opening device	External physical damage, trim valves not in appropriate open or closed position, intermediate chamber leaking	Red	30 day notice	12.4.4.1.4
	Dry pipe valve, strainers, filters and restricted orifices not internally inspected after 5 years	Red	30 day notice	12.4.4.1.6
Preaction valve and deluge valve	External physical damage, trim valves not in appropriate open or closed position, valve seat leaking, electrical components not in service	Red	30 day notice (24 hours if system would not function)	12.4.3.1.6

Preaction valve and deluge valve	Interior of preaction valve/or deluge valve, strainers, filters, restricted orifices, and diaphragm chambers not internally inspected after 5 years	Red	30 day notice	12.4.3.1.8
Sprinkler pressure reducing control valves	Not in open position,leaking, not maintaining downstream pressures in accordance with the design criteria, valve damaged, handwheel missing or broken	Red	30 day notice (24 hour notice if valve will not function or cannot be operated)	12.5.1.1
PRIVATE FIRE SERVICE MAINS				
Exposed piping	Mechanical damage, leaking, corroded or not properly restrained	Red	30 day notice	7.2.2.1
Mainline strainers	Plugged or fouled, corroded	Red	30 day notice (24 hour notice if nonfunctional)	7.2.2.3
Backflow prevention assemblies	Reduced pressure assemblies differential-sensing valve relief port continuously discharging	Red	30 day notice (24 hour notice if water discharge will cause damage)	12.6.1.2
Fire department connection	Not visible nor accessible, couplings & swivels damaged, do not rotate smoothly, plugs & caps or gaskets damaged or missing, missing identification sign, check valve leaking, automatic drain not operating properly or missing, clapper not operating properly or missing	Red	30 day notice (24 hour notice if FDC cannot be used) Missing FDC - observation form note	12.7.1
Dry barrel , wet barrel & wall hydrant	Inaccessible, barrel contains water or ice, improper drainage from barrel, leaks at outlets or top of hydrant, cracks in barrel, tightness of outlets, worn nozzle threads, worn operating nut, missing wrench	Red	30 day notice	7.2.2.4
Hose/hydrant houses	Inaccessible, damaged, not fully equipped	Red	30 day notice	7.2.2.7
Monitor nozzles	Damaged, corroded or leaking	Red	30 day notice	7.2.2.6
STANDPIPE & HOSE SYSTEM				
Piping	Poor condition/ external corrosion, mechanical damage, leaking, not properly alligned, external loads	Red	30 day notice	6.2.1
Hose connection pressure reducing valves	Handwheel broken or missing, hose threads damaged, leaking, reducer and/or cap missing	Red	30 day notice	12.5.2
Hose rack assembly pressure reducing valve	Handwheel broken or missing, leaking	Red	30 day notice	12.5.3
Hose valves	leaking, visible obstructions, caps, hose threads, valve handle, cap gasket, no restricting device, damaged or in poor condition	Red	30 day notice	12.5.5
Hose	Mildew present, cuts and deterioration, couplings not of compatible threads, no gasket or damaged gaskets, corrosion present and hose not connected	Red	30 day notice	6.2.2
Hose nozzle	Missing, broken parts or thread gasket damaged	Red	30 day notice	6.2.2
Hose storage	Hose not properly racked or rolled, nozzle clip missing, nozzle not contained, damaged, obstruced	Red	30 day notice	6.2.2
Cabinet	Corroded or damaged parts, not easy to open, not accessible, not identified, door glazing in poor condition, lock not functioning in break glass type, valve, hose nozzle, fire extinguisher, ect. not readily accessible	Red	30 day notice	6.2.2

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Non Testing and Testing Deficiencies

Item	Deficiency	Tag	Action	Reference
SPRINKLER SYSTEMS				NFPA #25
Sprinklers - standard	No test after 50 years, every 10 years thereafter	Red	30 day notice	5.3.1.1.1
standard	Prior to 1920 not replaced	Red	30 day notice	5.3.1.1.1.1
standard	No test after 75 years, every 5 years thereafter	Red	30 day notice	5.3.1.1.1.4
Solder-type 325° or greater	No test after 5 years, every 5 years thereafter	Red	30 day notice	5.3.1.1.1.3
fast response	No test after 20 years, every 10 years thereafter	Red	30 day notice	5.3.1.1.1.2
dry	No test after 10 years, every 10 years thereafter	Red	30 day notice	5.3.1.1.1.5
Subject to harsh environments	(Corrosive atmospheres, corrosive water supply, includes freezers and coolers) No test after 5 years, every 5 years thereafter	Red	30 day notice	5.3.1.1.2
Solder type	(Commercial-type cooking eqpt. & ventilating systems) No replacement after one year	Red	30 day notice	5.4.1.9
Gauges	Not replaced or recalibrated if out of calibration after 5 years	Red	30 day notice	5.3.2
Alarm devices	Water motor and gong not functioning	Red	30 day notice	5.3.3
	Pressure switch or vane type switch not functioning or no alarm	Red	24 hour notice	5.3.3
Antifreeze systems	Specific gravity of antifreeze not correct	Red	30 day notice	5.3.4
Main drain	Large drop in full flow pressure or slow return to normal static pressure.	Red	24 hour notice	12.2.6
Obstruction Investigation	No inspection of main and branch line after 5 years or inspection revealed presence of MIC, zebra mussels, rust and scale	Red	30 day notice	13.2.1
VALVE, COMPONENTS & TRIM				NFPA #25
Control valve	Valve will not operate through its full range	Red	24 hour notice	12.3.3.1
	No spring or torsion felt in rod when opening post indicator valve	Red	24 hour notice (if it appears that valve will not fully open or gate is not longer attached to handle)	12.3.3.2
Supervisory switches	No signal from two revolutions of the hand wheel from normal position or when stem has moved one-fifth of the distance from normal position, signal restored in position other than normal	Red	24 hour notice (30 day notice if valve sealed or locked)	12.3.3.5.2
Dry pipe valve/Quick opening device	Priming water level not correct	Red	30 day notice	12.4.4.2.1
	Quick opening device did not pass test	Red	30 day notice (24 hour notice if system will not function)	12.4.4.2.4
	Automatic air maintenance device did not pass test	Red	30 day notice (24 hour notice if system will not function)	12.4.4.2.8
	Low air pressure switch did not send signal or no alarm	Red	30 day notice	12.4.4.2.6
	Low temperature switch did not send signal or no alarm	Red	30 day notice	12.4.4.2.7
	Annual trip test results were not comparable to previous tests	Red	30 day notice	12.4.4.2.2
	No full flow trip test done after 3 years or test results not comparable to previous results	Red	30 day notice	12.4.4.2.2.2

Preaction valve and deluge valve	Priming water level not correct	Red	30 day notice	12.4.3.2.1
	Automatic air maintenance device did not pass test	Red	30 day notice	12.4.3.2.12
	Low air pressure switch did not send signal or no alarm	Red	30 day notice	12.4.3.2.10
	Low temperature switch did not send signal or no alarm	Red	30 day notice	12.4.3.2.11
	Annual full flow trip test revealed plugged nozzles, pressure reading at hydraulically most remote nozzle and/or at valve not comparable to original design values, manual actuation devices did not operate properly	Red	30 day notice	12.4.3.2.2 12.4.3.2.3 12.4.3.2.4.3
Sprinkler pressure reducing control valves	No full flow test done after 5 years or test results not comparable to previous results	Red	30 day notice	12.5.1.2
PRIVATE FIRE SERVICE MAINS				NFPA #25
Underground and exposed piping	No flow test done after 5 years or test results not comparable to previous results	Red	30 day notice	7.3.1
Backflow prevention assemblies	No forward flow test done after one year or did not pass forward flow test	Red	30 day notice	12.6.2.1
	Did not pass backflow performance test	Red	30 day notice	12.6.2.1
Dry barrel & Wall hydrant	Hydrant did not flow clear or did not drain within 60 minutes	Red	30 day notice	7.3.2.1 7.3.2.4
Monitor nozzles	Did not flow acceptable amount of water or did not operate throughout their full range	Red	30 day notice	7.3.3.1 7.3.3.2
STANDPIPE & HOSE SYSTEM				NFPA #25
Hose connection pressure reducing valves	No full flow test done after 5 years or test results not comparable to previous results	Red	30 day notice	12.5.2.2
Hose rack assembly pressure reducing valve	No full flow test done after 5 years or test results not comparable to previous results	Red	30 day notice	12.5.3.2
Hose valves (Class I and Class III standpipe system)	Annual test revealed valve leaking or difficult to operate	Red	30 day notice	12.5.5.2.1 12.5.5.2.1.1
Hose valves (Class II standpipe system)	No test after 3 years or test revealed valve leaking or difficult to operate	Red	30 day notice	12.5.5.2.2 12.5.5.2.2.1
Hose	No test after initial 5 years or 3 years thereafter or did not pass service test	Red	30 day notice	NFPA #1962
Hose nozzle	Waterway obstructed, tip damaged, controls and adjustments do not operate as designed, shutoff valve if provided does not operate as designed or close off flow completely	Red	30 day notice	NFPA #1962
Hose storage device	Rack will not swing out of cabinet at least 90°	Red	30 day notice	6.2.2
Main drain	Large drop in full flow pressure or slow return to normal static pressure.	Red	24 hour notice	6.3.1.5
Standpipe system	No flow test done after 5 years or test results did not provide design pressure at required flow	Red	30 day notice	6.3.1.1
Dry standpipe, dry portion of wet standpipe and manual standpipe system	No hydrostatic test done after 5 years or test showed leaks	Red	30 day notice	6.3.2