

# PM000025

Revision 2

## SPRINKLER SYSTEM INSPECTION AND TESTING

Maintenance Procedure  
Continuous Use  
[FP02]

**APPROVED FOR USE**

1.0	INTRODUCTION.....	3
2.0	REFERENCES.....	3
3.0	MATERIAL LIST.....	4
4.0	EQUIPMENT LIST.....	4
5.0	PRECAUTIONS.....	5
6.0	LIMITATIONS.....	5
[ ]	6.1. HOLD AND WITNESS POINTS.....	5
[ ]	6.2. TAGOUT/LOCKOUT.....	5
[ ]	6.3. OTHER LIMITATIONS.....	5
7.0	PREREQUISITES.....	5
[ ]	7.1. ADMINISTRATIVE.....	5
[ ]	7.2. TASK PREPARATION.....	5
8.0	PERFORMANCE.....	6
[ ]	8.1. MONTHLY SPRINKLER SYSTEM INSPECTION.....	6
[ ]	8.2. QUARTERLY SPRINKLER SYSTEM INSPECTION AND TESTING.....	6
[ ]	8.3. SEMI-ANNUAL TESTING OF SUPERVISORY SWITCH.....	9
[ ]	8.4. ANNUAL CONTROL VALVE MAINTENANCE.....	9
[ ]	8.5. TASK VERIFICATION.....	9
[ ]	8.6. RESTORATION TO OPERATIONAL STATUS.....	10
	SAMPLE DATA SHEET.....	11

## 1.0 INTRODUCTION

This procedure provides basic work steps to safely perform periodic inspection and testing of Sprinkler Systems.

This procedure generates the following Quality records in accordance with WP 13-1, Quality Assurance Program Description (QAPD) and Hazardous Waste Facility Permit (HWFP).

- Attachment 1 consisting of one of the following:
  - EAPM000025-384 Salt Handling Shaft Hoist House
  - EAPM000025-411R Remote Handling Area
  - EAPM000025-411C Contact Handling Area
  - EAPM000025-411O Over Pack and Repair
  - EAPM000025-413 Exhaust Filter Building
  - EAPM000025-451 Support Building
  - EAPM000025-452 Safety And Emergency
  - EAPM000025-453 Warehouse & Shops
  - EAPM000025-455 Aux. Storage Bldg
  - EAPM000025-456 Pump House
  - EAPM000025-458 Guard & Security
  - EAPM000025-459 Core Storage
  - EAPM000025-474 Buildings 474A and 474B
  - EAPM000025-474C Building 474C
  - EAPM000025-474E Building 474E
  - EAPM000025-481 Warehouse Annex
  - EAPM000025-486 Engineer
  - EAPM000025-489 Training
  - EAPM000025-918 Trailer 918
  - EAPM000025-918B Trailer 918B
  - EAPM000025-950 Trailer 950
  - EAPM000025-951 Trailer 951
  - EAPM000025-952 Trailer 952
  - EAPM000025-965 Trailer 965
  - EAPM000025-971 Trailer 971
  - EAPM000025-986 Trailer 986

## 2.0 REFERENCES

## BASELINE (DEVELOPMENTAL)

29 CFR 1910	Subpart L – Fire Protection
NFPA 25	Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
NM 4890139088	WIPP, TSDF, Hazardous Waste Facility Permit New Mexico Environment Department, October 27, 1999
WP 10-2	MOIM
WP 10-WC3010	Maintenance PM/MWI Controlled Document Processing
WP 10-WC3011	Maintenance Process
WP 12 IS.01	Industrial Safety Program
WP 12-FP.01	Fire Protection Program
WP 12-FP3001	Fire Protection Impairment
WP 13-1	Quality Assurance Program Description

## REFERENCED (REQUIRED ON-HAND)

None required

**3.0 MATERIAL LIST**

ITEM	MATERIAL DESCRIPTION	QTY	UNIT	PR / WHSE STOCK NO.
1	Rags	N/A	N/A	38-01634
2	Lubricant, power lube	1	Can	X-51-04036

**4.0 EQUIPMENT LIST****SPECIAL EQUIPMENT**

ITEM	DESCRIPTION
1	Wire seals (as required)
2	Wrench (as required)
3	Keys for locks on control valves (as required)
4	6' Ladder (as required)
5	10' Ladder (as required)

**5.0 PRECAUTIONS**

The JOB HAZARDS CHECKLIST indicates types of hazards that may be present during the performance of this work. See the indicated section for precautions and mitigating actions.

**JOB HAZARDS CHECKLIST**

HAZARD	MITIGATED AT SECTION
CHEMICAL HAZARD	[ ] 8.4

**6.0 LIMITATIONS**

## [ ] 6.1. HOLD AND WITNESS POINTS

None required

## [ ] 6.2. TAGOUT/LOCKOUT

None required

## [ ] 6.3. OTHER LIMITATIONS

- The order of completion of this work may be modified, or sections may be performed in parallel.
- Brackets at the beginning of steps are optional place-keeping aids, and may be checked off as work progresses.
- Attachment 1 is a sample Data Sheet only. Each system shall have its own Data Sheet.
- Troubleshooting or other activities outside the scope of this PM may require the initiation of a work order and/or impairment tag as directed by the Responsible Engineer, Fire Protection Engineer (FPE), or Facility Shift Manager (FSM).

**7.0 PREREQUISITES**

## [ ] 7.1. ADMINISTRATIVE

[ ] 7.1.1. Personnel performing this work review these work instructions.

[ ] 7.1.2. Record work order number on Attachments.

## [ ] 7.2. TASK PREPARATION

[ ] 7.2.1. Obtain materials and equipment shown in Materials and Equipment section.

## 8.0 PERFORMANCE

### [ ] 8.1. MONTHLY SPRINKLER SYSTEM INSPECTION

#### [ ] 8.1.1. Visually inspect sprinkler system riser for the following:

- Accessibility
- Cracks
- Leaks
- Erosion
- Salt buildup
- Damage
- Corrosion
- Loose or missing parts
- Structural deterioration
- Condition of gauge(s)
- Proper position of gauge(s)

#### [ ] 8.1.2. Verify isolation valve for water motor gong is open and has wire seal in place. (if equipped)

#### [ ] 8.1.3. Verify control valve (if equipped) is open.

#### [ ] 8.1.4. Verify valve is locked unless provided with a supervisory switch.

#### [ ] 8.1.5. Document monthly inspection on attachment 1.

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### NOTE

This note applies to section 8.1.6

- Gauges should have current calibration stickers.
  - Gauges should read between 125 and 170 psi.
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#### [ ] 8.1.6. Record calibration due date.

#### [ ] 8.1.7. Record static water pressure on equipped gauge(s).

#### [ ] 8.1.8. **IF** gauge for sprinkler system pressure (Fac 474 & systems with an alarm valve) indicates above 170 psig, **THEN** notify Central Monitoring Room Operator (CMRO) **THEN** slowly bleed pressure to below 150 psig by cracking open main drain valve and visually observing pressure gauge, **THEN** document in comment section.

### [ ] 8.2. QUARTERLY SPRINKLER SYSTEM INSPECTION AND TESTING

- [ ] 8.2.1. Inspect fire department connection (if equipped) for:
  - Cracks
  - Erosion
  - Salt buildup
  - Corrosion
  - Loose or missing parts
  - Structural deterioration
  - Blocked access
  - Obstructions in waterway
  - Worn or damaged coupling and threads
  - Free-rotating swivel
  - Gasket in good condition
  - Missing or damaged protective cap
  - Check valve leakage
  
- [ ] 8.2.2. Inspect standpipe hose valves (if equipped) for:
  - Blocked access
  - Valve leakage
  - Missing or damaged hand-wheel or cap
  - Gasket in good condition
  - Damaged threads
  
- [ ] 8.2.3. Inspect water motor gong (if equipped), supervisory switch (if equipped) and pressure or flow switch for damage.
  
- [ ] 8.2.4. Test water-flow alarm devices as follows:
  - [ ] 8.2.4.1.1. Notify CMRO of sprinkler system testing.
  - [ ] 8.2.4.1.2. Fully open Inspector's Test valve and monitor lapsed time until alarm is received.
  - [ ] 8.2.4.1.3. Verify operation of water motor gong (if equipped).
  - [ ] 8.2.4.1.4. Close Inspector's Test valve after alarm has sounded or two minutes has elapsed.
  - [ ] 8.2.4.1.5. Record elapsed time for alarm to sound.  
**Acceptance Criteria:** 90 seconds max.
  - [ ] 8.2.4.1.6. Verify alarm was received in CMR.
  - [ ] 8.2.4.1.7. Reset FAP.
  - [ ] 8.2.4.1.8. Inspect Inspectors Test valve for leakage through valve.

- [ ] 8.2.4.1.9. **IF** alarm did not sound, **THEN** inspect FAP to see if signal was received.
- [ ] 8.2.4.1.10. **IF** alarm did not sound within 90 seconds, and the FAP did not receive a signal, **THEN** inspect the alarm line strainer (if equipped) and clean as required.
- [ ] 8.2.4.1.11. **IF** the water motor gong did not operate, or operated poorly, **THEN** inspect the strainer upstream of the motor gong and clean as required.
- [ ] 8.2.4.1.12. **IF** a strainer was cleaned, **THEN** repeat step [ ] 8.2.4.1.2 to [ ] 8.2.4.1.12 to determine if there was any improvement in alarm operation.

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**NOTE**

This note applies to section [ ] 8.2.5

Residual pressure normally reads 110 psi or greater when fire pump is running.

**IF** discrepancy is noted,

**THEN** notify FPE for further evaluation.

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- [ ] 8.2.5. Perform the sprinkler system main drain test as follows:
  - [ ] 8.2.5.1.1. Fully open main drain valve and, after pump starts up, record residual water pressure from riser gauge(s).
  - [ ] 8.2.5.1.2. Close main drain valve.
  - [ ] 8.2.5.1.3. Reset FAP.
  - [ ] 8.2.5.1.4. Inspect main drain valve for leakage through valve.
- [ ] 8.2.6. Notify CMRO sprinkler system testing and maintenance is complete.
- [ ] 8.2.7. Document quarterly inspection an attachment 1.

- 8.3. SEMI-ANNUAL TESTING OF SUPERVISORY SWITCH
  - 8.3.1. Notify CMRO of supervisory switch testing.
  - 8.3.2. Operate valve in the close direction two turns or until trouble alarm sounds at FAP.
  - 8.3.3. Return valve to the full open position. (Trouble alarm should clear).
  - 8.3.4. **IF** trouble alarm does not clear  
**THEN** notify responsible Engineer.
  - 8.3.5. Verify alarm was received in CMR.
  - 8.3.6. Notify CMRO supervisory switch testing is complete.
  - 8.3.7. Document semi-annual inspection an attachment 1.
  - 8.3.8. Notify CMRO sprinkler system testing and maintenance is complete.

**WARNING****Chemical Hazard Exists**

This warning applies to section  8.4

Personnel shall be familiar with the chemical manufacturer's Material Safety Data Sheet for chemicals used during the performance of this work

- 8.4. ANNUAL CONTROL VALVE MAINTENANCE
  - 8.4.1. All personnel involved in the performance of this work discuss hazards, precautions and mitigating actions to be taken for the chemical being used.
  - 8.4.2. Lubricate OS&Y valve stem.
  - 8.4.3. Fully cycle control valve.
  - 8.4.4. Document ANNUAL inspection an attachment 1.
- 8.5. TASK VERIFICATION
  - 8.5.1. FSM or designee review procedure.

- [ ] 8.6. RESTORATION TO OPERATIONAL STATUS  
None required

**SAMPLE DATA SHEET**

**FIRE PROTECTION SPRINKLER SYSTEM REPORT**

BUILDING 384 – SALT HANDLING SHAFT HOIST HOUSE

Dwg. No. 38-S-001-W

	<b>EQUIPMENT</b>	<b>LOCATION</b>	<b>ACTION</b>	<b>CONDITION</b>
<b>MONTHLY</b>	Sprinkler System Riser	Northeast Corner	Visual Inspection	YES[ ] NO*[ ]
	Alarm Isolation Valve FW-452-V-009	Northeast Corner	Wire Sealed Open	YES[ ] NO*[ ]
	Pressure Gauge 384-PI-001-006 (Firewater Supply)	Northeast Corner	Static Pressure (125 PSI to 170 psi _____PSI CAL. DUE DATE _____	SAT[ ] UNSAT*[ ]
	Pressure Gauge 384-PI-001-005 (Sprinkler System)	Northeast Corner	Static Pressure (125 PSI to 170 psi _____PSI CAL. DUE DATE _____	SAT[ ] UNSAT*[ ]
<b>QUARTERLY</b>	Fire Dept. Conn.	Outside Northeast Corner	Inspection	SAT[ ] UNSAT*[ ]
	Water Motor Gong	Northeast Corner	Inspection	SAT[ ] UNSAT*[ ]
	Pressure Switch 384-PS-050-102	Northeast Corner	Inspection	SAT[ ] UNSAT*[ ]
	Water Motor Gong	Northeast Corner	Operates	YES[ ] NO*[ ]
	Building Fire Alarm	Building Interior	Elapsed Time For Alarm To Sound (90 sec. max.) _____sec.	SAT[ ] UNSAT*[ ]
	Alarm received in CMR	N/A	Call CMR	YES[ ] NO*[ ]
	Strainer	Northeast Corner	Cleaned N/A_____	SAT[ ] UNSAT*[ ]
	Inspector's test valve FW-384-V-010	Outside Southwest Corner	Inspection	SAT[ ] UNSAT*[ ]
	Pressure Gauge 384-PI-001-006 (Firewater Supply)	Northeast Corner	Residual pressure (greater than 110psi.) _____PSI	SAT[ ] UNSAT*[ ]
	Pressure Gauge 384-PI-001-005 (Sprinkler System)	Northeast Corner	Residual pressure (greater than 110psi.) _____PSI	SAT[ ] UNSAT*[ ]
Main drain FW-384-V-003	Northeast Corner	Inspection	SAT[ ] UNSAT*[ ]	

\*Explain in Comments section

