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Procedure Title: **The Two Inch Drain Test**

1.0 **PURPOSE**

1.1 The object of the Two Inch Drain Test is to verify that sufficient water is available to supply the sprinkler system and confirm that a valve is at least partially open.

2.0 **RESPONSIBILITIES**

2.1 The Fire Chief has overall responsibility for the implementation of this procedure, including assuring that Fire/Rescue personnel are trained to perform a Two Inch Drain Test and for assuring that the Fire/Rescue personnel are following this procedure when performing a Two Inch Drain Test.

2.2 The Duty Captain is responsible for assuring that the Two Inch Drain Test is conducted for any of the following conditions.

2.2.1 During a check of a cleared impairment.

2.2.2 When an unlocked valve, unsealed valve, or damaged seal on a valve is found.

2.2.3 After a water main break on a supply line for a sprinkler system. This is primarily for detection of rocks and sediment in the line, but it also is important in confirming the condition of the supply valves for the sprinkler system.

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- 2.3 The Duty Captain is responsible for performing follow-up actions in the event that a problem with a Two Inch Drain Test is reported by a firefighter, including initiating an impairment for the valve (if one does not already exist) and receiving authorization for the resulting “extended impairment” if the problem cannot be resolved during the same day that the problem is discovered.
- 2.4 The Duty Captain is responsible for performing follow-up actions in the event that a Two Inch Drain Test cannot be performed by a firefighter, including making arrangements such that the test can be performed and/or initiating an impairment for the valve (if one does not already exist) and receiving authorization for the resulting “extended impairment” if the test is scheduled to be performed at a later date.
- 2.5 Firefighters are responsible for performing Two Inch Drain Tests in compliance with this procedure.
- 2.6 The Fire/Rescue Watch Desk is responsible for recording the results of a Two Inch Drain Test.

3.0 **DEFINITIONS**

4.0 **PREREQUISITES**

5.0 **PRECAUTIONS**

- 5.1 With a strong water supply at BNL this method will not detect a ½ shut valve, but it will detect major mechanical failure not apparent from the outside of the valve.
- 5.2 Check the area where the drain discharges for anything that could be damaged. During winter months, be careful of icy conditions on roads and walkways.

6.0 **PROCEDURE**

- 6.1 Locate a water pressure gauge on the system side of the operated valve. On a sprinkler station this is the bottom pressure gauge which "floats" on the supply, take the pressure as the "static pressure". If the pressure is trapped by a check valve, wait until step 8 for readings.
- 6.2 On sprinkler systems with 2 water supply lines (underground supply and backfeed from standpipe system), a Caution sign (see Appendix A) is located on the drain valve. When this condition exists, the secondary supply valve (standpipe valve) should be closed prior to performing test. CAUTION: Be sure to re-open the secondary supply valve when test is completed (see step 9).
- 6.3 Open the drain valve slowly.

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6.4 When the valve is fully open, wait for the pressure to stabilize (about 10 to 15 seconds). Take an average pressure reading for the "residual pressure".

6.5 Take a look at the water discharging from the drain. Wait until all rust is flushed out and the water is clear. If debris such as rocks, gravel, are seen, notify the Duty Captain.

If the pressure reading keeps falling and stops at zero, the valve is completely shut. Check all valves supplying the system. If they appear open, notify your Duty Captain immediately and report a broken valve.

6.6 Close the drain valve SLOWLY! The pressure should build as the valve is shut. When the valve is completely closed, the pressure gauge may fluctuate; this is normal. However, if the pressure continues to slowly build after the drain valve is closed, this may also indicate a partially shut valve. Recheck the valves supplying the system and notify the Duty Captain if no apparent problem is found.

WARNING: Rapid closing of a drain valve can cause a water hammer which could trip dry pipe valves or damage piping.

6.7 When the pressure levels off, this can be taken as the reading for the "static pressure".

6.8 On sprinkler systems with 2 water supply lines, re-open the secondary supply valve.

6.9 Take the difference between the static pressure and the residual pressure. With BNL's water supplies, it should not exceed more than 10 psi. If it does, a partially shut valve may exist. If the difference between the static and residual pressure is greater than 10 psi, notify the Duty Captain.

6.10 The static and residual pressures from a Two Inch Drain Test shall be recorded by the firefighter who performs the test. This information is recorded on the Impairment Sheet.

6.11 If the Two Inch Drain Test is associated with an impairment, the Fire/Rescue Watch Desk should document the results of the Two Inch Drain Test on the Fire/Rescue Impairment Tracking Form. If the Two Inch Drain Test is not associated with an impairment, the Fire/Rescue Watch Desk should document the results of the Two Inch Drain Test in the Watch Desk log book.

6.12 Any time a Two Inch Drain Test for a sprinkler system cannot be performed (due to freezing conditions or possible damage by waterflow), the Duty Captain is to be notified.

6.13 Any time a problem with the results of a Two Inch Drain Test are discovered as discussed in this procedure, the Duty Captain is to be notified.

7.0 **IMPLEMENTATION AND TRAINING**
None

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8.0 **REFERENCES**

8.1 NFPA Standard

9.0 **ATTACHMENTS**

Appendix A

APPENDIX A

CAUTION

THIS RISER HAS 2 WATER SUPPLY LINES

(UNDERGROUND SUPPLY AND BACKFEED FROM STANDPIPE SYSTEM)

**CLOSE STANDPIPE VALVE WHEN DOING
2 IN. DRAIN TEST**

(REOPEN STANDPIPE VALVE UPON COMPLETION OF TEST)

**CAUTION SIGN ON SPRINKLER SYSTEMS
WITH 2 WATER SUPPLY LINES**