Fire Pump Testing

Weekly operational tests

Risk Control Services

This bulletin covers the basic procedure for weekly performance testing of both electric motor and diesel engine-driven fire pumps. In addition to an annual full-flow fire pump test, the weekly operational test is part of the preventive maintenance procedures recommended by the National Fire Protection Association (NFPA).

The operational or "run" test helps assure that the pump will operate without mechanical difficulty and protect the facility if a fire should occur.

WEEKLY TESTING

Fire pump operational tests should be conducted by running the pump at a "no-flow" or churn condition. The pump should be run for the proper time interval and its operation monitored by a qualified person. This bulletin contains checklists for an electric motor and a diesel engine-driven pump. The appropriate checklist should be used to both record important pump operation data and to help identify problems. If excessive vibration, unusual noise, heat or other abnormalities become apparent, immediately abort the test and have the equipment serviced or repaired by a qualified sprinkler contractor.

TEST PROCEDURE

1. First, make sure to notify the alarm company that the fire pump is going to be tested.

2. Verify that all valves are in the proper position. The fire pump header control valve should be closed and drain valve open.

3. Start the pump with a drop in system pressure. This can be accomplished by opening the petcock valve on the sensing line just prior to where it enters the controller.

4. Record the pump starting pressure from the gauge (usually located on the sensing line).

5. Record the pump's suction and discharge pressure readings. Complete the checklist.

6. Visually check the pump packing glands to insure that they produce a slight visible discharge of dripping water. Adjust the packing gland nuts as needed.

7. Periodically check packing boxes, bearings or pump casing for overheating.

8. Check for malfunctions, excessive vibration, heat, unusual noise, smoke, etc. If significant problems are noted, abort the test and have the pump serviced by a qualified sprinkler contractor.

9. Insure that the pump operates for at least 10 minutes for electric motor-driven pumps or 30 minutes for diesel engine-driven pumps.

10. After shutting the pump down, reopen any valves that were shut to run the test. Return the pump controller to the automatic start position and turn on the jockey pump.

11. Notify the alarm company that testing is complete and alarms can be restored to normal service.

TEST RESULTS

Compare the results to previous tests to determine if the pump is operating satisfactorily. Significant differences between tests may indicate a problem which needs to be corrected. Consult with a qualified sprinkler contractor if there is question.

FIRE PUMP MAINTENANCE

A scheduled preventative maintenance, testing and inspection program is necessary to insure reliability and an acceptable level of readiness.

The pump, motor or engine, drive train, lubrication, cooling, fuel supply, electrical and battery systems and associated components are typically part of a scheduled preventative maintenance program.

The preventive maintenance, test and inspection frequency should follow the manufacturer's specifications. NFPA 25, "Standard for the Inspection, Testing & Maintenance of Water Based Fire Protection Systems" also provides a sample preventive maintenance schedule.

In addition to the weekly operational pump test, an annual full-flow pump test should be performed to verify that the pump's actual flow and pressure performance still remains within specification. Any noted test deficiencies should be corrected immediately.

LIMITATIONS

This bulletin is not intended to cover all aspects of the periodic maintenance needed by a fire pump or its associated equipment. This bulletin additionally does not cover fire pumps driven by gasoline or steam engines or other types of drivers.

SUMMARY

Fire pumps provide pressure for critical fire protection equipment such as sprinklers and standpipes which are designed to control building fire and provide life safety protection.

Without a fire pump, these systems would have insufficient pressure to function adequately, thereby often resulting in impairment of these protective systems.

The weekly operational fire pump checklists provided in this technical bulletin can be used by your organization to help prevent fire protection equipment impairment and to enhance system reliability.

FIRE PUMP-WEEKLY TESTING AND INSPECTION
(ELECTRIC PUMP)

Inspector Name: Date: ITEM	STATUS		
	Yes	No	N/A
The alarm receiving station has been notified before starting the fire pump test?			
Piping valves for suction, discharge and bypass are open; test header valve is closed?			
Starts automatically by dropping pressure? Start pressure: _____ psi			
Suction pressure is normal? Indicate: _____ psi			
Discharge pressure is normal? Indicate: _____ psi			
Pump packing glands have slight water drip (to cool)?			
Circulating relief valve is discharging flow while pump is running?			
Pump casing temperature adequate (not hot)?			
Any unusual vibration or noises?			
Pump controller power on light illuminated?			
Pump controller transfer switch light illuminated?			
Reverse phase light off or normal phase pilot light on?			
Pump room temperature maintained at least 40 degrees Fahrenheit?			
Did the pump run for at least 10 minutes?			
Test completed. Any valves shut to run test have been reopened; the pump controller has been returned to the automatic start position; all alarm lights are off?			
Test completed. Contact the alarm receiving station to verify that alarms were received and the alarm system has been restored to normal operating status?			

Inspector Name: Date:

A "No" response above indicates the need for investigation and corrective action to restore the system to normal operation.

Additional Comments:

FIRE PUMP-WEEKLY TESTING & INSPECTION
(DIESEL-DRIVEN PUMP)

Inspector Name: Date: ITEM	STATUS		
	Yes	No	N/A
Batteries voltage is reading normal?			
Batteries charging current is reading normal?			
Batteries light is on or the battery failure lights is off?			
Batteries cell liquid level is normal; terminals are clean?			
Pump room ventilation louvers are operational?			
Pump room temperature maintained at least 40 degrees Fahrenheit (or 70 degrees Fahrenheit if no engine heater)?			
The alarm receiving station has been notified before starting the fire pump test?			
Pipe valves for suction, discharge and bypass are open; test header valve is closed?			
Pump starts automatically by dropping pressure? Start pressure: _____ psi			
Suction pressure is normal? Indicate: _____ psi			
Discharge pressure is normal? Indicate: _____ psi			
Pump packing glands have slight water drip (to cool)?			
Relief valve operates?			
Any unusual vibration or noises?			
Pump casing temperature adequate (not hot)?			
Engine oil level is normal? Pump running oil pressure is normal? _____ psi			
Engine cooling water is running and coolant temperature is normal? _____degrees Fahrenheit			
Heat exchanger temperature is normal and flows to the drain?			
Pump run for at least 30 minutes?			
Fuel tank is at least 2/3 full?			
Test completed. Any valves shut to run test have been reopened; the pump controller has been returned to the automatic start position; all alarm lights are off?			
Test completed. Contact the alarm receiving station to verify that alarms were received and that the alarm system has been restored to normal operating status?			

Inspector Name: Date:

A "No" response above indicates the need for investigation and corrective action to restore the system to normal operation.

Additional Comments:
