

Guidelines for impairments to fire protection systems

Introduction

Impairments to fire protection systems can prove to be disastrous in emergency situations. Many large property losses could have been eliminated if protection systems had not been impaired. Expensive protection and supervisory systems must be maintained in good operating condition to limit the possibility of a large loss.

Impairments occur when any fire protection system is taken out of service. This includes sprinkler systems, underground water mains, fire pumps, fire pump suction tanks, gravity tanks, detection systems, carbon dioxide and other gas extinguishing systems, and explosion suppression systems.

Impairments may be planned or due to an emergency. Regardless, the system is no longer capable of providing intended protection to the impaired area. Precautions must be taken to minimize the duration and extent of impairment, ensure prompt restoration, provide temporary protection and supervision, and reduce hazards in the affected area.

Planning

The importance of an impairment management program must be understood and emphasized by upper management. Management must make a positive statement and maintain ultimate responsibility for implementation of the impairment program. The following is the basis of the impairment program:

- A positive management statement should be issued.
- A detailed impairment program system should be adopted.
- Personnel should be assigned program responsibility and supervisory control.
- Personnel should be designated to implement the various tasks involved. The personnel should be thoroughly trained in their responsibilities.
- Routine review and updating of the impairment program and retraining of personnel should be conducted
- Schedule one impairment at a time. Keep as much protection in service as long as possible.

Caution: Plant management or other responsible plant personnel must supervise the contractors and place in action the listed safeguards.

Types of impairments

Impairments are generally considered as “planned” or “emergency” types.

A planned impairment occurs when all or part of a protective system must be shut down for maintenance, renovation or construction. These are usually projected well in advance and offer the easiest opportunity for planned safeguards and minimizing duration.

An emergency impairment occurs when an accident or unforeseen incident limits the effectiveness of the system and the system must be shut down for repair. Having an established program in place should prepare companies to deal with these situations.

Impairment program materials

Permits are used to show proper authorization for the impairment. These are needed to describe the work and the precautions taken, and should be signed by an authorized person. The permit should be kept in a visible location where it can be noticed and followed up on.

Tags should be placed on the shut valve or other impaired device to highlight its condition.

Warning stickers should be placed on all valves, pump control panels and other critical control devices to notify others that protection must remain in service unless there is authorization for a shut off.

Procedures

1. Complete a fire system work permit for every impairment. Additional permits are available by calling the phone number listed on the permit.
2. Fax, email, or provide the information online to Risk Engineering of Zurich Services Corporation.
3. For emergency assistance, call the number listed on the permit (Note: for emergency assistance after hours, weekends and holidays, call 1-800-695-6036).
4. Place the "Out of Service" tag on the affected valve or control device. Display the permit in a visible location for follow-up.
5. Expedite the work. Workers, materials, equipment and tools should be ready before any system is shut off. Return protection to service quickly.
6. Schedule the work during idle periods when fewer ignition sources exist.
7. Notify the public fire department that fire protection systems or water supplies are out of service.
8. Notify the central station service or other alarm-monitoring agency.
9. Keep as much protection in service as possible.
10. Notify plant emergency personnel and also managers in the affected areas.

Precautions

1. Shut down hazardous processes and other sources of ignition including cutting and welding.
2. Prohibit smoking in the impaired area.
3. Provide a continuous patrol for the affected area to check on housekeeping and special hazards.
4. Station someone at or near closed sprinkler control valves. They should be prepared to quickly reopen the valve if fire is discovered.
5. Provide additional fire extinguishers in the affected area. Small hose lines can be charged and laid out for quick use by trained personnel.
6. For long impairments, consider using cross connections as a method of providing water to sprinklers. Hose can be used to connect 2-inch drains, or to connect hydrants with 2-inch drains or system piping. Pipe connections between ends of sprinkler systems is another method that has been utilized.
7. As much as possible, partially or fully restore systems to service overnight for work that continues for several days.

Restoration

1. Verify all valves are left wide open and secured.
2. Conduct a full 2-inch drain test on each system that is restored. The pressure will drop slightly when the valve is opened. The pressure should come up quickly after the valve is closed.

A slow return may indicate a control valve is not fully reopened, or there is a partial obstruction in the supply pipe. If the pressure drops to zero (0), this indicates a shut valve or complete obstruction.

3. Clear the impairment with the fire department and your central station service or other alarm-receiving agency.
4. Complete the permit and fax, email, or provide the information online to Risk Engineering of Zurich Services Corporation after protection is restored.