

Fire Protection Impairments

Understanding the Risk

An impairment of any fire protection system or equipment occurs when that protection system, alarm or detection device is removed from service either partially or completely. This includes planned or emergency outages of the system or devices. The probability of a fire or explosion causing major damage is increased exponentially whenever a system, alarm or detection device is impaired. The longer the protection is impaired the greater the probability becomes. Therefore, it is necessary to minimize the duration and scope of any impairment or provide for an alternate protection system.

A protection system may become impaired for a number of reasons, such as maintenance, renovation, construction, equipment failure or just forgetting to activate a system or device. To assure that the impairment is properly handled, management should have an impairment program implemented as an integral part of the plant's pre-emergency program. Such a program requires several basic steps:

1. Assign the responsibility and the authority to control the impairment to one individual. Normally a plant engineer, maintenance supervisor, or safety supervisor is designated. In an emergency, a shift supervisor or fire brigade chief may have the authority to impair a system, but the overall responsibility of the impairment remains with the assigned individual.
2. Educate plant personnel in basic precautions when a protection system or equipment is impaired.
3. Implement written procedures to be incorporated into the plant pre-emergency program:
 - a. Limit the number, scope and duration of impairment(s).
 - b. Adequate alternative protections are maintained or put in place, during a sprinkler impairment
 - c. Notify the public fire department at start and finish of each impairment.
 - d. Appropriate actions are taken to minimize the risk of fire during a sprinkler impairment. This includes shutting down any hazardous processes.
 - e. Relocate combustibles away from the area.
 - f. Stop any cutting and welding that would increase the probability of a fire occurrence.
 - g. Supplement manual fire protection with extra extinguishers.
 - h. Provide a continuous fire watch.
 - i. Complete impairment work in a timely manner.
 - j. Restore protection system upon completion of work.
 - k. Verify, by testing, that the protection system is operational.

Types of Sprinkler Impairment

There are three basic types of impairments: planned, emergency and concealed; however all are dealt with similarly.

- 1) **Improperly Impaired System (IIS)** – An Improperly Impaired System is an unknown impairment. It occurs when a fire protection system is accidentally left out of service or removed from service by an unauthorized person. An IIS is normally discovered during the plant's self-inspection, by security service, loss control survey, or by a sprinkler contractor.
- 2) **Emergency Impairment** – An emergency impairment occurs when an unexpected event impairs the normal function of the fire protection system. A section of frozen sprinkler piping bursting, or a fork lift truck damaging sprinkler piping are examples. Any emergency situation is normally associated with confusion and a sense of urgency. To help eliminate a portion of the confusion, a written procedure should be in a location available to all personnel.
- 3) **Planned Impairment** – A planned impairment is a scheduled impairment. It is usually an improvement or modification to the present system. In these situations the fire protection can be shut down in a controlled manner and in such a way as to cause the least impairment to protection systems. Examples include adding a new section of sprinkler piping or replacing old sprinklers.

Impairment Handling

For each of the three types of impairment, handling procedures will be similar:

1. Isolate the area where the situation or condition is causing the impairment. If possible, keep the remaining protection system in service. This may require temporary connections (e.g., cross-feed of sprinkler systems by using 2½ inch hose and coupling) or bypassing the system.
2. Notify the shift supervisor and the plant emergency organization or plant fire brigade chief that an impairment has occurred.
3. Secure any hazardous operation in the area where the protection system is impaired.

4. Properly “tag out” the impaired fire protection system or equipment with an AIG Global Property “Fire Protection Equipment Out of Service” tag (COM-CG-02-0008) and notify AIG as follows:

AIG Global Property Impairment Hotline

Telephone: (877) 705-7287

Email: GlobalProperty.Impairment@aig.com

The following information will need to be provided by phone or included in the email:

- a. Your Name
 - b. Your Company Name
 - c. Telephone Number
 - d. Type of Impairment
 - e. What system or equipment is impaired
 - f. Whether the system is partially or completely impaired
 - g. An estimated length of time the system / equipment is to be impaired
 - h. The precautions established while the impairment is active
5. Start repairs or perform work on the impaired system as soon as the area is secured. Continue to work on the impairment until it has been restored to service. Any welding or cutting required for the repair should be performed in a protected area and not in the area of the impairment.
 6. Place additional portable extinguishers in the impaired area at accessible locations.
 7. Notify the public fire department that an emergency impairment has occurred and that all or part of the protection system is out of service.
 8. Notify the alarm company that an impairment has occurred and indicate if any of the alarms have been affected.

Restoration

After completing the work, it is important to assure that the fire protection has been properly restored. Eight steps are required to assure the protection has been restored. Each step should be verified by the individual that authorized the impairment. These steps are:

1. Open all valves that were secured during the impairment. Remove the “Fire Protection Equipment Out of Service Tags” once valves are confirmed to be open. Verify that the system is properly lined up and valves are open by conducting a 2” drain test. (Note: If during the test the pressure drops below normal, the system may have a restriction or a partially closed valve.)
2. Place all alarms or detection devices back into service.
3. Restore any fire protection equipment to “automatic” that was secured or placed in “manual”.
4. Verify that portable extinguishers are in place and are fully charged.
5. Notify the plant supervisors (shift, the plant emergency organization or plant fire brigade chief) that the fire protection system/equipment has been restored.

6. Notify the alarm service or central stations that the fire protection has been restored and that the alarms are back in service.

7. Notify the public fire department that the fire protection system is restored to service and all alarms have been activated.

8. Notify AIG Global Property that the system has been restored:

AIG Global Property Impairment Hotline

Telephone: (877) 705-7287

Email: GlobalProperty.Impairment@aig.com

NOTE: Retain the bottom half of the “Fire Protection Equipment Out of Service Tag” for review with the next visiting loss control representative.

Prompt notification of an impairment is of significant benefit to you and your company. Impairment calls to AIG Global Property are registered and communicated to the Account Engineer and to the provided company contact. They can answer questions and make suggestions as to how to maintain a safe facility while the impairment is being corrected. They are there to help you.

Support Material

The AIG Global Property “Fire Protection Equipment Out of Service Tag” tags can be obtained by contacting a Global Property Loss Control Consultant; or by calling the or emailing the AIG Global Property Impairment Hotline at:

Telephone: (877) 705-7287

Email: GlobalProperty.Impairment@aig.com

The Fire Protection Resource Order Form (COM-CG-13-0012) can be used to order supplies.

An example of the tag is shown on the following page.

