Impairments to Fire Protection Equipment

INTRODUCTION

Buildings and equipment are provided with fire protection and/or detection systems to reduce property damage and interruption to business in the event of fire. These systems must be in service at the outbreak of fire to operate effectively. However, invariably there will be times when these systems must be shut down for maintenance, testing, system upgrade, or repair. Shutting systems off without taking proper precautions, or leaving these systems impaired longer than necessary, has been a contributing factor in many losses. In most cases, these losses could have been mitigated by properly managing the impairment.

Developing a formal Impairment Management Policy that requires use of Impairment Permits is the best solution toward mitigating this risk. Empowering management to take full ownership and responsibility is critical, as they are most familiar with the fire systems and hazards. This document outlines the basic considerations needed to develop an effective Impairment Management Policy. Please contact your local Paragon Risk Engineering representative with any questions, or if you need assistance customizing a policy that meets your specific needs.

LOSS EXAMPLES

In January 1999, a fire occurred in a two-story frozen food preparation plant. A cooling unit overheated and ignited EPS (expanded polystyrene) insulation in a ceiling and roof assembly, allowing fire to spread across a false ceiling. Before the fire started, the automatic sprinkler system was shutdown because cleaning with high-pressure hoses and steam was causing false alarms. The fire department was not notified of the situation and the resultant loss was £15.8M.

On 24 June 1999, a fire occurred in an old mill complex in a vacant one-story structure of wood-frame construction. Investigators believed that smoking materials caused the fire, which started in the grass outside the building. The warehouse's sprinkler system had been shut down before the fire and the resultant loss was £6.3M. If the sprinkler system had not been shut down, the fire would have likely been extinguished in the incipient stage.

In August 2000, a fire occurred in a non-combustible building of general warehouse occupancy. The fire started in an electrical panel in a product storage room. Automatic sprinkler protection was shut down before the fire due to a water leak and the resultant loss was reported to be £8.8M.

**The above are excerpts from the National Fire Protection Association (NFPA) Journal loss history*

IMPAIRMENT POLICY

An impairment policy should include the following:

- A policy document that mandates use of a formal permit to monitor all impairments to fire protection and/or detection systems.
- Senior management support and endorsement for the policy.
- The policy should stipulate specific penalties for non-compliance.
- The policy should be effectively, and routinely, communicated to contractors and employees.
- The policy should be reviewed and improved periodically.
- Competent personnel trained to authorize and manage system impairments.
- A comprehensive checklist of precautions.

Only competent personnel should manage or authorize impairments. These personnel should receive training so that they are familiar with the fire and explosion hazards and protection features at the site. They should also fully understand their operational responsibilities, which include initial site inspection, permit issuance, and a final check to ensure that

protection/detection systems are restored to service. These individuals should be closely involved in the periodic policy review process.

PRECAUTIONS

The person authorizing and managing the impairment should consider the following points. If any of the following items are of concern, no permit should be issued until the condition is corrected.

- ❑ Affected area minimized.
- ❑ Duration minimized.
- ❑ Timing appropriate.
- ❑ Manpower sufficient.
- ❑ Contingency plans to restore protection promptly in the event of fire.
- ❑ Good Fire Department response anticipated.
- ❑ Combustibles relocated.
- ❑ Temporary automatic protection provided as practical or required.
- ❑ Manual protection satisfactory
- ❑ Ignition sources controlled and hazardous operations ceased.
- ❑ Hot Work Permit issued if required.
- ❑ Fire watch provided, if unreliable detection.
- ❑ Emergency Organization and Fire Department notified.
- ❑ Workers aware of permit requirements, required precautions, and/or the hazards involved.

The person authorizing the impairment should always inspect the site and discuss the precautions with those performing the work prior to issuing a permit. They will be ultimately responsible for coordinating the fire watch, Emergency Organization and Fire Department participation, along with worker education. They should perform aggressive follow-up and should call the Fire Department after restoration.

Minimize the size of the impaired area. Impairing multiple systems can result in an unnecessarily large exposure. Minimize the duration of the impairment by initially preparing the work area, and work continuously until the job is complete. If the impairment is due to planned work, make certain that the timing of the impairment is appropriate. Preplan with the Fire Department to assure that impairments will occur at a time when they can best respond. Have the Fire Department on-site for emergency impairments when all precautions can not be taken.

Manpower is an important consideration with respect to minimizing the duration of the impairment, and for ensuring effective response to a fire. Workers need to understand the Impairment Policy, permit precautions, and should be familiar with the hazards in the affected area. Develop contingency plans to restore impaired protection promptly in the event of fire. Make temporary caps available to plug sprinkler lines. Assign personnel the responsibility of reopening sprinkler control valves quickly in the event of fire.

Whenever possible, relocate combustible materials to eliminate or reduce the fire hazard. If practical, provide temporary partial protection if the impairment will be of extended duration (e.g. feed automatic sprinklers through fire department connections via hose lines). Ensure that adequate manual protection features are present (e.g. charged hose lines and portable fire extinguishers).

Control all ignition sources and cease any hazardous operations. Pay particular attention to Hot Work, smoking, electrical equipment, static electricity, molten materials, spontaneous heating, and/or sparks or hot surfaces associated with mechanical equipment. Hot Work should only be performed if proper precautions are taken and the work is supervised via issuance of a Hot Work permit. Hot Work should not be performed if alternatives such as sawing, bolting, or gluing are practical, or if automatic fire protection systems are impaired. Request that the fire department stand by during emergency impairments to fire protection systems if Hot Work must be performed in an unprotected combustible occupancy.

A fire watch should be conducted in the affected area unless in-service, full-coverage detection is provided. Hourly surveillance of all affected areas will be sufficient for most occupancies. Increased frequency should be considered in higher hazard occupancies. Always notify the Fire Department and Emergency Organization during the impairment. Solicit their participation as needed.

Paragon Risk Engineering can be contacted with any questions that arise. If you require assistance with an impairment, please call us and one of our consultants will promptly return your call.

Tel: +1 (0) 888 505-4859 Dial 701
E-mail: impairments@paragonconsults.com

SIGN OFF

After the impaired fire protection/detection system has been restored to service, the permit should be returned to the person or department who authorized the work. The time that the systems were restored should be recorded and the permit signed by the person(s) doing the work. The person or department who authorized the work should physically verify that the protection has been placed back in service before signing off. Impairment Permits should be maintained on file for documentation and policy review purposes.

SAMPLE PERMIT

The attached permit is included to assist the clients of Paragon Risk Engineering in developing their own Impairment permit. This permit can be amended as required, as a permit that is tailored to meet the needs of your specific site is much more effective than a generic form. We suggest that a two-part permit be employed. The person who authorizes the impairment should retain one copy for follow-up, and the other should be retained at the work site, preferably attached to the control device for the impaired protection. Printouts with copies can accomplish the same objective for sites that have infrequent impairments.

Sprinkler System Impairment Sheet

Attention : **IMPAIRMENT DESK**

E-mail Address : impairments@paragonconsults.com Phone No/Fax No : **1-888-505-4859**

From : _____ Date : _____

Company : _____ City : _____

Fax No : _____ Phone No : _____

Location : _____ Ref No : _____

PLANNED IMPAIRMENT

System to be Shutdown (Please indicate by placing and ' x ' in the box)

[ ]	Automatic Sprinkler System	[ ]	Fire Pump (s)
[ ]	Alarm System	[ ]	Fire Main
[ ]	Firewater Storage Tank	[ ]	Other (e.g. CO2, Halon etc)

Comments : _____

Reason for Shutdown : _____

Area Affected : _____

Start Time / Date : _____ _____

Estimated Duration : _____ _____

Precautions being followed : **(Please indicate by placing and ' x ' in the box)**

[ ]	Use shut off tag	[X]	Notify Fire Department
[X]	Notify department heads	[ ]	Notify Alarm Company
[ ]	Cease all hazardous operations	[ ]	Work to be continuous
[X]	Hose / extinguishers available	[ ]	Additional watchman surveillance
[ ]	Ban welding / cutting / hotwork	[ ]	Emergency connection planned

☐ No Smoking ☐ Continuous Fire Watch

☐ Other (Please Specify) _____

Change to Impairment Conditions : _____

_____

Time Restored : _____ ☐ pm

_____ ☐

INSTRUCTIONS :

1 **Fill out Section 1 prior to shutdown (48 hours before where possible) e-mail to address above**

2 **Fill out Section 2 and resend e-mail if there are any changes to the impairment.**

3 **Fill out Section 3 when the impairment is restored and e-mail**

Contact **Paragon Risk Engineering** if you require consultation:

Tel: +1 (0) 888 505-4859
E-mail: impairments@paragonconsults.com