

Making sense of risk
Risk engineering
Asia Pacific



Fire protection impairment programme



Liberty
Specialty Markets

Fire protection impairment programme

Fire protection systems are extremely reliable when properly maintained and tested. Fire protection systems are essential for the safety of people and assets, so it is essential that an impairment of the system, even for a short duration, is properly managed. This is because an impairment could render a fire protection system ineffective or completely inoperable, with potentially catastrophic results.

Fire protection impairments can result from planned or unplanned shutdowns of the fire protection, detection or alarm systems.

A 2009 National Fire Protection Association (NFPA) report found that 5%

of all automatic extinguishing systems failed to operate, and that the major cause of system failure was due to the protection systems being shut off (63%), followed by lack of maintenance (14%), use of an inappropriate system (11%), human error (9%) and damaged system (3%).

An effective [Fire protection impairment programme](#) is therefore crucial in preventing fire spread. This impairment guide is intended to help property owners and managers develop and implement a practical programme to manage fire protection, detection and alarm system impairments and to minimise downtime of critical protection systems.

Developing a fire protection impairment programme

A good [Fire protection impairment programme](#) should include the following:

- Full support from senior management;
- Written procedures that are updated annually;
- Preparations to make and precautions to be taken before, during and after a planned impairment;
- Methods for monitoring progress in restoring the system;
- Records of events as they occur and tasks as they are undertaken;
- A well-stocked [Fire protection impairment kit](#) (as discussed below); and
- The appointment of a [Fire Safety Manager](#) responsible for minimising exposures and promptly restoring protection (as discussed below) and for maintaining the [Fire protection impairment kit](#).

Reasons for failure

System shut off	Lack of maintenance	Inappropriate system for type of fire	Manual intervention defeated system	System component damaged
63%	14%	11%	9%	3%

Types of impairment

Minor (<8hr; only 1 system) Impairment lasting less than eight hours AND No more than one system out of service	Major (>8hr; >1 system) Impairment lasting more than eight hours OR More than one system is out of service
Planned Routine inspection, testing and maintenance of systems	Unplanned Emergency or unforeseen event requiring shut down of systems

Fire Safety Manager

Appoint a **Fire Safety Manager** with sufficient authority to develop, implement and oversee the programme. The **Fire Safety Manager** should have a thorough understanding of the plant operations, special hazards and protection systems, and should have access to and be responsible for maintaining the **Fire protection impairment kit**.

Appoint a responsible person and an alternate for every shift.

The **Fire Safety Manager** should ensure that responsible personnel are trained to handle planned and unplanned impairments and know who to notify in the event of an impairment. Depending on the extent of the impairment, appropriate notifications may include: production, maintenance and security personnel; senior management; fire protection contractors; fire and emergency services; the alarm company; and your insurance broker, who will notify and liaise with Liberty Specialty Markets (Liberty).



Fire Protection impairment kit

A well-stocked **Fire protection impairment kit** forms part of the essential advance planning for fire protection impairment events. The **Fire Safety Manager** is responsible for maintaining the kit, which should contain the following:

- A copy of the **Fire protection impairment kit checklist**
- Contact details for fire and emergency services; the **Fire Safety Manager**; production, maintenance and security personnel; senior management; fire protection contractors; the alarm company; and your broker
- A copy of this document (**Fire protection impairment programme**), for reference
- A master copy of the document **Record of valve closures**, for duplication as necessary
- A supply of red **Fire protection**

impairment permits (with tear-off **Fire protection out of service tags**)

- A supply of yellow **DO NOT SHUT VALVE** tags
- A supply of white **WARNING Before disabling...kit** stickers.

The documents **Fire protection impairment programme**, **Fire protection impairment permit**, **Fire protection impairment kit checklist** and **Record of valve closures** may be downloaded and printed from our website.

Liberty can supply you with:

- red **Fire protection impairment permits** (with tear-off **Fire protection out of service tags**);
- yellow **DO NOT SHUT VALVE** tags; and
- white **WARNING Before disabling...kit** stickers.

Please contact your insurance broker to arrange this.

Managing contractors

The **Fire Safety Manager** or other designated person is responsible for contractor activities as follows:

- Always supervise and follow up on contractors performing maintenance and repairs to systems to ensure that systems are promptly restored and operational.
- Do not give contractors responsibility for the operational status of your protection systems.
- Do not assume that the protection systems are operational.
- Make contractors aware of established policies and procedures, and hold them accountable.
- Identify in their contract the specific work to be completed.
- Require the contractor to provide a certificate of insurance with adequate coverage limits before they start work.
- Remove any wording in the contract that waives subrogation rights.

Managing impairments

The [Fire Safety Manager](#) or other designated person is responsible for coordinating all aspects of the impairment process, and for maintaining the [Fire protection impairment kit](#). Depending on the type of impairment (see table above), the [Fire Safety Manager](#)'s responsibilities include (but are not limited to) the following:

Unplanned impairments

Advance planning is crucial to the

effective handling of unplanned, emergency impairments. Make sure you have a list of emergency contact phone numbers available in your [Fire protection impairment kit](#) to speed up notifications and to expedite emergency repairs.

Planned impairments

Make sure all the materials needed to complete the project are at the job site, and that repair parts and replacements

are ready to go before you disable any fire protection systems or parts of any system.

For both planned and unplanned impairment events, the [Fire Safety Manager](#) should access the [Fire protection impairment kit](#), proceed as per the checklist below and issue a [Fire protection impairment permit](#).

Fire protection impairment permit

The [Fire protection impairment permit](#) is issued by the [Fire Safety Manager](#), and authorises an individual or group to disable a specific fire protection system for a specific time, on a specific date. A separate permit should be issued for each impaired system.

The [Fire protection impairment permit](#) procedure is as follows:

Determine the extent of the impaired protection and the system or valve numbers, building areas and operations in the affected area.

Verify that the required notifications have been completed; if not, complete them.

Ensure all advance planning is complete and all precautions have been taken as described on the checklist below (and summarised on the back of the permit), prior to disabling the systems.

Complete the protected area ('*Protecting*'), system or valve number, responsible person ('*By*'), '*Authorised by*', and '*Reason for closing*' on both the top and bottom portions of the [Fire protection impairment permit](#).

Complete the estimated date and time for the system to be restored ('*To be restored*') on the bottom portion of the permit.

Tear or cut along the dotted line and issue the top portion to the person responsible for disabling and monitoring the protection system. This red [Fire protection out of service](#) tag should be conspicuously displayed at the fire protection control valve for the duration of the impairment.

Retain the *bottom* portion of the permit and display on a fire protection status board or other prominent place as a reminder to follow up on the impairment and to ensure prompt repairs to the protection systems.

Complete a second [Fire protection impairment permit](#) in the same way where a fire services connection is provided, and display the red [Fire protection out of service](#) tag (upper portion) on the correct fire services connection.

Issue a separate permit for each impaired system, including fire services connections and disabled actuation devices/controllers.

Record valve closures on the [Record of valve closures](#) document.

Fire protection impairment permit procedure (continued):

Display prominently on a fire protection status board or other prominent place the lower portion of the permit for the duration of the fire protection impairment.

Restore all fire protection systems and as each is restored to service, detach its red [Fire protection out of service](#) tag.

Ensure all red [Fire protection out of service](#) tags have been accounted for.

Match each red tag with the retained lower portion of its permit and complete both portions with the date and time the protection was restored ('*Restored*') and by whom ('*By*'). Sign both portions ('*Verified by*').

Place *both portions* of the completed [Fire protection impairment permit](#) on file as a hard copy record, or scan and retain in soft copy.

Fire protection impairment safety procedures

These procedures are summarised on the back of the [Fire protection impairment permit](#).

Before fire protection impairment

Ensure all necessary materials are at the job site and repairs/alterations are ready to go before any valve is closed or systems are disabled *for planned impairments*.

Alert management, production and maintenance personnel and the emergency response team, so that the necessary safeguards can be taken. Appoint a responsible person to reopen valves or enable systems in the event of a fire *if safe to do so*.

Notify fire and emergency services of impending or existing fire protection system impairments. Give them details of the type and extent of the impaired protection and the buildings and processes affected. This allows them time to adjust any pre-fire planning if necessary.

Notify your insurance broker before planned major impairments and as soon as possible for unplanned impairments where these are expected to last longer than eight hours/one shift or involve more than one system. They will contact and liaise with Liberty on your behalf.

Discontinue hazardous operations which may include, but are not limited to, hot work, welding and cutting operations and the handling of flammable liquids.

Obtain and make available additional fire extinguishers, hoses and other manual fire-fighting equipment, and *ensure that personnel know how to use it*.

Establish a continuous fire watch for the area(s) affected by the impaired protection systems.

Fasten a red tag (the top portion of the [Fire protection impairment permit](#)) to the operating valve/switch of each impaired system.

Record valve closures in a [Record of valve closure](#) document.

During repair work

Complete the repair/maintenance work while the premises are fully attended where possible. Do not leave fire protection out of service any longer than necessary.

Monitor the progress of the work and maintain a continuous fire watch throughout.

Display on a fire protection status board or other prominent place the lower portion of the [Fire protection impairment permit](#) for the duration of the impairment. This serves as a reminder to follow up on the impairment and ensures prompt repairs to the protection systems.

After completion of repair work

Immediately restore fire protection systems to service once repair work is complete.

Open and lock or seal wide open sprinkler systems and water supply control valves and perform main drain tests downstream from water-based extinguishing systems. If tests are satisfactory, relock each valve open.

Detach its red [Fire protection out of service](#) tag as each system is restored to service.

Fasten a yellow [DO NOT SHUT VALVE](#) tag to each reopened valve.

Secure all fire protection control and alarm panels and verify that all alarms, fire protection systems and water-based extinguishers are back in service.

Ensure all red [Fire protection out of service](#) tags are accounted for, match each with the retained lower portion of its permit and complete and sign both portions.

Return any system control keys to the usual secure place.

Update the [Record of valve closures](#) document to reflect the reopening of valves.

Notify appropriate plant personnel, the fire and emergency Services, the alarm company and your insurance broker that the fire protection systems have been restored.

Want more information?

Update on U.S. Experience with Sprinklers and Other Fire Extinguishing Equipment, National Fire Protection Association (NFPA), January 2009.

Australian Standard 1851 **Routine service of fire protection systems and equipment.**

NFPA 25 **Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.**

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