FIRE PROTECTION AND SECURITY SURVEILLANCE

INTRODUCTION

Prompt detection of adverse conditions is crucial to effective loss prevention and control. Most catastrophic losses grew from an initiating event that could have been easily controlled with prompt detection, correct diagnosis and an appropriate response. While many factors make it possible to contain a fire to its area of origin, the most important factor is how soon the fire is detected.

During normal business hours, most areas of a facility are occupied. By their presence, the occupants provide protective surveillance because they are able to detect and respond to problems such as fires; ammonia or other hazardous materials leaks; refrigeration or other utility failures; vibrating machinery or overheated electrical conductors.

A carelessly discarded cigarette, for example, may ignite the contents of a wastebasket, and the ensuing fire may spread until the entire building is involved. However, someone who discovers the fire while it is still in its incipient stage may be able to extinguish it with a portable fire extinguisher. In some cases, the occupants can also detect conditions that might lead to a fire, such as a malfunctioning machine. Similarly, most companies realize that increased surveillance is vital in guarding against theft and fires of incendiary origin.

Occupants are not always available to provide surveillance. After workers go home or in areas that are otherwise unoccupied, some alternate means of continuing surveillance must be provided.

In conjunction with fire and explosion protective systems and with other management programs for loss prevention and control, fire protection and security surveillance provides a means of:

- Continuously monitoring the facility for conditions that might lead to a fire, explosion, or other incident;
- Promptly notifying the management representative (Emergency Coordinator) and, if appropriate, the public fire department or private Fire Brigade; and
- Effectively preventing unauthorized access to the facility.

Management must determine how this surveillance is best achieved. See PRC.1.11.0.A, PRC.1.11.0.B and PRC.1.11.0.C.

POSITION

Management should develop a written surveillance plan for both fire protection and security to be certain that the facility is checked regularly during idle periods. To accomplish this, management should:

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- Determine which areas of the facility are unoccupied during both working and nonworking hours.
- Consult with AXA XL Risk Consulting when selecting the types of surveillance for the unoccupied areas.
- Designate a management representative to be responsible for overseeing the surveillance program. This representative should review surveillance reports daily. Management control of surveillance is critical to maintaining program integrity.
- Evaluate changes in the facility that might require revising the surveillance plan. Refer to PRC.1.0.2.

DISCUSSION

The ideal type of surveillance is continuous occupancy throughout all portions of a facility by people who are trained to react properly to emergencies. However, this is rarely achieved. Even facilities that operate 24 hours a day often have holiday and vacation shutdowns. These plants may also have offices, storage areas or idle process areas that are only visited occasionally. Thus, even facilities with continuous operations require supplemental surveillance programs.

Surveillance programs fall into one of two broad categories: active programs using guards who limit access and make patrols during idle periods; and passive programs using fences, lights, barriers and electronic devices. In many cases, facilities must combine active and passive programs to achieve adequate surveillance.

Active Programs

An active surveillance program of “standard” guard service has advantages over a strictly passive program in that guards can detect unsafe conditions and correct them before a loss occurs. In addition, guards can use their senses to detect incipient fires. They can then sound an alarm and attempt extinguishment. Standard guard service is defined by AXA XL Risk Consulting as hourly recorded tours during nights and bi-hourly recorded tours during idle days that cover all the unoccupied areas of the facility.

Guard tours must be supervised. This may be done using a system of guard reporting keys or stations permanently installed along the specified route of the tour. Records of the completion of each tour may be kept by means of portable or stationary watchclocks or by means of a central station or proprietary guard patrol tour supervisory system. The watchclock or proprietary system records should be checked daily by management’s representative for omissions, and the reason for any omission should be promptly determined. Similarly, any tour delinquency reports from a supervising central station should be checked upon receipt and the reported interruption investigated.

While making regular tours throughout the facility, guards must be alert for all emergencies, paying special attention to known hazardous areas. Guards are in a position not only to detect and correct unsafe conditions that might lead to a serious fire, but also to discover an incipient fire. Therefore, the guards should be familiar with the fundamentals of fire control and with the proper use of all available extinguishing equipment.

The importance of notifying the fire department before attempting to fight the fire should be stressed in guard training. Guards should report any situation that may endanger the facility, such as an exposing fire in adjacent properties. Any unusual condition that the guards cannot correct without assistance must be reported immediately to the proper official so the situation can be remedied without undue delay. Such situations include the impairment of sprinkler service, the failure of heating equipment, or the abnormally strong odors of refrigerants or materials in process.

In addition to carefully following written pre-emergency plans, guards must be resourceful and capable of applying common sense to any unusual conditions they may encounter, such as “natural” hazard threats. If the facility is experiencing freezing weather, for example, the guard should be alert to those areas of the facility where protective systems or process equipment might be vulnerable to freezing damage. Such areas should be checked frequently to ensure that heating systems are

maintaining the temperature necessary to avoid damage. If a thermometer is unavailable, a resourceful guard might set out a small container of water to observe by the condition of the water when the area might be approaching a dangerously low temperature.

Passive Programs

Passive surveillance programs include protective signaling systems, such as central station systems, as well as equipment that contributes to the physical security of the premises, such as fences, lights, barriers, locks, and closed circuit television or other intrusion detection devices. Passive programs can either replace or supplement active programs. At locations where values are lower and hazards are limited, passive programs may replace active programs. At locations with higher values or greater hazards, passive programs may supplement active programs. See NFPA 72, PRC.11.0.1 and PRC.11.1.1.0.

When a protective signaling system is used as the sole means of surveillance, a walk-through tour to detect unsafe conditions should be made by a competent person immediately after the facility becomes unoccupied. Such a tour would be similar to the first tour made by a guard if standard guard service were provided. Further, when unusual conditions prevail at such a facility, a responsible person should remain there or return as quickly as possible to provide additional surveillance. Unusual conditions include, but are not limited to, impairments to fire protection systems or severe weather conditions. Failure of a protective signaling system in conjunction with such unusual conditions might severely increase the facility's susceptibility to loss.

Regardless of the location or size of a facility, one way of increasing security is to physically prevent access by unauthorized persons; e.g., windows may be covered with heavy screening or protective bars or may be permanently sealed. It should be noted, however, that sealed window openings may delay fire detection and may reduce heat, smoke or explosion venting. See PRC.16.3.

Exterior doors should be equipped with security locks. When it is not possible to physically prevent unauthorized entry, intruders may be detected by a protective signaling system. Such a system should be installed only by reputable contractors using equipment listed or approved by a nationally recognized testing laboratory, and the plans should be reviewed in advance by AXA XL Risk Consulting.

To secure a facility's perimeter, chain link fencing may be used. Fences should be inspected at least weekly to be sure they have not been breached.

A physical barrier may be supplemented by perimeter lighting and closed circuit television. The lighting should be checked nightly and the closed circuit television maintained according to specifications provided by the installer. The closed circuit television system should be equipped with motion detection, as well as a means of recording on videotape unusual activities. Any breakdowns should be investigated and repaired immediately.

EVALUATING GUARD SERVICE

Consider the following features when evaluating standard guard service:

TOUR SUPERVISORY SYSTEM RECORDING METHODS

Guard tours should be recorded by one of the following methods:

- Portable watchclock. The clock must be kept locked, and the key must be inaccessible to the guard. The clock records should be removed from the clock and checked daily by management's representative. Guards should never remove their own records from the clock. Even if contract guard service is employed, management's representative should remove the records from the clock and check them rather than relying on a supervisor from that service.
- Central station guard patrol tour supervisory system. With this type of system, the written records of the guards' tours are maintained in the central station. NFPA 72, requires the central station to notify the facility in writing if the guard is late in starting or finishing a tour. A specified grace period of 10 min – 15 min is usually permitted. Upon the expiration of the grace period, the central station attempts to contact the guard by telephone. If unable to reach the guard, the central station immediately notifies the police and dispatches its own armed guard.
- Proprietary guard patrol tour supervisory system and stationary watchclocks. With these systems, the guards' tours are automatically recorded at a central location. Management's representative should review this record daily.

CHECKING TOUR RECORDS

When checking tour records, make sure that:

- All unoccupied areas of the facility are included in each tour.
- All key stations or tour supervisory transmitters in each tour have been recorded clearly in a regular hourly pattern at night and in a bi-hourly pattern during the day.
- Tours last no longer than 45 min, allowing for a rest period of at least 15 min each hour.
- The tours begin within one half-hour of the time the area becomes unoccupied and continue to within one half-hour of the resumption of occupancy.
- The "tell-tale" of a portable or stationary watchclock is recording each time the clock is opened. Look for indications that the clock has been opened more than once a day or at unusual times. This might indicate that surveillance records were tampered with or that unauthorized persons have access to a clock key.

TOUR SUPERVISORY SYSTEM INITIATING DEVICES

Key stations, tour supervisory transmitters, or intermediate stations should be inspected once a month to see that they have not been relocated or removed, and to confirm that they are firmly attached and sealed with a "tamper" seal. Make sure the key has not been damaged. If there is evidence of tampering, the key stations, tour supervisory transmitters, or intermediate stations should be checked more often and suitable action taken.

GUARDS

Consider the following points when evaluating guards. See NFPA 601 for further details.

- The physical and emotional stability of guards should be evaluated. Guards hold positions of trust that require individuals who are physically able, mentally alert, and morally responsible. Pre-employment tests and investigations evaluating these qualifications should be mandatory whether the guards are employees of the company or from a contract service.
- Guards should have sound judgement and should be capable of responding calmly in an emergency. They should be mature enough to have sound judgment and should have the physical stamina required by the job.
- A sufficient number of guards should be provided to maintain proper surveillance. It is not desirable for guards to be assigned part-time duties unrelated to surveillance. If they are so assigned, however, these duties must not interfere with surveillance.
- The guards should receive management's full support in the performance of their duties.
    - When the guards are facility employees, management should provide the necessary training and supervision and establish the scope of the service.
    - If a contract guard service is used, management should not assume that it will be adequate. Rather, management should prepare detailed specifications and investigate the ability of prospective contractors to meet these specifications. When the contract has been let, management should make sure that its intent is being carried out.
- The initial and continued training of guards should be given as a formal, comprehensive written program covering all applicable protection procedures. Each guard must be:
    - Acquainted with the general nature of the facility's operations and possess specific knowledge of those operations which are hazardous.
    - Familiar with the facility's manual and automatic fire protection equipment and protective signaling systems. They should be especially aware of the location of all sprinkler valves and know which area each controls. AXA XL Risk Consulting suggests that guards periodically accompany the person making fire protection equipment inspections in order to gain a working knowledge of facility protection features and hazards (see *OVERVIEW*, Section 12 [PRC.1.12.0]).
    - Familiar with the location and operation of manual fire alarm stations and other means of transmitting fire alarms. Such means should be provided throughout the facility to permit guards to easily report a fire.
    - Taught to notify the fire department before attempting to fight the fire.
    - Taught how to admit public fire apparatus to the property and how to direct fire department officers to the location of the fire.
    - Taught to properly notify company officials when an emergency occurs or when potential trouble is observed.
    - Taught to maintain a shift log and to prepare reports to management of observations made and action taken during tours.
- Guard service should be integrated into the overall pre-emergency planning program (see *OVERVIEW*, Section 7 [PRC.1.7.0]).
- General and special instructions and other data required by the guards should be written down and kept up-to-date (see NFPA 601).

In summary, management should expect, and is entitled to receive, guard service of the highest quality. Guards must be conscientious in the performance of their duties, noting and reporting all infractions of company regulations and closely following the orders given to them.

FIRE ALARM AND INTRUSION DETECTION SYSTEMS

Fire alarm systems use three basic types of signals:

- Alarm, a signal indicating fire. This includes:
  - Manual fire alarms;
  - Discharge of automatic sprinkler or other fixed extinguishing systems;
  - Automatic fire alarms, such as heat, smoke or flame detectors.
- Supervisory, a signal that indicates an “off normal” condition in a fire protection system and its return to normal. This includes:
  - Control valve tamper for automatic sprinkler or other fixed extinguishing systems.
  - High and low air pressure on dry pipe or preaction sprinkler systems.
  - Private water supplies, such as gravity tank level and temperature or electric motor-driven fire pump running and power failure.
  - Public water supplies, such as low public water pressure.
  - Low building temperature for buildings with wet pipe sprinkler systems; for dry pipe, preaction, or deluge valve closets; and for fire pump houses located in areas subject to freezing. Such devices should be located in portions of the facility most likely to become dangerously cold first, such as remote stairwells or spaces above suspended ceilings. They should be set at high enough a temperature that facility personnel will be able to respond to and correct a loss-of-heat condition before damage occurs.

    Supervision of the operating status of a facility’s boiler or furnace may be used to supplement low building temperature supervision, but should never be used in place of specifically located low building temperature detectors, as it is possible for a portion of the heating system to become ineffective while the boiler or furnace continues to operate. In particular, if the boiler has insufficient water, prompt detection may prevent severe boiler damage which might have resulted in a fire.
  - Guard patrol tour delinquency.
- Trouble, a signal indicating the loss of fire alarm system power supply or circuit integrity.

There are five basic types of fire alarm systems. These are protected premises, central station, proprietary supervising station, remote supervising station and auxiliary systems. All five types are addressed in NFPA 72. Also see PRC.11.1.1.0.

Intrusion detection systems use two basic types of signals:

- Intrusion, a signal indicating unauthorized entry.
- Trouble, a signal indicating the loss of intrusion detection system power supply or circuit integrity.

IS YOUR FACILITY SECURE?

The following questions are intended to assist management in determining the security measures needed to adequately protect their facilities from fire and explosion. These fires and explosions may be the result of acts of the facilities' employees, authorized visitors, or intruders. Also see PRC.1.11.1.

ORGANIZATIONAL PLANNING

An appraisal of the following points will give some indication of the likelihood of damage from riot and civil commotion or acts of vandalism or malicious mischief by intruders. The degree of security needed can then be more reasonably determined. To assist in determining if a facility is a potential target, management should consider:

- Nature of Business
  - Is production carried on under military research or procurement contracts?
  - Are the products particularly "attractive" to criminals? The list of attractive materials includes explosives, firearms, ammunition, drugs, electronics, intoxicants and flammable liquids.
- Public Image of Company
  - Is hiring policy considered fair?
  - Are wage policies acceptable?
  - Are employee relations satisfactory?
  - Is the neighborhood satisfied with the facility?
  - Has employment been stable (without cutbacks or layoffs)?
  - Are any employees or ex-employees disgruntled?
  - Has the facility been criticized for environmental pollution?

To evaluate the degree of security provided, management should review the facility's security planning:

- Has a written security plan been developed?
- Does this plan include protection against arson and vandalism?
- Does the plan provide for consultation and liaison with public safety authorities?

EXTERNAL SECURITY

External security precautions should reasonably control access while allowing normal business to continue.

- Control of Access
  - Do topographical features, such as cliffs or rivers, afford a degree of natural protection?
  - Are fences and exterior perimeter alarms adequate?
  - Are gates properly controlled and locked on schedule?
  - Is entrance of individuals and motor vehicles controlled?
  - Are contents of vehicles checked?

- Is access to keys restricted and controlled?
- Has provision been made to quickly admit the public fire department during an emergency?

- Other Considerations
  - Does the locale have a history of, or potential for, civil strife?
  - Is the area adequately illuminated?
  - Are adequate external guard patrols provided where needed?
  - Are doors and windows adequately secured and adequately protected against thrown objects?
  - Are other means of access protected?

INTERNAL SECURITY

Internal security precautions include supervising personnel, taking security measures, and making sure fire and explosion protective systems remain in service.

Personnel

To evaluate supervision of personnel, management should consider:

- Employees
  - Are proper pre-employment screenings made?
  - Are identification cards or badges used to restrict employees to specific areas?
  - Are employees instructed to challenge strangers?

- Contract Service Personnel
  - Are their pre-employment screenings reviewed?
  - Are they required to log in and out of the facility, and are their movements supervised by facility personnel?
  - Do they wear identification badges?
  - Are their tool kits or equipment inspected upon entering and leaving the facility?

- Outside Vendors, and Delivery or Repair Personnel
  - Are they regularly assigned?
  - Are they issued identification badges?
  - Are they required to log in and out of the facility, and are they escorted while at the facility?
  - Are they restricted to specific areas?
  - Upon entering and leaving the premises, are their tool kits and equipment inspected?

- Guests and General Public
  - Are they admitted on legitimate business only?
  - Are they identifiable as guests?
  - Are they required to log in and out of the facility, and are they escorted while at the facility?
  - Is access restricted to certain areas?
  - Are their belongings inspected upon entering and leaving the facility?

Security Measures

To evaluate internal security, management should consider:

- Are the buildings adequately patrolled by security personnel?
- Are security alarms used in vital unattened areas?
- Do plans for handling civil disturbances provide for additional security coverage?

Protective Systems

To determine the likelihood that fire and explosion protective systems will function properly in an emergency, management should consider:

- Are critical facilities located in locked or continuously supervised areas or are they otherwise specially protected? These facilities include substations and switchgear, computer equipment, fire pumps and other water supplies, sprinkler controls and special extinguishing systems.
- Are water supplies and sprinkler systems kept in service?
- Are sprinkler control valves either sealed or electrically supervised?
- Do all employees know how to report a fire?
- Has a suitably organized and trained Fire Brigade been provided?
- Has an adequate supply of portable extinguishing equipment been provided, and have employees been instructed in its use?