CFPA EUROPE ®

ARSON DOCUMENT

EFSAC
European Fire and
Security Advisory Council
EFSAC Endorsed Guideline

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Foreword

The Security Commission of the Confederation of Fire Protection Association Europe (CFPA-E) has developed common guidelines in order to achieve similar interpretation in the European countries and to give examples of acceptable solutions, concepts and models. The CFPA-E has the aim to facilitate and support fire protection and security aspects across Europe.

The market imposes new demands for quality and safety. Today fire protection and security aspects form an integral part of a modern strategy for survival and competitiveness.

The guidelines are primarily intended for the public. They are also aimed at the rescue services, consultants, safety companies and the like so that, in the course of their work, they may be able to help increase fire safety and security in society.

These guidelines have been compiled by the Guidelines Commission and are adopted by all fire associations in the CFPA-E.

These guidelines reflect best practice developed by the countries of CFPA-E. Where the guidelines and national requirements conflict, national requirements must apply.

Content

1   Introduction

This document provides background information and practical guidance on the prevention and control of arson.

Arson is fire affecting the premesis caused by the malitious act of a human being.

It is provided for the use of managements of all enterprises in industry, commerce and the public sector and will also be of interest to government departments, local government organizations, police, fire brigades, insurers, and research bodies.

The document is published by the various member countries of CFPA Europe in their respective languages.

2   Facts About Arson

In most developed industrial countries arson has become the major fire problem of our time. While fire statistics in general and arson statistics in particular are inadequate to a lesser or greater degree in most countries it has been clearly established that worldwide the cost of arson as a proportion of all fire costs may be as high as 50 per cent depending on the country. Insurers throughout the world are devoting between a quarter and a third of their total loss expenditure to pay for losses resulting from arson. An alarming increase in the number of deliberately started fires, as reflected in the criminal statistics of all industrial countries, has been noted. An important point about fire begun deliberately is that not only has the number of such fires increased enormously but that the cost of such fires is much higher than with accidental fires - the reason being that deliberate fires are often begun in more than one place, that accelerants are used and that fire protection equipment is interfered with.

There are many different motives for arson (see chapter 3) although it is felt in most European countries that arson for gain (i.e. to defraud insurers), while a significant factor, accounts for only a small part of the cost. Where evidence has been collected it is seen that much arson is associated with vandalism and other crimes such as burglary. A substantial number of offenders are young males aged 14-18; even younger children are often the culprits. See also Guidelines No. 8 : 2004 F.

It is clear from studies which have been made that no type of building is immune from arson attack but some buildings are far more prone to arson attack than others. Targets which have been identified as particularly at risk include domestic dwellings, schools (probably the worst hit in most countries), warehouse and storage premises, shops, hotels and restaurants, construction sites, hospitals, farm building, factories. Vehicles are also greatly at risk from arsonists, especially when a vehicle has been used for other criminal activities.

In preparing countermeasures against arson the various agencies concerned and the managements of industrial and public buildings need to consider with care the relative vulnerability of different categories of buildings and individual premises within those categories as well as various other factors which affect the risk (see chapter 4).

3   Motivation of the Arsonist

The motives for committing arson are many and varied and, in devising countermeasures against arson, the fullest possible understanding of what causes people to start fires is required – by governments, fire, police and other agencies; and by the management of premises in need of protection.

Such information is best obtained from a compilation in each country of arson fires that have occurred and an analysis of the motives of arsonists who have been apprehended and prosecuted. Meanwhile, the information in this chapter, and from other published sources, will be of help to the various agencies and managements in deciding who the arson enemy may be, taking appropriate preventive measures and, in the case of small suspicious fires, perhaps successfully identifying the culprit before a major tragedy occurs.

3.1 The Different Kinds of Arson

Arson for gain

This is to:

– defraud insurers

– circumvent planning law (i.e. to destroy a building which is 'protected' so that a new building can be constructed).

Each of the above types of arson may be committed by the individual who himself stands to gain or may be 'contracted out' to another person - the 'torch for hire' syndrome.

Arson Associated With Other Criminal Acts

This can be:

– to conceal or cover up a burglary or break-in

– to disguise sabotage

– part of a blackmail attempt

– to cover a murder

– vandalism

– to destroy evidences in a vehicle that has been used for other criminal acts.

It is believed that a substantial number of arson cases are associated in particular with vandalism and with break-ins.

Arson Associated With Political or Economic Motivation

The desire to destabilize (a company or organization)

– Elimination or weakening of a competitor

– Industrial sabotage

– Blackmail

– Intimidation

– Pressure groups

– Workers' struggles

– Manipulation of crowds

– Terrorism.

Arson Associated With 'Grievance'

– Revenge against a colleague or head of department (or teacher etc.)

– Jealousy (of colleague's promotion or success)

– Personality conflicts in the company or organization

– Salary grievances, lack of advancement in the job, feeling of being unappreciated

– Fear of unemployment or company relocation

– Failure to be elected to a certain position or committee

– Other grievances against the company

– Having been humiliated in front of fellow workers

– Failure to adapt to changing techniques.

It is to this category that management and fire investigators will first look if the cause of a fire is recognised as arson. In many such cases the arsonist is identified, breaks down and confesses. When the arsonist is not identified there can be significant deterioration in human relations and work atmosphere, along with damage to the company's reputation in respect of customers, suppliers, bankers etc.

Arson Associated with Mental Disturbance or Instability

- Revenge
- Hatred
- Jealousy
- Boredom
- Desire to attract attention (arson for heroism)
- Frustration, sexual perversion
- Pyromania
- Vandalism (often associated with alcoholism or dependence on drugs).

In these manifestations, the arsonist is giving vent to his deeper impulses by deliberately starting a fire. Psychiatrists believe that such a person starts a fire as a way of solving personal problems and reducing physical tension.

A pyromaniac is attracted by the spectacle of a large fire and since he does not fear being identified he will not hesitate to commit his criminal act.

In this category come the seekers after thrills, the attention-seekers, the would-be heroes whose impulses may even lead them to apply for work as fire fighters or security guards - sometimes with disastrous results.

Also coming within this category are three other manifestations of arson:

- The cry for help - when the world around seemingly ignores the offender's problems
- The desire to 'escape' - e.g. the patient in a mental hospital wishing to be transferred elsewhere
- Self-destruction (suicide attempts)

Children and Adolescents Playing with Fire

Arson means deliberately starting a fire in order to destroy. If a small child plays with matches (as a toy) and accidentally starts a fire it is clearly not arson. However, studies have shown that even small children as young as 3 or 4 have started fires in their homes for revenge or through jealousy directed towards parents or older brothers or sisters.

So far as fire brigade, police and managements are concerned there are many cases on record of young children entering business premises and starting fires; in assessing the risk to any premises the presence in the area of a disproportionately large number of children needs to be taken into account.

CFPA E European Guidelines No. 8 : 2004 F emphasises the need to engage with and educate young people in ways which will help to dter them from coming arson. See Guidelines no. 8 : 2004 F.

4 Assessing the Risk of Arson

The potential for a building to burn down always exists. Arson is merely another ignition source in addition to those inherently present, although a very important one. In assessing the risk from arson attack, management has to consider the possibility of such attack externally from intruders and internally from employees. A number of factors have to be taken into account

No location can be considered totally free from arson risk but some neighbourhoods are more vulnerable than others: isolated locations for example; inner city areas subject to unrest, vandalism and rowdy behaviour; premises adjacent to football grounds and other such areas where large crowds gather.

It may be known that fire raising has occurred in the neighbourhood. It is helpful for the firm to maintain liaison with the police to ascertain whether an arsonist is operating in the area. Other firms may also be able to supply information on a mutual exchange basis. Local newspapers should be read.

Security of the building should be assessed in respect of any political or racial issues. If labour relations are bad or redundancies have occurred, trouble could be expected. A positive interest should be taken in employee attitudes and any internal conflicts resolved.

The attitudes of neighbours should also be assessed. It is clearly beneficial that neighbours should be positively encouraged to take an interest in the continued existence of the premises. If there is local anger arising from a noise nuisance or unpleasant smells being given off by the work operations, trouble could result. Buying up of property in the locality could also be a cause for resentment.

The defensive measures taken by the company will depend on the severity of the perceived risks and on whether the risk is of a permanent or temporary nature.

Management should start off on the assumption that arson, from whatever quarter or motive, can be prevented if thought is given in advance to the potential threats. Generally, the action of the arsonist is not so skilful that his plans cannot be frustrated by comparatively simple methods. Even the intruder with considerable expertise can be deterred by suitable security measures.

The remainder of this chapter comprises tables which allow the company (A) to assess level of hazard and (B) relative effectiveness of security measures. The tables can also be used as checklists for identification of vulnerable points so that appropriate action can be taken. Questions to be answered		Points
1 There has been fire damage in the neighbourhood or in similar firms		
- possibly caused by arson		5
- definitely or probably caused by arson		10
2 There have been unexplained fires in your firm during the last 5 years		
(small fires that were discovered and extinguished immediately)	≤ 2	5
	> 2	10
3 There have been burglaries in your firm during the last 5 years	≤ 2	10
	> 2	20
4 There is a tense working atmosphere in your firm		5
- There are dismissals/redundancies coming		8
- There is high labour turnover due to a poor morale amongst employees		5
- There are disputes about working conditions		5
5 The firm's business is seasonal		2
6 The general public have access to the premises		5
7 The firm occupies buildings which are in an isolated area		5
8 The firm is situated in a disturbed urban area		10
9 The firm has premises near places where crowds gather		
(e.g. a football stadium, large schools, unoccupied sites which could attract large number of young people)		5
Total amount of points		………

Table 4-1: Checklist for determination of arson risk

Rating the points

Points	Degree of risk
0 up to 4 points	normal
5 up to 9 points	potential hazard
10 up to 19 points	hazard
20 up to 39 points	considerable hazard
40 points	extreme hazard

Description of the safety/security measure	Points
1 Site guarding and supervision	
Continuous outside and inside guarding by at least two persons in contact via radio and carrying out regular patrols monitored by clocking points. The patrols are supervised at a continuously manned point on site (e.g. reception, control centre etc).	30
Surveillance outside working hours only but with other requirements as above.	20
Access control of all employees, visitors, suppliers, escorting of visitors.	10
Continuous surveillance of all gateways and entrances by gate-keepers and/or video surveillance system (VSS) cameras; the video monitors under observation in a continuously occupied office, doors and gates controllable from a central point.	10
2 Measures against intrusion	
2.1 Structural measures	
Enclosure of entire site with security fencing/gates (see text).	12
High security perimeter doors and window protection, if accessible (see text). Arrangements for safe keeping of keys.	10
Facade of masonry or equivalent material with a height above ground of at least 2 m.	3
Adequate illumination of facades and sensitive parts of the site.	5
2.2 Technical measures	
Approved intrusion detection installation with alarm notification to a continuously occupied point (e.g. reception, Alarm Receiving Centre)	
'Shell' surveillance (windows, doors, skylights etc.) of vulnerable buildings.	18
Interior surveillance (electronic sensors to monitor areas three-dimensionally).	7
Outside surveillance (fence surveillance systems, remotely monitored, detector activated VSS etc).	10
3 Fire safety precautions	
3.1 Structural measures	
Construction with approved level of fire-resistance.	10
Separate, lockable, fire compartments for the storage of flammable materials.	5
3.2 Technical measures	
Sprinkler systems which protect the whole building and which are protected against sabotage.	10
Fire detection systems which monitor the whole building.	10
3.3 Organizational measures	
Waste containers of metal and with lids. The containers protected against unauthorised use.	8

Storage of flammable materials a minimum of 10m from buildings or in accordance with regulations.	5
Tidy storage: gangways clear between the storage.	3
Passages and stairways free of combustible material.	2
Closing of all fire protection doors after working hours.	2
Closing of all fire protection doors automatically by operation of fire detection.	5
Regular removal of waste.	2
Works fire team on continuous stand-by.	20
Regular inspection of all safety equipment and fire protection measures with check list and immediate correction of any faults.	3
Staff trained to deal effectively with fire situations, particularly the correct selection and use of fire extinguishers,	10
A dynamic emergency procedures plan (e.g. handling fire brigade response and behaviour of the employees).	10
Total amount of points	………

Table 4-2 Points system to determine effectiveness of various safety/security measures

Rating the points

Points	Security level
0 up to 29 points	low
30 up to 59 points	satisfactory
60 up to 89 points	good
90 points	very good

5 Arson Investigation

In order to establish remedial measures against fire it is clearly necessary to have as much knowledge as possible about the cause, location and other aspects of fires which occur. Such information is obtainable from compilation and study of fire statistics provided by fire brigades and insurers. Included in such information should be data on the incidence of fires begun deliberately.

If there is any suspicion whatsoever on the part of the police, fire brigade or other concerned party that the cause a fire may be arson, it is essential that, as far as possible, the scene remains undisturbed and preserved for investigation by qualified personnel and that the debris be protected from contamination by outside sources.

Having visited the scene of a fire in order to establish where, how and when the burning originated, it is often necessary for investigators to supplement their findings with a laboratory examination of various items. In addition, there are many incidents that are dealt with by police 'scene of crime' officers in which laboratory analyses will provide useful corroborative evidence. There will also be a number of cases in which it is necessary, perhaps because of suspected fraud, to establish the nature of the materials that have burnt.

Items recovered from fire scenes tend to be of three types:

1) Debris or clothing which may require to be tested for the presence of flammable liquids.
2) Domestic or industrial appliances which need to be examined for evidence of misuse or malfunction.
3) Materials removed for burning tests to determine, for example, the ease with which they can be ignited or how fast flames will spread across their surface.

Most laboratory work involves analysis for flammable liquids but a large number of other items are examined, especially in relation to fatal fires.

6 Security as Part Management Responsibility

In the modem world companies cannot survive without continuously adapting to the many risks that threaten them.

The management of any enterprise, whether it is a factory, warehouse, shop, office building, hotel or public building, has a responsibility to ensure that the enterprise will continue to function effectively for the benefit of its customers, clients or visitors, as well as for the shareholders in the business and the workforce.

Interruption of the successful running of the enterprise can take many forms including, for example a cut in electric power, a strike, loss of vital raw materials – or a fire, It has been said that a fire can be one of the quickest and most devastating ways of stopping a business.

Today a major starting point of fires in every kind of enterprise, whether in industrial buildings or in buildings used by the public, is arson - the fires which are begun deliberately for one reason or another. Often these deliberate fires are associated with malicious acts (e.g. break-ins, vandalism, etc.). In attempting to prevent stoppages for these and other reasons the management needs therefore, as an integral part of its operational planning, to consider each and every one of the risks and to take the necessary action to prevent an occurrence and to limit their effects.

This European guidance document is concerned with the prevention and control of fires which are begun deliberately. However, planning against deliberate fires needs to be part of management's overall safety policy to protect people and property against fires in general; equally it forms part of the management's overall strategy for dealing with security threats of all kinds.

It could be said that the whole of the content of this document is, therefore, the business of management because each section of the guidance considers different aspects of the risk of arson and methods to control these risks.

In brief however, management responsibility can be said to encompass the following:

− Analysis of the risk of arson (e.g. the vulnerability of the enterprise to arson attack from outside and from within).

- Consideration of the effectiveness of different remedial measures, taking their cost into account.
- Relating the risk analysis and remedial measures to the total fire safety and security programme operating within the enterprise.
- Giving particular attention to the following measures:
- the appointment of a person responsible for fire safety and security including arson.
- the instruction and training of all staff to make them aware of the danger to them and the business from fire including deliberate fire.
- the installation of appropriate and cost-effective fire and intrusion protection equipment (e.g. intrusion detection, access control, VSS, fire alarms, sprinklers, etc.).
- surveillance procedures (patrols, watchmen, caretakers).
- liaison with police and fire brigade to ensure appropriate preventive measures before, and effective countermeasures after, an arson attack.
- having an in-company system for investigation of fires.
- having a contingency plan should the worst happen.

6.1 Arson – The Consequences for the Company

The consequences of arson for the company may be divided into three main categories:

Material consequences: Direct material damage. These consequences are known and can be directly evaluated and calculated (if a prior and up-to-date valuation of property exists).

This category includes:

- destruction of buildings
- destruction of machines and durable goods
- destruction or deterioration of stores of raw materials and finished products
- destruction of plans and archives

Intangible consequences: We are here concerned with intangible damages, which can however be easily defined, i.e.:

- financial losses, operating losses
- delays in delivery times (leading to penalties)
- loss of market share

but also:

- loss of confidence on the part of customers, suppliers, bankers
- tarnishing of corporate image and damage to the company's reputation

Human consequences: Apart from the enforced unemployment that may result from arson in a company, the human consequences are generally not well-known and do not attract the attention they deserve. Why is this? Simply because there are no materially visible and measurable damages in the short term.

The effect on people of an act proved to be arson, especially if the arsonist has not been identified, may be catastrophic and long lasting.

The enquiry made after the fire by the police, while obviously necessary, tends to increase the anxiety of people in the affected company.

This may lead to deterioration of human relations, loss of confidence in management and supervisory staff and can sow doubt and suspicion in the minds of all employees.

6.2 'Internal' Arson – Approaches to a Solution

The risk of arson inside an enterprise such as a company is of a different nature from other types of arson risk. The prevention strategy to be implemented must be both original and imaginative and must be aimed at improving human relations and exchange of information in the company, since these two aspects are essential to success of the strategy. This approach is

particularly important in dealing with potential arson committed by persons working for, or having once worked for the company, whether their motivation is personal or dictated by factors outside the company, i.e. when an employee is used as an instrument by another or others.

Prevention in this field must be centred on human relations and must concern every level of the company, i.e. all the different partners must be involved. Unfortunately there is no absolute method or 'recipe' for implementing this type of prevention. Each situation is unique and specific to the profile of the arsonist and that of the company.

However a certain number of means and procedures can be suggested and applied. They concern almost exclusively the role and behaviour of the different partners within the company since much depends on labour relations, human relations, understanding, information and communication.

6.3   Internal Arson in Companies – Prevention Role of People

Management: Apart from its essential role of managing the company, it also has the task of determining the company's labour policy, the salary scale, bonuses etc - all sectors in which discontentment and disappointment can easily arise.

Providing regular information on the progress of the company and explaining the strategy chosen would appear to be good preventive tactics.

Supervisory staff: This category has an important role to play in the company because of its position between the management, the other employee categories and trade unions and employee associations. Its job is to 'transmit' information, and if it does not always receive adequate explanation or supporting arguments for this information, unnecessary and time wasting conflicts may arise.

Supervisory staffs have a fundamental role to play in prevention of arson, for the following reasons:

In practical terms, they tend to work late in the evening and start early in the morning, which is useful for surveillance of the premises. They are familiar with the different work stations and the strategic points of the establishment and therefore likely to notice any abnormal situation and inform the authorized person.

In human terms, they are familiar with the company's employees and provide a willing ear. A foreman for example has a close relationship with his co-workers and knows them individually, not solely in the work context but sometimes in the context of their private lives. In practice he is the first to notice that something is wrong and may, if he thinks necessary, take action before anything irrevocable is done.

The security chief: He has a pivotal role to play in security in the establishment since he is (or should be) in contact with everyone and must ensure that communication flows easily through all levels of the company.

He is the person most concerned with communication in the field of arson.

He must be simultaneously available, ready to listen and act as confidant while always remaining impartial in his evaluations and judgements. He will often be the first to discover an abnormal situation and strange or unusual behaviour. He therefore plays an essential preventive role in the fight against arson in the company.

Employees: Plant workers and white-collar staff know each other well since they work together. They are ideally placed to note any unusual behaviour or abnormal attitude on the part of their colleagues and to inform the right people.

A false argument is often invoked to avoid handing on this information i.e. people are reluctant to denounce a colleague, to be indiscreet, to get involved in somebody else's business or to 'tell tales'. Some experiments have been carried out in this field in medium-sized companies (200 to 300 employees) using the following procedure (the experiment was a simulation agreed to and acted out by all company employees).

Any employee observing abnormal behaviour in a fellow worker did not inform his immediate boss, but instead informed either the security head (if the company had one), the nurse or someone else closely involved with the company with no hierarchical relationship to him or her-

self. The information could be given verbally or in written form (in this last case, several employees chose to remain anonymous). The results were convincing. The work climate did not suffer and the atmosphere remained satisfactory.

Although they were only simulations these experiments are interesting since they show that employees are well aware of the daily concerns and preoccupations of fellow workers and that they are vitally interested in the continued operation of the company and concerned that it should not be destroyed by arson.

Information is handed on readily if it remains anonymous (written) or discreet (verbal).

Personnel and labour relations department: The task of this department is to manage personnel but also to be aware of their motivations and desires. It has an undeniable role to play in prevention but it must avoid falling into the trap of policing the establishment.

It should act effectively whilst safeguarding the rights, the freedom and the personality of the individual and his family. The personnel file which details all aspects of the person's professional life, job entry tests and family information, must be used with the utmost discretion.

Trade unions and employee associations: It is essential that trade union and employee associations, which should be regarded as useful partners in the business of defending the interests of the company as well as those of employees, be kept informed in these matters. They play a valuable daily role in the security of the company and in particular in prevention of arson since one of their permanent motivations is the defence of the tools of labour and thereby employment. No trade union delegate wishes to see his company go up in smoke, even if he disagrees with a particular measure or is unhappy with a particular strategy.

People involved closely with the company: We are referring to doctors, factory inspectors, nurses, social workers - the role of these people in the fields of prevention, medicine and family assistance is well known to all. There is no need to dwell on the help they can provide but they should definitely be kept informed and invited to take part in brainstorming sessions on the subject.

6.4 Conclusions

Fire prevention and prevention of arson in companies is not a simple matter to tackle although excellent results can be obtained. It is essential to act with and through the personnel, for if the latter are not informed, any attempt at prevention in this field is doomed to failure.

Likewise we should recall that any preventive procedure or system that is instituted will be more effective if it is not imposed on personnel, if they accept it in good part and especially if it does not mean that they are subjected to unnecessary constraints. These measures and systems must allow personnel to live and work normally and must never be seen purely as instruments of control or surveillance.

Management have a leadership role in the fight against arson but they must also ensure all their staff feel they have an equal responsibility to protect the business from disaster. Likewise, the security chief should not be seen as the only person really involved in the matter since everyone involved in the company has exactly the same role to play.

In conclusion, the basis of effective action in this field (as in many others) remains: respect of the individual, reliable information and communication.

7 Security Measures to Prevent Arson

A programme of practical measures for the protection of any building against arson attack covering security equipment and systems (enclosure and other aspects of security of the building, lighting, surveillance, alarms); general fire precautions including good housekeeping; organisational measures (guarding, access control, and inspection and maintenance of systems). The design of the security arrangements should take into account any national standards or criteria operated by insurers. It is essential that high security approved and (where available) certificated products are selected. The following advice is based on the assumption that such products are employed on a 'Best Practice' basis.

7.1 Security Equipment and Systems

Enclosure

A robust enclosure is one of the most suitable measures for denying potential arsonists access to property.

An outer enclosure should:

- prevent crossing of a property limit
- impede intentional surmounting of a property limit
- delay intentional forcible surmounting of a property limit

An outer enclosure is any system for enclosing a property, including gates and doors. The enclosure shall be uninterrupted. It should, if possible, run in a straight line along one side. As outer enclosure, a wire mesh, a steel lattice or a steel profile frame fence with:

- a minimum height of 2.50 m above the ground, including climb-over protection, (subject to local regulations)
- crawl-under and climb-over protection
- a maximum uniform post interval of 2.50 m

should be provided.

Building Security

The objective of any security system to prevent unlawful entry is to increase the time expended by the intruder and to act as a deterrent. Such security should be taken into account at the planning stage and architects can provide important assistance in convincing the proprietor of the necessity for installing intruder-deterrent door and window elements.

External walls which are readily destructible or combustible should be avoided.

Doors

It is difficult to select all components of a door and to match them to one another such that maximum protection against intrusion is achieved. For this reason, only tested, approved and certificated security doors sets (door including suitable frame) should be considered for high risk situations. The standards are based on dynamic tests, static loadings and, last but not least, manually performed intrusion tests corresponding to the forces and techniques normally occurring during a break-in. These rules specify requirements for both individual parts and complete door sets.

An installed door set should fulfil the following requirements:

- The entire frame shall be firmly anchored in the masonry.
- The door leaves offer adequate resistance to attempted break-in. They can be made of wood, metal or - if suitably designed - of other materials.
- At least three burglary protecting door hinges shall be fitted according to design.
- In the case of a door opening outwards, hinge security fittings or backing hooks should be provided.
- The locking of the door shall withstand high loads.
- The lock should be protected by a burglar protecting door shield.

Locks

Burglary protecting locks should have a throw of the bolt of at least 20 mm. If the lock is capable of being operated from the inside without the use of the key, an assessment must be made of the exposure to manipulation e.g. via adjacent glazing. Internal keyless operation may be essential (e.g. if the door is a means of emergency escape) but, otherwise, operation should be by key on both sides.

Lock Mechanisms

Lock cylinders are exposed to attack by criminals. Approved locks incorporate robust protection against such attacks.

Striking Plate

Long and thick enough design which can be anchored to the masonry. In the case of metal frames, reinforcement of the recess for bolt and latch engagement.

Door Hinges

Heavy duty hinges which are firmly attached to the frame and the door leaf. If possible, additional fittings of 'backing hooks' (also known as 'dog bolts', or 'hinge bolts'). Backing hooks should be provided in all cases where the door hinges are on the side prone to interference.

'Cross-bolt' Lock

These locks or crossbars with locking bolts, are engaged right across the entire width of the door in lock cases securely anchored to the wall on the left-hand side and right-hand side of them. The crossbar lock fulfils three functions simultaneously. In addition to the properly locking function on both sides of the door, it reinforces the door leaf itself. When correctly fitted, the crossbar is a very effective additional locking system which will normally suffice, even when special security is required, for example, in the case of rear exits. These devices are usually 'retro-fit' devices.

Multipoint Locks

These are usually already incorporated into doors that are sold complete with their own, integral, locking arrangements. These are seldom fitted retrospectively ('retro-fit'). The bolts may secure the door on the locking side only (e.g. two or three bolts), or on additional sides (e.g. both sides, sides, top/bottom). This is a secure arrangement (which also has the effect of reinforcing the door leaf itself).

Espagnolette Bolt Lock

These locks, also called bascule locks, are particularly suitable for securing double-leaf doors. When operated, bars are moved, the ends of which engage in striking plates fixed to the door frame or floor. The range extends from the twin bolt lock, which locks top and bottom, to quadruple locking on all four sides of a door.

Windows

The following features are important:

–   the whole window should be burglary-resistant (proved and certificated) – as with security doors
–   if normal windows are used, these should be upgraded additionally with retrofit products
–   retrofit products are given in a large number of designs and for several applications

Intruder-deterrent Window Designs

Intruder-deterrent window designs, where all parts relevant to security have been matched to one another, shall be provided in the lower area of the building. In the upper building outer walls, glazing resistant to penetration by thrown objects in accordance with national standards will suffice. It is generally accepted that intruders will be deterred from attempting to enter windows that are 'out of normal reach' (defined as requiring a climbing aide above 4 metres).

Conventional windows provide only slight protection against intruders. A tried and tested method of protection against intrusion is the use of two or three retrofit products (additionally mounted locks) which will offer a modest improvement . If the window cannot be readily opened without smashing the glass a certain type of 'inexperienced' intruder MAY be deterred. As well as additional window locks, installation of which should be standard practice for accessible windows, the use of intruder-deterrent glazing may be considered. The performance features of glazing systems are specified in national and international guidelines and standards.

Alternatively (or additionally) various types of physical window barrier can be fitted ranging from lightweight steel mesh to heavy steel bar grilles. Selection of such a barrier is a matter of security risk assessment.

For example, steel roller shutters with solid slats (laths) can form a very effective barrier, provided high security, criminal resistant products are selected. Moreover, because there are no apertures in this type of barrier, lighted materials can not be pushed into the premises. Completely 'blind' shutters of this, and equivalent types, are especially recommended as a defence against arson but care is required that burning materials can not still be pushed through broken glazing and ignite contents 'by-passing' the sides of the shutter defences. Thus, externally fitted shutters MAY be preferred, provided care is then taken to frustrate the sabotage of the 'shutter box', fixings and securing points.

Lighting

The lighting of buildings, open spaces and outer enclosures, is a valuable measure for defeating the intentions of arsonists. Illumination should be of a standard which permits moving shadows to be readily recognizable.

It is preferable to install several small lighting fixtures, rather than a few large ones. The lighting units should be split up into groups and, if possible, they should be fused separately in the low voltage distribution system. The covers of the lighting fixtures should be resistant to thrown objects. The power supply lines shall be laid securely in the ground or at a minimum height of 5 m. It is advisable to provide automatic switch-on of the lighting by photocell control. The lighting fixtures should be mounted at a minimum height of 5 m. When designing lighting installations it is vital to avoid leaving unlit corners in which an intruder may conceal himself.

Surveillance Systems

The type of surveillance and the alarm system selected will mainly depend, in addition to the size of the property and the number of weak points to be monitored, on whether surveillance must be carried out only inside the building or also externally.

In the case of intruder alarm systems, a distinction is drawn between three types of surveillance:

building 'shell' surveillance

interior surveillance

property surveillance.

Building 'shell' surveillance

The walls and roof of the building provide the physical containment of the area to be protected. In the case of wall surveillance, priority is given to surveillance of all weak points through which forced entry is most expected. Especially weak points in the exterior wall which must be included in surveillance are points which can most easily be penetrated with little expenditure of time and with little equipment. These will generally be doors, windows, roof lights, ventilation shafts and walls and roofs of lightweight materials.

Adequate physical protection, such as heavy duty locks, is essential for electronic surveillance. Opening and forced entry detectors are used for 'shell' surveillance.

Opening detectors (e.g. magnetic contacts) monitor the closed state of windows and doors. The detectors trip the alarm when the contact in question is actuated by opening the door or window.

Intruder alarm detectors are able to monitor windows, doors, walls and ceilings of a secured area against forcible entry. For this purpose, for example, glass breakage detectors and vibration detectors may be used to recognise a break-in.

Interior surveillance

To secure the interiors of buildings it is customary to use motion detectors which react to the movements of persons who have entered a monitored zone. The detectors available are, for example, passive infra-red detectors (PIRs), infra-red or high frequency radio frequency 'beams', ultrasonic detectors and microwave detectors. The ranges of these devices may vary between 5 and 100 m according to method and type.

Motion detectors are highly sensitive devices which can easily give false alarms if not properly planned and installed. In addition to this, naturally, the detection must meet the appropriate rules and standards.

Property surveillance

Property surveillance of valuables, filing cabinets with important and/or valuable documents and other individual objects in a room can be monitored separately. For this purpose there are, for example, capacitive field change detectors.

Building 'shell' surveillance has several advantages compared with interior surveillance or property surveillance and is more valuable than interior surveillance for prevention of arson. Any attempted attack will be reported at a very early stage, possibly before the perpetrator has managed to actually enter the premises. However, a carefully designed system will often consist of a balanced blend of 'shell' and interior surveillance.

Video Surveillance Systems (VSS)

Video surveillance systems or Closed Circuit Television (CCTV) can be very effective but it essential that careful consideration is given to the objective before decisions are taken. For example it is vital to decide at the outset whether the objective is to merely detect infiltration, or recognise vehicles or persons or identify persons (i.e. with sufficient reliability to obtain criminal convictions). The objective will dictate the type (and cost) of the system and the arrangements necessary for the human observation of the images.

A video surveillance system may consist of the following elements:

One or more video cameras; static cameras are usually preferred to cameras that pan, tilt and zoom (PTZ) by remote control. The cameras should be suitable for nocturnal surveillance or for the type of lighting to be in operation.

One or more monitors for video presentation, with, if necessary, a video switchover system. Where several video sources are to be connected to one output, this switchover can take place cyclically and/or manually.

Video motion detection (VMD) may be included. This technology alerts the surveillance personnel to changes in the VSSimages (e.g. when an intruder enters the field of view). The device must permit simple programming of the video zones to be monitored. VMD helps prevent the surveillance personnel from failing to observe critical occurrences and sends them alert signals if anything moves in the area being monitored. Alternatively, images can be presented to the observer when a conventional movement detector (e.g. a PIR), sharing the same field of view as the camera, is triggered.

Long-play digital video recorder or 'hard disk' recorder which records all occurrences triggering an alarm. It must also be possible to record and index occurrences from several cameras simultaneously. These occurrences should be recorded in 'real time'. Still video frames recorded at the moment of triggering can also be selected for viewing by the observer.

Open space Surveillance (Perimeter Surveillance)

A complete system for open space surveillance will consist of the following:

– High security fencing and gates
– Open space surveillance sensors such as fence sensors, ground sensors, volumetric sensors
– Security lighting
– VSS
– Alarm/surveillance centre which monitors VSS images and accepts, evaluates and records alarms
– Guard personnel

The open space surveillance detectors on the market utilize a wide variety of different physical principles.

Electrical surveillance of fences and walls

With this method of surveillance, in a similar way to building 'shell' surveillance, interference with the fencing system, such as cutting through fences, is detected e.g. by vibration sensors.

Surveillance of ground zones

Devices known as geophones are installed in the ground. They react to structure-born sound or pressure changes. Alternatively, radio-frequency cable sensors or magnetic cable sensors can be installed in the ground; they trip an alarm when changes in the electromagnetic field or magnetic field are caused by the incursion of an intruder.

Microwave 'beams'

A beam of high frequency radio energy is maintained between a transmitter and receiver located strategically to create a 'barrier' along the periphery of a site. Changes in the electromagnetic field caused by the incursion of an intruder lead to an alarm being triggered.

Infra-red 'beams'

When an invisible light beam between the transmitter and receiver is broken through the incursion of an intruder an alarm is triggered.

Capacitive fences

An electrical field is established between parallel transmitter and receiver wires. If an intruder enters the sphere of sensitivity of this field, an alarm is triggered.

8 General Fire Precautions

Investigations have shown that in all large-scale fires, serious errors in the overall safety concept have contributed significantly to spread of the damage. Effective fire precautions are the surest and most effective protection against arson and its effects.

Since in case of arson the fire will often occur in unexpected places, or at several points simultaneously, the planning of fire precautions should take these circumstances into account. The most important precautions are:

– Preventive precautions which prevent outbreak and spread of fires, e.g. by dividing the production and storage areas with fire walls and spatial barriers into the smallest possible fire hazard sections.

– Defensive fire precautions which detect and fight a fire on outbreak, e.g. by installation of automatic fire detection and/or automatic fire extinguishing systems.

Storage areas with readily ignitable liquids, gases or substances

Flammable liquids, gases and readily ignitable substances which can be used as fire accelerators should be stored in separate fireproof areas which are kept under lock and key at all times outside working hours. The presence of waste and rubbish near exterior walls or on freely accessible ramps and directly behind the enclosure should be avoided.

Cleanliness and tidiness

Cleanliness and tidiness are measures of the first importance in the interest of internal security.

These include:

– tidy storage
– adequate storage spaces
– secure storage of hazardous substances
– intermediate spaces kept free
– safe storage of waste
– keeping passages, stairs free
– no-smoking rules compliancy

- cleanliness in the despatch department
- daily removal of flammable waste from storage and production areas
- keeping flammable waste in non-flammable containers
- no combustible substances lying around in disorder inside or outside the works buildings
- care with the siting of automatic vending machines

9   Organisational Methods

Guarding

To avert risk to a company from within (arson by company employees or visitors), additional measures are necessary. These should reduce the opportunity for arson, restrict the freedom of movement of the arsonist and minimize possible consequences.

An essential precondition for combating arson is suitably organized guarding of the works by watchmen or works security personnel. Guarding of this nature must be assisted by technical measures. To minimize the cost of surveillance by watchmen, particularly for small companies, a viable solution in industrial estates, for example, can be for several companies to combine for the purpose of their premises being guarded jointly by in-house guards or a security company.

All parts of the premises should be included in surveillance. Ideally, surveillance should be carried out immediately at the end of working hours and subsequently at various intervals which should not exceed two hours.

The initial check at finish of working hours is the most important. Here, adequate time should be available for checks to be carried out to see whether all inside and outside doors are locked. Works areas which have been shut down and buildings seldom frequented should be included. Rounds should not be made following a uniform timetable, but constantly changed, so that any occurrences are more readily recognizable by the watchman as 'not normal'. The watchmen should make their rounds in accordance with detailed checklists in which current changes in works routine are also noted. The fire safety manager will be responsible for these checklists.

Works Security/Guard Companies

The number of guards should be suited to the importance and size of the company. At least two watchmen should be available for each watch, one to man the watch centre and one to make the rounds. The watchmen should be equipped with radio communication and accompanied by a trained guard dog (greater radius of surveillance deterrent effect). The rounds of the watchmen should be checked by means of suitable systems.

Access Control/Surveillance of Entrances

Access to the works premises should be controlled to deny access to unauthorized persons. In large companies control cannot be carried out effectively by guards alone so that all personnel should be issued with electronic access control cards/tokens. To relieve the gatekeeper, an 'electronic turnstile' (or a mechanical turnstile) system is desirable which allows staff access through the enclosure. Employees can gain access on their own by using card/token readers; visitors must report to the reception and can thus be recorded effectively. With 'electronic turnstile' systems of this type, it is additionally possible to cordon off areas with high security requirements within the works, such as for example computer centres.

Inspection of Security Neasures

Security measures should be inspected regularly to ensure that they are in good working order. Any deficiencies should be remedied at once. If this is not possible, equivalent safety measures should be taken. Such inspections should be carried out with the aid of a check list.

10   Environmental and Design Measures Against Arson

Chapter 7 of this document puts forward a package of security measures for any building with the objective of keeping potential intruders out. In this chapter we consider related measures - the role of building design in making it more difficult for people to start fires outside or inside the

building; and the ways in which local surroundings, 'the environment', can be treated in order to lessen the risk of arson fires.

10.1 Improved Protection Through Building Design

In the design of new buildings, and in refurbishment of existing ones, much can be done by the architect or building surveyor to render arson attack more difficult. Protection against fire generally and arson in particular are matters that need to be fully integrated into buildings at the design stage.

Design begins with choice of site. From the point of view of security it is helpful if the building is not isolated and if it is under surveillance by neighbours and passers-by.

Public areas surrounding a building should be capable of observation from that building's windows. This is particularly important in regard to access points.

Avoid the 'wandering coastline' (i.e. walls of buildings having indentations) which gives 'lurking' space for intruders and arsonists. Rectilinear buildings are best from the security point of view. Buildings are especially vulnerable at the rear. Avoid recessed doorways and secluded courtyards which provide cover for vandals/intruders.

External areas which are totally enclosed and invisible from surrounding streets are dangerous; once an intruder has scaled the wall he is completely hidden from view.

Roofs - particularly flat roofs - provide access to other parts and into the building. Give special thought to low outbuildings, garages etc., which provide access to upper windows. Access to roofs should be made as difficult as possible.

To prevent access to roofs it is a good idea to have deep overhang of eaves. Roofing can be of slippery seamless material that is very difficult to walk on.

Avoid external drainpipes that can be easily climbed giving access to flat roofs and upper windows. Escape routes from the building should lead to areas which are supervised.

Stairwells should have as many observation points as possible, positioned so that landings can be seen by passers-by.

Flower beds and the like, while attractive, can provide cover for intruders. Keep vegetation at low level, especially near doors and windows.

The number of external doors into the building should be kept to a minimum.

Darkness is the greatest friend of the wrongdoer. One of the most effective methods of protection is to make the building readily visible at night to the public at large. It is particularly important to install external security floodlighting for storage areas and at the perimeters of buildings in secluded locations where break-ins are considered likely.

Avoid creating areas of shadow.

Lighting fittings and controls should be designed and sited so that they are not themselves vulnerable to malicious damage.

Areas subject to special hazard (e.g. control rooms, data archives, rooms containing key equipment) should be arranged along outer walls of the building with no openings in the outer walls.

Alongside the structural and design features in protecting a building, general tidiness and cleanliness also play an important part in discouraging vandalism and in ensuring that the arsonist is not provided with readily accessible fuel to start a fire.

Good protection is also helped by having a clear, uncluttered, layout which is easily surveyed.

10.2 Layout of Surroundings, General, Tidiness, Cleanliness

Surrounding terrain: It should be possible to survey the complete terrain. Any obscuring features should

be artificially landscaped by filling, levelling etc. Vegetation is not to impair surveillance.

Development of a terrain by roads: The road network is to be as short and surveyable as possible. If possible arrange for entry and exit through a single opening in the outer fence.

Storage on the site:

– If materials are stored outdoors then the stacks should not commence directly at the outer fence or at the building.

– A vacant strip of land at least 5-10 m wide should be present between building and storage stack and between fence and storage stack.

– Stacks can be higher if there is a surrounding wall (see also CFPA-E Guideline n° 7: 2005 "Safety Distance between Waste Containers and Buildings").

– Flammable stored materials should be separated by stacks of materials which are non-flammable or only combustible with difficulty - hence the outermost stack facing the road should consist of non-flammable materials or those combustible with difficulty.

– Clear arrangement of storage stacks to facilitate checking and surveillance.

– No materials such as paper, wood waste etc are to be allowed to gather between the stacks.

– If grass grows between and adjacent to the stacks and along the building facades, then this is always to be kept short by mowing.

– Loading ramps and external facades are unsuitable locations for storing packing materials such as wooden palettes, wooden packing cases, etc.

– Only metal waste containers are to be used, they must have a locking facility and must not be overfilled.

– Regular cleaning and rubbish clearing activities are necessary on the complete site.

– Easily combustible solids and liquids which could encourage an arsonist should not be freely available on the plant site, they should be kept locked up in secure containers or rooms.

– Ladders and other similar equipment are to be stored to prevent unauthorized use.

Housing estates: Anonymous open spaces and semi-public areas over which no-one has any control (e.g. dark arches under massive concrete stilts, lonely walkways and hidden corners) should be avoided in housing estates or shopping centres. Recreational amenities can be provided for children so that they are not tempted to play on stairways or corridors of flats.

Security advisers: It is recommended to consult security advisers on security requirements of new buildings, particularly schools, which are more resistant to theft, vandalism and arson.

Shopping precincts: In shopping precincts surveillance can be greatly improved by avoiding or resiting obstructions such as telephone booths or thickly planted areas.

Derelict buildings: Derelict buildings, open wasteland or building sites which are easily accessible, are all tempting targets for the opportunist arsonist. Derelict buildings should be boarded up, open wasteland should be fenced off and building sites should be adequately protected against intruders.

Lack of maintenance or repair of damage encourages further vandalism. Damage should be repaired immediately.

11　Fire Protection Equimpment for Control of Arson

In all types of buildings, management planning against fire has to include the provision of the most appropriate and cost-effective fire protection equipment. Such equipment is required to deal with accidental fires as well as deliberate fires, but to ensure control against the latter, additional factors need to be taken into account. Also, since much arson originates from outside the building, it is necessary for management to consider the provision of security as well as fire equipment. This particular aspect is dealt with in Chapter 7 of the document.

Manual equipment: The first line of defence against fire is the provision of portable fire extinguishers and/or permanent hose-reels. Clearly such equipment can only be used during working hours when staff are on the premises (or by security staff if present when the building is

closed). For this equipment to be effective it is essential that some, if not all, staff are trained in its use.

Fire detection: In most premises - certainly in any which are left empty at night and at weekends - it is desirable to install an automatic fire detection system with a link via a control station to the fire brigade.

Automatic extinguishment: In establishments not having a 24-hour-a-day fire safety team, or for those at some distance from the nearest public fire brigade station, consideration has to be given to the installation of automatic equipment for the extinguishment of any fire that occurs.

Automatic gas extinguishing installations are activated on detection of a fire. They may be 'pin-point' installations installed especially to protect hazardous or valuable machines or processes.

'Total flooding' installations are used to protect premises in which there is special risk of fire or which contain equipment crucial to the establishment's operation. Such installations are effective for superficial fires but not deep-seated ones and the extinguishing agent must remain in contact with the fire for a certain interval which means that the premises in which total flooding equipment is installed must be gas-tight.

Automatic gas extinguishing installations protect equipment or premises against fires starting inside the protected premises but not against fires that have started and spread outside the premises. The only effective method of protecting the whole building or establishment is installation of an automatic water sprinkler extinguishing system which detects the fire, sounds the alarm and extinguishes the fire, or at least keeps it under control, until the arrival of the fire brigade. In the vast majority of incidents, fires are effectively extinguished by the operation of no more than four or five sprinkler heads so that resultant water damage is minimal - far less of course than would be the case if the fire developed and was extinguished by fire brigade operations.

Some establishments having special fire risks (e.g. highly-flammable liquids or chemicals) need appropriate fixed or mobile resources - fixed foam extinguishing systems, or special vehicles equipped with foam or powder nozzles etc.

Deciding on the type of fire-fighting means most suitable, given the particular risks characterizing a particular establishment, is not purely a technical problem. It is the culmination of a global analysis of the establishment's vulnerability, a process which includes the following steps:

– identifying the establishment's 'nerve centres'
– identifying ignition sources
– evaluating the establishment's capacity to cope with a fire which includes evaluating the maximum acceptable loss-of-operation time as well as the potential direct and indirect losses.
– looking for technical solutions to reduce the criticality of the nerve centres, eliminate ignition sources and install barriers between them and the nerve centres
– installing the appropriate fire-fighting means
– finally, appropriate insurance for risks that cannot be reduced or eliminated and drafting of a safety plan.

This process transcends the risk of accidental fire and must also take into account such risks as theft of goods, sabotage, industrial espionage, acts of vandalism - and all other acts of malicious damage besides arson. As concerns malicious acts likely to be committed by persons from outside the establishment, the means chosen will include intruder detection installations triggering human intervention, access control systems covering walls and gates and all other means of passive protection.

11.1 Effectiveness of Fire-protection Systems in the Absence of Attempts at Sabotage

If the arsonist has made no attempt to sabotage the fire protection installation before lighting a fire, the effectiveness of the system is the same as for an accidental fire. However since such fires are usually started with the help of flammable liquids, they tend to be serious fires and spread very fast. In many cases fires will have been lit in several different areas.

A fire detection system will function perfectly and raise the alarm locally or remotely, but if there is no fire-fighting team available on site or no effective automatic extinguishing system, the fire will have caused serious damage before the fire brigade arrives.

Suggested improvement: a recorder which would time the events (bringing into service and taking out of service of zones, detection of fire(s), spread in various premises) would be very useful to help determine the causes of fires, particularly in cases of arson.

Detection-triggered gas extinguishing systems will be effective if the fire is lit in protected premises.

Suggested improvement: Even without sabotage, total flooding systems may be rendered useless if exits have been left open. Surveillance of these exits, with indication of operative or failure status of fire detection systems, would reinforce their effectiveness.

Automatic water extinguishing systems are perfectly effective. Failure of a sprinkler installation in a case of arson without sabotage of the protection system is most unlikely. This is probably due to the relatively large surface areas (area able to be completely covered by sprinklers at anyone time) generally greater than 260 m^2.

11.2 Effectiveness of Means of Protection in the Case of Arson with Attempt at Sabotage

The fire-protection systems currently marketed are extremely vulnerable to sabotage. The only way of ensuring their effectiveness is by mechanically protecting access to vital parts and electronically monitoring the means of access to and/or the status of these parts.

Fire detection systems are self-monitoring and designed routinely to indicate any breakdown or fault. Shielding of detectors is not monitored, but this type of sabotage is not considered likely.

If the signalling panel is monitored by a human operator, the installation will be as effective as if it were protected mechanically or electronically.

In the event of remote monitoring, the premises in which the signalling panel and the transmitter are installed must be mechanically protected, any attempts to break into the premises must be indicated and the transmitter and the transmission line must be self-monitored.

Automatic gas-extinguishing installations triggered by fire detection are also designed to signal any breakdown or fault. The gas distribution network is not monitored but this type of sabotage is not considered likely. Openings (doors and windows) of protected premises must be monitored as must access to premises in which relay cabinets are installed if these premises are not under human surveillance. Relay status information must be repeated in the premises where the fire detection signalling equipment is installed. If the bottles containing the extinguishing gas are placed in different premises, access to these premises must be monitored by intrusion detection systems monitored in the establishment's alarm centre.

Automatic water extinguishing systems do not always have intrinsic protection or monitoring capability. It is therefore essential to protect the following elements:

– the sources:
    – metering room, valves, public water supply counter and main, valves
    – reservoir, tank, cistern
    – the pipes and conduits linking the sources to the booster room
– the boosters:
    – the engines (motors) and starting equipment
    – pumps and valves
    – booster power supplies
– control stations:
    – internal and external valves

All these elements must be installed in premises protected against intrusion (metal doors. security locks, door contacts and/or volumetric detection). Sprinkler stations should not be spread out throughout the establishment but should be located in a single place to facilitate protection.

Valves should be indelibly identified and the open position easily verifiable (valve with extending rod).

Valves should be fitted with padlocks and chains solid enough to resist hacksaws.

Fuel intakes (petrol or diesel) for booster engines must be protected, as must motor cooling input/output orifices.

Emergency stop switches must not be accessible by non-authorized persons. If activated a fault alarm must be transmitted.

11.3 Preventive measures

Independently of protection systems, the most important measure is to reduce the establishment's vulnerability and not to facilitate the task of arsonists.

In particular, conduct periodical inspection of the establishment on all the safety and security measures (see also CFPA-E Guidelines 1 : 2002 'Internal Fire Protection Control'):

– inside buildings, containers of flammable liquids must always be stored in locked premises, access to which is monitored where possible.

– outside buildings, flammable materials - waste, pallets etc. - must not be stored against the walls of buildings.

Ideally the premises housing the automatic fire extinguishing systems should be checked regularly (daily if possible) in the course of organized patrols or have a high level of electronic surveillance.

The following check should be made during these patrols:

– position of valves

– mode switches set to 'automatic working' - pressure readings

– the condition of access doors (hatches or access doors to the metering room, pump and transformer room)

– control stations and valves

– alarm panel, lamp test and other remotely detected information

Surveillance should be entrusted to skilled personnel capable of detecting anomalies likely to put the systems out of service. The personnel should be selected on the basis of responsibility, mental stability and motivation in terms of prevention.

11.4 Operational Steps to be Taken in the Event of a Fire (Establishments Protected by Sprinklers)

As soon as a fire (whether or not criminal in origin) or terrorist attack has occurred and after examination of the situation on the site, it is necessary very rapidly to make routine checks to ensure that the automatic water extinguishing systems are operational and have not been sabotaged.

These checks consist of verifying:

– that control post valves and upstream supply valves are open

– that automatic and manual start-up of pumps is feasible

In addition and at the same time the persons responsible should not neglect the possibility of sabotage or arson in some other area of the establishment.

These tasks should be undertaken in parallel with calls for outside help, evacuation of personnel, assistance to injured persons, monitoring of power supplies (gas, electricity, heating).

As soon as the fire(s) has/have been brought under control by the automatic systems with possible back-up by security personnel using conventional fire-fighting methods, and once the premises close to the fire have been carefully checked, the supply valve for the sector concerned will be shut and attempts should be made to render the sprinkler system operational as quickly as possible.

The work of salvage, drying, enquiry and experts' reports can then begin.

12 Conclusion

Arson is a major social and economic problem, causing large scale property damage, injury and loss of life. It is considered the most important cause of fire in most European states having the largest impact in terms of severity and a greater frequency than any other single cause of fire. As this guidance document has explained, the factor that makes it more challenging to combat than other causes of fire is the fact that it is stems from the wilful act of a human intelligence (often seeking to maximise damage or even personal injury) and the motivations can be complex and difficult to pin down.

This introduces more dimensions and complexity to risk assessment than is the case with most other hazards and complacency or resignation are not options. Businesses and enterprises that ignore arson may have to pay a price from which recovery may not be possible.

Managers need not only to familiarise with state-of-the-art control and surveillance measures (of which the most important are outlined in this document) but also to establish systems and structures for the maintenance of a continuous state of vigilance for developments that might point to increased risk of arson. This state of preparedness should include an awareness of the actions required in a post-fire scenario so that investigators are given the best possible chance of establishing if the facility appears to be under attack from the arsonist, thus enabling remedial measures to be implemented quickly.

Finally, an awareness of arson trends and countermeasures should be maintained by keeping in touch with local police, fire and insurance organisations and national/international arson prevention bodies.