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**Crime – Central Station Burglary Alarm Systems**

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**Scope**

This criteria is intended to provide Loss Control Representatives with specific guidelines and information for evaluating central station burglar alarm systems for risks carrying crime coverage.

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### I: Central Station (CS) Information

Refer to the Central Station Alarm Association (CSAA) "*An Insurance Guide to Selecting a Burglar Alarm System*" for additional information on central stations and an explanation of crime terminology.

**Definition:** A fire-resistive or automatic sprinkler protected building or office facility capable of receiving, monitoring and dispatching appropriate help for burglary and theft and/or fire conditions. Access to the premises of the CS is highly restricted. An UPS (Uninterrupted Power Source) consisting of either batteries, a natural gas or a gasoline engine-driven generator is one of the requirements. The UPS should have sufficient total capacity to power the Central Station for at least 24 hours under normal load. Central Station Premises protection is available in grades: A, B, C, AA, BB and CC.

A white "Certificate of UL listing" is issued by the Central Station for those systems fulfilling the necessary requirements. The certificate provides the following information: **(Page 6 for sample)**

- Name of Central Station
- Grade and Installation # (Extent)
- Certificate # and Expiration date

When a signal is received at a Central Station a telephone call is made to the local police (same as Extent for the area) where the burglary is attempted. In addition, when contracted for, a guard is dispatched from the Central Station to their subscribers premises.

### The following are Central Station explanations:

- A. Grade
- B. Extent
- C. Armed Guard Response
- D. Alarm Transmittal Methods
- E. Line Security / Line Supervision
- F. Local Alarms
- G. Comparison of Sensing Devices

**A. Grade:** "UL certified" grades indicate primarily the response time required for the Central Station alarm investigators to reach the subscriber premises following receipt of the alarm, and the method used to transmit the signal:

GRADE A: Time required to reach the risk from receipt of the alarm should not exceed 15 minutes.

GRADE B: Time required is 20 minutes.

GRADE C: Time required is 30 minutes.

GRADES AA, BB, CC: Same guard time response, as A, B, or C. However, the line over which the signals are transmitted is supervised in the event of wire cutting or electrical jumping. This is called LINE SECURITY.

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**B. Extent:** Extent of protection is determined by the protection of accessible openings and the use of interior protection devices. **UL definitions of Extents 1, 2 or 3 (installations) are as follows:**

**EXTENT # 1**

- a. **All** points of entrance plus floors, walls and show windows.
- b. Completely protecting all windows, doors, transoms, skylights, and other openings leading from the premises and all ceilings, floors and halls, party and partition walls, and building walls enclosing the premises, except building walls which are exposed to street or public highway and except that part of any building wall which is at least two stories above the roof of an adjoining building.

**EXTENT # 2**

- a. **All** accessible points of entrance plus floors and party walls. Completely protecting all accessible windows (except stationary show/plate glass windows), doors, transoms, skylights, and all other openings leading from the premises; with contacts only, all non masonry walls and all hall, party and partition walls enclosing the premises
- or**
- b. **All** accessible points of entrance except show windows and excluding walls, floors, party walls; plus interior space (motion). Protecting with contacts only all movable openings leading from the premises and providing a system of invisible radiation to all sections of the enclosed area so as to detect four-step movement when steps are taken at a rate not less than one step per second
- or**
- c. **All** accessible points of entrance plus interior paths. Completely protecting all accessible windows (except stationary show windows), doors, transoms, skylights, and other openings leading from the premises; with contacts only, all inaccessible windows; and providing a network of invisible beams to subdivide the floor space of each floor or separate section of protected area into three or more approximately equal areas, where necessary to provide at least one subdivision per 1,000 sq. ft. (100 sq. meters) of floor space.

When Concentration rates "Yes", the beam arrangement should provide spanning the entire front of the wall. in addition to accomplishing the required subdivisions. The requirement for subdivision and alteration rooms, furnace and coal rooms, basements, and other portions of the premises where valuables are not stored.

**EXTENT # 3**

- a. Complete protection of accessible openings, completely protecting all accessible windows (except stationary show windows) doors, transoms, skylights, and other openings leading from the premises.
- or**
- b. Partial protection of accessible openings plus limited beams or motion. Protecting with contacts only all accessible openings leading from the premises and providing one or more invisible rays or channels or radiation with the minimum overall length of the rays or radiation equivalent to the longest dimensions of the area(s) to detect movement through the channel when a person crosses each channel at any point at the rate of one step per second.

**or**

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- c. Partial. protection of doors and complete space protection (motion). Protecting with contacts only, all doors leading from the premises and providing a system of invisible radiation to all sections of the enclosed area so as to detect four-step movement when steps are taken not less than one per second.

### **C. Central Station Armed Guard Response**

There are two types of guard responses:

1. **With keys** to the risk (Alarms from KEY installation require complete search of the premises and adjacent locations' if accessible).
2. **Without keys** to the risk (Alarms from "No Key" installations require complete exterior search of the premises). Generally "No Key" installations are preferable to "Key" installations.

### **D. Central Station Alarm Transmittal Methods**

There are 4 types of Central Station Transmittal Methods:

#### **1. Multiplex System:**

##### **a) Closed window system:**

- A group of alarm subscribers are sharing one signal
- Communication is between a microcomputer at risk and the computer at the Central Station over a high quality private phone connection
- Advantages: greater reliability, easier location of trouble spots, reduced costs

##### **b) Open window systems:**

- Alarm systems are connected to the shared line in a party line arrangement.
- Line costs are shared, however, the system is subject to electronic noise either from a malfunction or from a deliberate jamming attempt.
- Also, the one phone line transmits a lot of information that makes it difficult to find a problem spot.

#### **2. Direct Wire Systems**

- One of the oldest methods of alarm transmittal.
- Uses a copper wire to connect each customer separately to the Central Station.
- Problems in the line are easily recognizable.
- Disadvantages are high cost, limited types of signals that can be transmitted and lack of distinction between failure of the phone line and an actual alarm.

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### **3. Digital Communicator System**

- Less expensive as it uses the risk's existing telephone line, and can also function well for long distances.
- Capable of transmitting different type alarms similar to multiplex.
- It is not as reliable since the Central Station monitors it only when a signal is sent by the risk. It may be programmed to advise the Central Station periodically of their line integrity.
- Other systems use two separate phone lines for improved reliability.

### **4. McCulloh System**

- Its a party line arrangement of up to 15 alarm systems all using copper wires.
- Alarm messages are sent telegraph style and are received on strips of paper in codes.
- Disadvantages include:
  - a. Simultaneous alarm signals could send confusing codes.
  - b. Operator interpretation is required (chance of error)
  - c. Phone line problems might be difficult to locate and correct.
  - d. Dedicated copper wires are becoming obsolete and therefore expensive and even unavailable.

### **E. Line Security/Line Supervision**

**Line Security** is the protection provided to the transmittal lines to ensure that prospective, sophisticated burglars do not compromise, interfere or attempt to substitute the communication channels by shunting, jumping out the telephone lines or substituting alarm equipment. Line supervision is done by data encryption, random tone patterns, and other methods that are very difficult if not impossible to duplicate. Line security is a superior form of detecting attempted interference than line supervision.

**Line Supervision** is a simple means of detecting transmittal lines that are "down" by showing a trouble signal at the Central Station. The normal mode of detection is generally line resistance to see if the circuit is open or closed; or a more sophisticated method superimposes a tone or an ac voltage on the line, which monitors any tone or voltage changes.

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 Service Center No: 0  
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### CENTRAL STATION BURGLAR ALARM SYSTEM CERTIFICATE

THIS CERTIFIES that the *Alarm Service Company* is included by Underwriters Laboratories Inc. (UL) in its *Directory* as qualified to use the *UL Listing Mark* in connection with the certificated *Alarm System*. This Certificate is the *Alarm Service Company's* representation that the *Alarm System* including all connecting wiring and equipment has been installed and will be maintained in compliance with requirements established by UL. This Certificate does not apply in any way to the installation of any additional signaling systems, such as; fire; smoke, waterflow, burglary, holdup, medical emergency, or otherwise, that may be connected to or installed along with the *Certificated Alarm System*.

**LIMITATION OF LIABILITY:** Underwriters Laboratories Inc. makes no representations or warranties, express or implied, that the *Alarm System* will prevent any loss by fire, smoke, water damage, burglary, hold-up or otherwise, or that the *Alarm System* will in all cases provide the protection for which it is installed or intended. UL may at times conduct inspections of the *Alarm Service Company* including inspections of representative installations made by it. UL does not assume or undertake to discharge any liability of the *Alarm Service Company* or any other party. UL is not an insurer and assumes no liability for any loss which may result from failure of the equipment, failure to conduct inspections, incorrect certification, nonconformity with requirements, failure to discover nonconformity with requirements, cancellation of the Certificate or withdrawal of the *Alarm Service Company* from inclusion in UL's *Directory* prior to the expiration date appearing on this Certificate.

#### ALARM SYSTEM DESCRIPTION:

System Grade: AA	Alarm Investigator Response Time: 15 minutes
System Type: Premises	Extent of Protection: 3
Keys to Property: No	Line Security: Employed
Method of Alarm Transmission: Multiplex	Alarm Sounding Device: None

#### Protected Property:

ELECTRONICS COMPANY INC  
 154 MAIN RD  
 NORTH, NJ 07647

#### Alarm Service Company:

AN ALARM SERVICE CO  
 333 PFINGSTEN RD  
 NORTH, NJ 07621

SN: **BC51145372**

\_\_\_\_\_  
 Alarm Service Company's Representative

Date \_\_\_\_\_, 19\_\_

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**F: Local Alarms**

A local alarm is one that sounds a loud, audible signal such as horn, local bell or siren. A local alarm could be UL listed or not. A UL listed local alarm has to meet UL qualifications as to duration, mode of actuation, accessibility and exposure to vandalism. An ordinary local bell (not necessarily UL listed) is advisable on all Central Station supervised alarms to serve as a deterrent to most burglars.

**G: Comparison of Sensitive Devices**

A sensing device is a particular means of detecting intrusion. There are basically two categories of devices: Devices that monitor perimeter protection (such as 1. below), and devices that monitor area such as motion and sound detection. (See 2. to 9. Below for the comparison of sensing devices).

**1. CONTACTS - FOIL - OPEN WIRING - SCREENS - GROOVED STRIPPING**

<b>Major Uses:</b> Protection at accessible openings (see definition)	
<b>Advantages</b>	<b>Disadvantages</b>
Simple	Easily compromised
Trouble free	Will not detect "stay behinds"
Low cost	Needs maintenance often

**2. PHOTOELECTRIC BEAMS**

<b>Major Uses:</b> Perimeter or area protection can be a single beam or stacked arrangement providing a vertical barrier	
<b>Advantages</b>	<b>Disadvantages</b>
Covers open areas where physical obstructions cannot be tolerated	Beams can be located and defeated
Detects "stay behinds"	Susceptible to misalignment
Can activate other security devices such as cameras, microphones, etc.	Dusty or smoky atmospheres may cause false alarms
Covers large ranges, of up to 1 000 ft.	

**3. SONIC AND VIBRATION DETECTORS**

<b>Major Uses:</b> As a sensing device on any surface to which it is attached for either yard or area protection	
<b>Advantages</b>	<b>Disadvantages</b>
Can be extremely sensitive for specialized	Cannot be used in areas of high vibration
Applications such as vaults	Difficult to defeat unless exact location is known

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### 4. MICROWAVE

**Major Uses:** Similar to ultrasonic, except that range and sensitivity are considerably greater. Same advantages as ultrasonic

Advantages	Disadvantages
Not affected by air currents	Penetrates solids
Equipment is compact & easily installed	False alarms can be caused by other radio transmitters operating at a similar frequency
Not prone to false alarms from air currents	Not suitable for use in metal buildings
	Building movement is sensed as an alarm

### 5. ULTRASONIC

**Major Uses:** Area protection. Saturates area with a pattern of high frequency sound waves, the intruder disrupts the wave pattern and triggers alarm

Advantages	Disadvantages
Detects "stay behinds"	Does not penetrate solids
Flexible interior coverage	May not detect slow movements
Difficult for intruders to detect	Can be subject to false alarms
	Cannot be used in high sound absorbing areas
	Cannot be used in areas subject to excessive vibration from mechanical equipment or excessive air turbulence

### 6. INFRARED MOTION DETECTION (Passive infrared)

**Major Uses:** Area protection, detects body heat and transmits alarms. Excellent for confined areas

Advantages	Disadvantages
Not subject to false alarms from movement of non living things	Subject to false alarms from hot metallic surfaces or from the sun
Not affected by air in motion, sounds, vibration, electrical or radio disturbances, or changes in level	Subject to false alarms from rodents, however viewing pattern can be adjusted to start a few feet above the floor to avoid this problem
Will not penetrate glass or solids	
Covers fairly large area	

### 7. FIELD (Proximity, Electrostatic, Capacitance)

**Major Uses:** Suitable for Perimeter protection. Current carrying field wires and separate sensing devices may be installed along a fence

Advantages	Disadvantages



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Capable of detecting burglar prior to intrusion

Only metal objects separated from ground can be monitored

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### 8. SOUND DETECTION

<b>Major Uses:</b> Area protection. Audible sound picked up by microphones in the protected, covered area	
Advantages	Disadvantages
Covers large volumes	Susceptible to outside noises
Inexpensive installation	Can be defeated by knowledgeable intruder
Can use existing intercom or speaker system as microphones	Subject to human error
	Local alarms cannot be easily provided.
	Failure of one microphone is not easily detectable
	Insensitive to areas with high ambient noise level.
	Notification of police or guards is not automatic

### 9. VIBRATION DETECTION (Seismic)

<b>Major Uses:</b> Safes, vaults. Highly sensitive piezoelectric crystal or microphone detects hammer like impact on rigid surfaces and generates alarms. Can also be mounted on fences for yard protection	
Advantages	Disadvantages
Versatile, highly adjustable	Will not detect "stay-behinds" if they keep away from fence, wall, etc. being monitored