

BFAAM Apprenticeship Program

Period 2

Related Training Instruction (RTI)

Module 5 – NFPA 72 – Supervising Stations

Reading material associated with this
module: Chapter 26 of NFPA 72, *National Fire
Alarm Code*, 2013 edition

Supervising Station General

- Chapter 26 addresses 3 types of supervising station operations , and 3 classifications of signal transmission from the protected premises to the supervising station
- Supervising Station types:
 - Central Station (Section 26.3)
 - Proprietary Supervising Station (Section 26.4)
 - Remote Supervising Station (Section 26.5)

Supervising Station General

- When a protected premises fire alarm system is monitored by a supervising station, the entire system becomes a supervising station fire alarm system 26.1.1
- The requirements of this chapter shall not apply to Chapter 29 (household systems) unless otherwise noted 26.1.3

Supervising Station General

- All types of supervising stations are required to immediately retransmit a fire alarm signal to the fire dispatch center, unless from a jurisdiction where alarm verification is required

26.2.1

Supervising Station Alarm Verification

- Where alarm signal verification is required by the responsible fire department, the supervising station shall immediately notify the communications center that a fire alarm signal has been received and verification is in progress

26.2.2.1

Supervising Station Alarm Verification

- Where alarm signal verification is required by the responsible fire department, the supervising station shall attempt to verify alarm signals prior to reporting them to the communications center where all the following conditions exist:
 - Documentation of the requirement for verification is provided to the supervising station and protected premises

26.2.3.1

Supervising Station Alarm Verification

- Required conditions, continued:
 - The verification process does not take longer than 90 seconds from the time the alarm signal is received and the retransmission of the verified signal is initiated
 - Verification of the alarm signal is received only from authorized personnel within the protected premises

26.2.3.1

Supervising Station Alarm Verification

- Required conditions, continued:
 - Verified alarm signals are immediately retransmitted to the communications center and include information that the alarm was verified
 - Alarm signals where verification is inconclusive are immediately retransmitted to the communications center
 - Alarm signals verified as nuisance alarms are not reported to the communications center

26.2.3.1

Supervising Station Alarm Verification

- Alarm signals not reported to the communications center shall be reported to the responsible fire department in a manner and at a frequency specified by the responsible fire department

26.2.3.2

Supervising Station General

- When required by the enforcing authority, governing laws, codes or standards, alarm signals transmitted to a supervising station shall be by addressable device or zone identification

26.2.4

Supervising Station General

- All supervising station fire alarm systems shall be programmed to report restoral signals to the supervising station of all alarm, supervisory and trouble signals upon restoration of the activation 26.2.5

Supervising Station General

- Change of Service - Supervising Station customers and the authority having jurisdiction shall be notified in writing within 30 days of any change that results in their signals being monitored by a different supervising station facility (Such as acquisition of accounts or corporate reorganization)

26.2.7

Supervising Station General

- When a Change of Service occurs, all zones, points and signals from each affected property shall be tested. The testing shall be performed either by the Supervising Station or the Prime Contractor, whichever is responsible for required testing of the system

26.2.7

Central Station Service

- 6 elements of Central Station Service:
 - Installation of alarm transmitters
 - Alarm, guard, supervisory and trouble signal monitoring
 - Retransmission
 - Record keeping and reporting
 - Testing and maintenance
 - Runner service

26.3.2

Central Station Service

- 4 methods of providing service:
 - Listed Central Station that provides all elements "in-house"
 - Listed Central Station that provides monitoring, notification, record-keeping and reporting; and subcontracts all or part of installation, testing and maintenance, and runner service

26.3.3

Central Station Service

- 4 methods of providing service:
 - Listed Local Service company that provides installation, testing, and maintenance; and subcontracts the monitoring, notification, record keeping and reporting to a listed Central Station. The runner service may be provided by either firm in this scenario

26.3.3

Central Station Service

- 4 methods of providing service:
 - Listed Central Station that provides installation, testing, and maintenance; and subcontracts the monitoring, notification, record keeping and reporting to another listed Central Station. The runner service may be provided by either firm in this scenario

26.3.3

Central Station Service

- Third party verification of code compliance is required to be provided by the organization that has listed the Central Station or Local Service Company

26.3.4

- The documentation shall be physically posted within 3' of the control unit and copies made available to the AHJ upon request

26.3.4.3

Central Station Service

- Listing Organization required to maintain records of issued documentation, and make them available to the AHJ 26.3.4.4
- Fire Alarm system service that does not comply with all of the requirements for Central Station Service, shall not be designated as Central Station Service 26.3.4.5

Central Station Facility

- Central Station shall conform to the requirements of UL 827 26.3.5.1
- Any subsidiary stations shall also comply with UL 827 26.3.5.2
- Subsidiary stations:
 - Monitored for intrusion, fire, power & environ.
 - Inspected monthly
 - Backup for failed equipment must be operational within 90 seconds of failure 26.3.5.2.1, .2, .3

Central Station Equipment

- Computer based signal processing hardware and software shall be listed for the purpose
- Power supplies shall comply with Chap. 10
- 2 independent means of retransmission to the fire dispatch center are required

26.3.6

Central Station Personnel

- Not less than 2 operators on duty at all times
- Monitoring alarm signals shall be the primary duty of operators, no other activity shall take priority

26.3.7

Central Station Signals

- Fire Alarm signals

- Retransmit to fire dispatch center
- Dispatch a runner to arrive within 2 hours when equipment needs to be manually reset by the contractor. Runner may be recalled if subscriber can reset equipment
- Immediately notify the subscriber
- If required, provide notice to subscriber and AHJ

26.3.8.1.2

Central Station Signals

- Supervisory signals
 - Communicate with subscriber
 - Notify fire department or law enforcement when required by the AHJ
 - Dispatch a runner to arrive within 2 hours unless other arrangement made with subscriber
 - Notify AHJ when suppression systems have been out of service for 8 hours

26.3.8.3

Central Station Signals

- Trouble signals
 - Communicate with subscriber
 - Dispatch a technician to arrive within 4 hours to fix problem, if necessary
 - Notify AHJ and subscriber when the system has been out of service for more than 8 hours, if required by AHJ

26.3.8.4

Central Station Signals

- Test signals
 - Recorded with date, time and type
 - Any test signal not received shall be investigated immediately
 - Each technician and alarm system user shall be provided with a personal identification code (PIC)
 - PIC must be provided prior to central station placing system in TEST mode

26.3.8.5

Central Station Signals

- Record keeping

- Complete records of all signals received shall be maintained for one year
- Reports shall be furnished to AHJ as requested

26.3.9

- Testing and maintenance for central station service shall be performed per Chapter 14

26.3.10

Proprietary Station General

- Shall be operated by personnel in constant attendance who are responsible to the owner of the protected property 26.4.2.1
- Protected property shall be under one ownership, and may be contiguous or not 26.4.2.2
- If the FACP is integral or located with the supervision station, signal transmission method requirements are N/A 26.4.2.3

Proprietary Station Facility

- Shall be a fire resistive, detached building or isolated from hazardous parts of the premises 26.4.3.1
- Access shall be restricted to those who need to be present 26.4.3.2
- Shall be provided with fire extinguishers, and an emergency lighting system with a capacity of 26 hrs 26.4.3.3

Proprietary Station Equipment

- Shall identify the building of alarm origination 26.4.4.1.2
- Shall identify the area of signal origin either at the building or at the supervising station 26.4.4.1.3
- Shall be two means of alerting the operator when each signal is received that indicates a change of state, one of which shall be audible that can only be silenced manually 26.4.4.2.1

Proprietary Station Equipment

- Requirement for all signals (including restorals) to sound until manually reset, is the reason the requirements for trouble signal indications are different in Chapter 10, Section 10.15.8
- All signals received shall be automatically and permanently recorded, including time and date

26.4.4.2.2

Proprietary Station Personnel

- At least 2 operators on duty at all times, one of which shall be permitted to be a runner 26.4.5.1
- If alarm retransmission to the fire dispatch is automatic, only 1 operator is required 26.4.5.1
- When a runner leaves the supervising station, two-way communications shall be made every 15 minutes or less 26.4.5.2

Proprietary Station Equipment

- All communications channels to the protected premises shall be verified every 24 hours 26.4.6.1.1
- Operator controls shall be operated (tested) at each change of shift 26.4.6.2.1
- If coded retransmission to a fire dispatch center is used, it shall be confirmed by two way voice communication 26.4.6.5

Proprietary Station Signals

- Fire Alarm signals
 - Notify the fire department, the emergency response team and any other parties required by AHJ
 - Dispatch a runner to arrive within 2 hours
 - Restore the system as soon as possible

26.4.6.6.1

Proprietary Station Signals

- Supervisory signals
 - Communicate with designated person(s)
 - Dispatch a runner to arrive within 2 hours unless signal is promptly restored
 - Notify Fire Department if AHJ requires
 - Notify AHJ when suppression systems have been out of service for 8 hours

26.4.6.6.3

Proprietary Station Signals

- Trouble signals
 - Communicate with designated person(s)
 - Dispatch personnel to arrive within 4 hours to initiate maintenance
 - Notify Fire Department if AHJ requires
 - Notify AHJ when service interruption has been 4 hours
 - Written notification to AHJ if more than 8 hrs

26.4.6.6.4

Remote Station - General

- Serves properties under various ownership 26.5.1.2
- Signals received at a fire dispatch center, fire station or other governmental agency 26.5.3.1.2
- With the permission of the AHJ, signals may be received at an alternate location 26.5.3.1.3
- Trouble signals may be sent to another location with trained personnel 26.5.3.2

Remote Station - General

- If not monitored at the fire dispatch center, retransmission of the alarm signals shall be by (in order of preference):
 - Dedicated voice or data line
 - Dedicated outgoing phone at RSS going to dedicated incoming phone at dispatch center
 - Private radio system using FD frequency
 - Other methods approved by AHJ

26.5.4.4

Remote Station - General

- At least two operators shall be on duty at all times 26.5.5.1
- Fire alarms shall be immediately retransmitted to the fire dispatch center 26.5.6.1
- Fire, Supervisory, Trouble signals - operator on duty shall notify the owner or representative immediately 26.5.6.2

Remote Station - General

- All operator controls shall be operated at the beginning of each shift or change in personnel, and the status of all alarm, supervisory and trouble signals noted and recorded 26.5.6.3
- Manual means of record keeping permitted 26.5.7.3

Communications Methods

- 3 methods of signaling addressed
 - Performance based technologies (would include cellular, IP and new methods)
 - Digital Alarm Communicator Systems
 - Radio Systems (including 1 and 2 way RF)

Performance Based Technologies

- New technologies not covered by the existing requirements shall comply with section 26.6.3.1
- FCC compliance required
- National Electrical Code Compliance required
- Communications integrity requirements
- Spare equipment shall be maintained 26.6.3.1

Performance Based Technologies

- A single communications path shall be permitted, and the path shall be supervised at an interval of not more than 60 minutes
- If multiple communications paths are used:
 - Each path shall be supervised within 6 hours
 - Failure of any path annunciated within 6 hours at the supervising station
 - Failure to complete a signal transmission shall be annunciated at the protected premises 26.6.3.1

Performance Based Technologies

- A single technology shall be permitted to be used to create the multiple paths of communication

26.6.3.1

Performance Based Technologies

- Loading capacity limited to 512 systems unless spare units are maintained at the supervising station and can be switched into service within 30 seconds (unlimited loading capacity)
- End to end communication time is 90 sec.
- Signal transmission to employ duplicate signaling, parity check, or equivalent

26.6.3.1

Performance Based Technologies

- If the fire alarm transmitter is sharing on-premises communications equipment, the shared equipment shall be listed as communications or information technology equipment

26.6.3.1.14

Performance Based Technologies

- Secondary power capacity for all equipment necessary for the transmission of alarm, supervisory and trouble signals located at the protected premises shall be as follows:
 - Fire alarm transmitters not requiring shared on-premises communication equipment shall comply with 10.6.7 (24 hrs standby)
 - If the fire alarm is sharing on-premises communication equipment, the shared equipment shall have 24 hrs standby 26.6.3.1.15

Digital Alarm Communicators

- Transmitter (DACT) shall be connected to the public phone network ahead of any private phone system at the premises
26.6.3.2.1.1
- Connection shall be made to phone lines under the control of the subscriber 26.6.3.2.1.1
- Phone lines shall be loop start, not ground start (allows supervision of phone line power)
26.6.3.2.1.1

Digital Alarm Communicators

- Line seizure is required, no connection to party lines is permitted 26.6.3.2.1.3
- Transmission time frame from activation of DACT to hangup shall not exceed 90 seconds 26.6.3.2.1.3
- If initial attempt is unsuccessful, a minimum of 5 and maximum of 10 additional attempts shall be made 26.6.3.2.1.3

Digital Alarm Communicators

- If maximum number of attempts are unsuccessful, the failure must be indicated at the protected premises 26.6.3.2.1.3
- A DACT shall be connected to a single phone line plus one of the following:
 - One-way private radio alarm system
 - Two-way RF multiplex system
 - Transmission means complying with 26.6.3.126.6.3.2.1.4

Digital Alarm Communicators

- EXCEPTION: If access to two technologies is not available at the protected premises, a telephone line shall be permitted to be used as the second transmission means

26.6.3.2.1.4

Digital Alarm Communicators

- Both channels of communications shall be supervised and tested as follows:
 - The interval for testing each channel shall not exceed 6 hours
 - Failure of either channel shall send a trouble signal on the other channel within 4 minutes and annunciate locally
 - Sending signals over both channels at the same time is permitted

26.6.3.2.1.4

Digital Alarm Communicators

- DACT rules:
 - Connect to 2 means of transmission
 - Select the operating means if one means is not operational
 - Primary means shall be public phone system
 - Shall be programmed with (2) Digital Alarm Communicator Receiver (DACR) numbers

26.6.3.2.1.5

Digital Alarm Communicators

- DACT rules:
 - 6 hour test requirement may be satisfied with other than test signals, provided the supervising station signal processing is automated to generate a trouble signal when more than 6 hours have elapsed since the last signal
 - If call forwarding is employed, the feature must be verified every four hours

26.6.3.2.1.5

Digital Alarm Communicators

- DACR rules:
 - Spare receivers shall be provided and be capable of switched into service in place of a failed unit within 30 seconds. One spare can be backup for up to 5 receivers
 - Number of phone lines connected to DACR limited to 8, unless supervising station automation system is redundant and capable of switchover within 30 seconds

26.6.3.2.2.1

Digital Alarm Communicators

- DACR rules:
 - Connected to a minimum of 2 phone lines
 - Phone lines shall be unlisted
 - Phone lines shall not be used for any purpose than receiving DACT signals (not used for 2 way voice communications, for example)
 - Phone lines shall be individually accessible
 - Phone line failure shall be annunciated

26.6.3.2.2.2

Digital Alarm Communicators

- DACR rules:
 - A signal shall be received on each individual incoming DACR line at least once every 6 hours
 - The failure to receive a test signal from a protected premises shall be treated as a trouble signal

26.6.3.2.2.2

Two Way RF Systems

- Maximum operating time from signal initiation to recording at the supervising station of 90 seconds 26.6.3.3.1.1
- Adverse conditions in the transmission channel shall be indicated within 200 seconds 26.6.3.3.1.1

Two Way RF Systems

- Type 4 system:
 - Each protected premises unit shall be within range of at least 2 receiving sites
 - System shall have 2 transmitters, capable of interrogating all transceivers
 - Failure of one receiver shall be annunciated at the supervising station, and shall not interfere with the operation of the other receiver

26.6.3.3.1.4

Two Way RF Systems

- Type 5 system:
 - One receiving site
 - One transmitting site
- Loading capacity tables for maximum number of systems may be ignored if supervising station automation system is redundant and capable of switchover within 30 seconds with no loss of signals

26.6.3.3.1.5

One Way RF Systems

- Consists of one transmitter at the protected premises, and at least two receivers
- Each site shall have two separate communication paths to supervising station

26.6.3.3.2.1

One Way RF Systems

- Transmitting equipment shall be supervised for failure by either producing a local indication or generating a trouble signal at the supervising station
- If antenna is separate from transmitter, cable must be in conduit
- Upon detection of power failure, repair service must be started within 12 hours

26.6.3.3.2.3

One Way RF Systems

- A Type 6 system includes one supervising station receiver and at least two repeater station receivers
- A Type 7 system includes at least two supervising station receivers and at least two repeater station receivers
- Repeater station receivers must annunciate a trouble condition at the supervising station when out of service

26.6.3.3.2.5

Duplicate Equipment - CS

- If duplicate equipment capable of switchover within 30 seconds is not provided, spare equipment components shall be on premises so that any critical failure can be repaired within 30 minutes.
- Exception: Proprietary Station Systems

26.6.4.2

BFAAM Apprenticeship Program

Period 2

Reading Assignment for
Module 6 – NFPA 72 – Testing & Maintenance

Reading material associated with this
module: Chapter 14 of NFPA 72, *National Fire
Alarm Code*, 2013 edition