

## **PART II - PRIMARY SYSTEMS INFORMATION**

### **III. Fire Protection**

#### **2. Preventive Maintenance**

##### **a. Preventive Maintenance Plan and Schedule:**

NFPA

#### Chapter 1 Inspection, Testing, and Maintenance

##### 1.1 Application.

1.1.1 The inspection, testing, and maintenance of fire alarm systems, their initiating devices, and notification appliances shall comply with the requirements of NFPA 72, 2002 Edition.

1.1.2 Procedures that are required by other parties and that exceed these requirements shall be permitted.

##### 1.2 General.

###### 1.2.1 Performance.

1.2.1.1 Performance Verification. Inspection, testing, and maintenance programs shall satisfy the requirements of NFPA 72, 2002 Edition, shall conform to the equipment manufacturer's recommendations, and shall verify correct operation of the fire alarm system.

###### 1.2.1.2 Impairments.

(A) The requirements of Section 4.6, NFPA 72, 2002 Edition shall be applicable when a system is impaired.

(B) System defects and malfunctions shall be corrected.

(C) If a defect or malfunction is not corrected at the conclusion of system inspection, testing, or maintenance, the system owner or the owner's designated representative shall be informed of the impairment in writing within 24 hours.

###### 1.2.2 Notification.

1.2.2.1 Before proceeding with any testing, all persons and facilities receiving alarm, supervisory, or trouble signals and all building occupants shall be notified of the testing to prevent unnecessary response.

1.2.2.2 At the conclusion of testing, those previously notified (and others, as necessary) shall be notified that testing has been concluded.

1.2.2.3 The owner or the owner's designated representative and service personnel shall coordinate system testing to prevent interruption of critical building systems or equipment.

##### 1.3 Inspection.

1.3.1 Visual inspections shall be performed in accordance with the schedules in Table 1.3.1 or more often if required by the authority having jurisdiction.

**Table 1.3.1 Visual Inspection Frequencies**

Component	Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually
1. Control Equipment: Fire Alarm Systems Monitored for Alarm, Supervisory, and Trouble Signals					
(a) Fuses	X	-	-	-	X
(b) Interfaced equipment	X	-	-	-	X
(c) Lamps and LED's	X	-	-	-	X
(d) Primary (main) power supply	X	-	-	-	X
2. Batteries					
(a) Lead-acid	X	X	-	-	-
(b) Nickel-cadmium	X	-	-	X	-
(c) Primary (dry cell)	X	X	-	-	-
(d) Sealed lead-acid	X	-	-	X	-
3. Transient Suppressors	X	-	-	X	-
4. Control Unit Trouble Signals	X (weekly)	-	-	X	-
5. Remote Annunciators	X	-	-	X	-
6. Initiating devices					
(a) Duct detectors	X	-	-	X	-
(b) Electromechanical releasing devices	X	-	-	X	-
(c) Smoke detectors	X	-	-	X	-
(d) Supervisory signal devices	X	-	X	-	-
(e) Waterflow devices	X	-	X	-	-
7. Interface equipment	X	-	-	X	-
8. Alarm Notification Appliances – Supervised	X	-	-	X	-
9. Supervising Station Fire Alarm Systems – Receivers	X	-	-	X	
(a) Two-way RF multiplex					

1.3.2 The visual inspection shall be made to ensure that there are no changes that affect equipment performance.

#### 1.4 Testing.

##### 1.4.1 System Testing.

1.4.2 Testing Frequency. Testing shall be performed in accordance with the schedules in Table 1.4.2, except as modified in other paragraphs of 1.4.2, or more often if required by the authority having jurisdiction. *Exception: Devices or equipment that are inaccessible for safety considerations (e.g., continuous process operations, energized electrical equipment, radiation, and excessive height) shall be tested during scheduled shutdowns if approved by the authority having jurisdiction but shall not be tested more than every 18 months.*

1.4.2.1 If automatic testing is performed at least weekly by a remotely monitored fire alarm control unit specifically listed for the application, the manual testing frequency shall be permitted to be extended to annually. Table 1.4.2 shall apply.

1.4.2.2 Sensitivity of smoke detectors and single- and multiple-station smoke alarms in other than one- and two- family dwellings shall be tested in accordance with 1.4.2.2.1 through 1.4.2.2.6.

1.4.2.2.1 Sensitivity shall be checked within 1 year after installation.

1.4.2.2.2 Sensitivity shall be checked every alternate year thereafter unless otherwise permitted by compliance with 1.4.2.2.3.

1.4.2.2.3 After the second required calibration test, if sensitivity tests indicate that the device has remained within its listed and marked sensitivity range (or 4 percent obscuration light gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years.

1.4.2.2.3.1 If the frequency is extended, records of nuisance alarms and subsequent trends of these alarms shall be maintained.

1.4.2.2.3.2 In zones or in areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.

1.4.2.2.4 To ensure that each smoke detector or smoke alarm is within its listed and marked sensitivity range, it shall be tested using any of the following methods:

- (A) Calibrated test method
- (B) Manufacturer's calibrated sensitivity test instrument
- (C) Listed control equipment arranged for the purpose

**Table 1.4.2 Testing Frequencies**

	Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually	Table 1.4.2.1 Reference
Component						1, 13
1. Control Equipment – Building Systems Connected to Supervising Station						
(a) Functions	X	-	-	-	X	-
(b) Fuses	X	-	-	-	X	-
(c) Interfaced equipment	X	-	-	-	X	-
(d) Lamps and LED's	X	-	-	-	X	-
(e) Primary (main) power supply	X	-	-	-	X	-
(f) Transponders	X	-	-	-	X	-
2. Engine-Driven Generator – Central Station Facilities and Fire Alarm Systems	X	X	-	-	-	-
3. Batteries – Fire Alarm Systems						5d
(a) Sealed lead-acid type	X	-	-	-	X	-
(1) Charger test (replace battery within 5 years after manufacture or more frequently as needed.)						
(2) Discharge test (30 minutes)	X	-	-	-	X	-
(3) Load voltage test	X	-	-	X	-	-
4. Control Unit Trouble Signals	X	-	-	-	X	7
5. Conductors - Metallic	X	-	-	-	-	9
6. Retransmission Equipment (the requirements of NFPA 72, 2002 Edition, Section 10.4.7 shall apply.)	X	-	-	-	-	-
7. Remote Annunciators	X	-	-	-	X	8
8. Initiating Devices	-	-	-	-	-	10
(a) Duct Detectors	X	-	-	-	X	-
(b) Electromechanical releasing device	X	-	-	-	X	-
(c) Fire alarm boxes	X	-	-	-	X	-
(d) System smoke detectors – functional	X	-	-	-	X	-
(e) Smoke Detectors – sensitivity (the requirements of NFPA 72, 2002 Edition, Section 10.4.3.2 shall apply.)	-	-	-	-	-	-

**Table 1.4.2** *Continued*

Component	Initial/ Reacceptance	Monthly	Quarterly	Semiannually	Annually	Table 1.4.2.1 Reference
(f) Supervisory signal devices (except valve tamper switches)	X	-	X	-	-	-
(g) Waterflow devices	X	-	-	X	-	-
(h) Valve tamper switches	X	-	-	X	-	-
9. Guard's Tour Equipment	X	-	-	-	X	-
10. Interface Equipment	X	-	-	-	X	14
11. Special Hazard Equipment	X	-	-	-	X	12
12. Alarm Notification Appliances	-	-	-	-	-	11
(a) Audible devices	X	-	-	-	X	-
(b) Visible devices	X	-	-	-	X	-
13. Off-Premises Transmission Equipment	X	-	X	-	-	-
14. Special Procedures	X	-	-	-	X	15
15. Supervising Station Fire Alarm Systems - Receivers	-	-	-	-	-	13
(a) Two-way RF multiplex	X	X	-	-	-	-

**Table 1.4.2.1 Test Methods**

Device	Method
1. Control Equipment	
(a) Functions	At a minimum, control equipment shall be tested to verify correct receipt of alarm, supervisory, and trouble signals (inputs), operation of evacuation signals and auxiliary functions (outputs), circuit supervision including detection of open circuits and ground faults, and power supply supervision for detection of loss of ac power and disconnection of secondary batteries.
(b) Fuses	The rating and supervision shall be verified.
(c) Interfaced equipment	Integrity of single or multiple circuits providing interface between two or more control panels shall be verified. Interfaced equipment connections shall be tested by operating or simulating operation of the equipment being supervised. Signals required to be transmitted shall be verified at the control panel.
(d) Lamps and LEDs	Lamps and LEDs shall be illuminated.
(e) Primary (main) power supply	All secondary (standby) power shall be disconnected and tested under maximum load, including all alarm appliances requiring simultaneous operation. All secondary (standby) power shall be reconnected at end of test. For redundant power supplies, each shall be tested separately.
2. Engine-Driven Generator	If an engine-driven generator dedicated to the fire alarm system is used as a required power source, operation of the generator shall be verified in accordance with NFPA 110, <i>Standard for Emergency and Standby Power Systems</i> , by the building owner.
3. Secondary {Standby} Power Supply	All primary (main) power supplies shall be disconnected and the occurrence of required trouble indication for loss of primary power shall be verified. The system's standby and alarm current demand shall be measured or verified and, using manufacturer's data, the ability of batteries to meet standby and alarm requirements shall be verified. General alarm systems shall be operated for a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Primary (main) power supply shall be reconnected at end of test.
4. Batteries - General Tests	Prior to conducting any battery testing, the person conducting the test shall ensure that all system software stored in volatile memory is protected from loss.
(a) Visual inspection	Batteries shall be inspected for corrosion or leakage. Tightness of connections shall be checked and ensured. If necessary, battery terminals or connections shall be cleaned and coated. Electrolyte level in lead-acid batteries shall be visually inspected.
(b) Battery replacement	Batteries shall be replaced in accordance with the recommendations of the alarm equipment manufacturer or when the recharged battery voltage or current falls below the manufacturer's recommendations.
(c) Charger test	Operation of battery charger shall be checked in accordance with charger test for the specific type of battery.
(d) Discharge test	With the battery charger disconnected, the batteries shall be load tested following the manufacturer's recommendations. The voltage level shall not fall below the levels specified. <i>Exception: An artificial load equal to the full fire alarm load connected to the battery shall be permitted to be used in conducting this test.</i>

**Table 1.4.2.1** *Continued*

Device	Method
(e) Load voltage test	<p>With the battery charger disconnected, the terminal voltage shall be measured while supplying the maximum load required by its application.</p> <p>The voltage level shall not fall below the levels specified for the specific type of battery. If the voltage falls below the level specified, corrective action shall be taken and the batteries shall be retested.</p> <p><i>Exception: An artificial load equal to the full fire alarm load connected to the battery shall be permitted to be used in conducting this test.</i></p>
5. Battery Tests (Specific Types)	
(a) Primary battery load voltage test	<p>The maximum load for a No.6 primary battery shall not be more than 2 amperes per cell. An individual (1.5-volt) cell shall be replaced when a load of 1 ohm reduces the voltage below 1 volt. A 6-volt assembly shall be replaced when a test load of 4 ohms reduces the voltage below 4 volts.</p>
(b) Lead-acid type	
(1) Charger test	<p>With the batteries fully charged and connected to the charger, the voltage across the batteries shall be measured with a voltmeter. The voltage shall be 2.30 volts per cell to <math>\pm 0.02</math> volts at 25°C (77°F) or as specified by the equipment manufacturer.</p>
(2) Load voltage test	<p>Under load, the battery shall not fall below 2.05 volts per cell.</p>
(3) Specific gravity	<p>The specific gravity of the liquid in the pilot cell or all of the cells shall be measured as required. The specific gravity shall be within the range specified by the manufacturer. Although the specified specific gravity varies from manufacturer to manufacturer, a range of 1.205-1.220 is typical for regular lead-acid batteries, while 1.240-1.260 is typical for high-performance batteries.</p> <p>A hydrometer that shows only a pass or fail condition of the battery and does not indicate the specific gravity shall not be used, because such a reading does not give a true indication of the battery condition.</p>
(c) Nickel-cadmium type	
(1) Charger test	<p>With the batteries fully charged and connected to the charger, an ampere meter shall be placed in series with the battery under charge. The charging current shall be in accordance with the manufacturer's recommendations for the type of battery used. In the absence of specific information, 1/30 to 1/25 of the battery rating shall be used.</p>
(2) Load voltage test	<p>Under load, the float voltage for the entire battery shall be 1.42 volts per cell, nominal. If possible, cells shall be measured individually.</p>
(d) Sealed lead-acid type	
(1) Charger test	<p>With the batteries fully charged and connected to the charger, the voltage across the batteries shall be measured with a voltmeter. The voltage shall be 2.30 volts per cell to <math>\pm 0.02</math> volts at 25°C (77°F) or as specified by the equipment manufacturer.</p>
(2) Load voltage test	<p>Under load, the battery shall perform in accordance with the battery manufacturer's specifications.</p> <p>Tests specified in (5) and (6) shall apply only to those systems using a common battery. If more than one common battery is used, each common battery shall be tested.</p>
6. Transient Suppressors	<p>Lightning protection equipment shall be inspected and maintained per the manufacturer's specifications.</p> <p>Additional inspections shall be required after any lightning strikes.</p> <p>Equipment located in moderate to severe areas outlined in NFPA 780, <i>Standard for the Installation of Lightning Protection Systems</i>, Appendix H, shall be inspected semiannually and after any lightning strikes.</p>

**Table 1.4.2.1** *Continued*

Device	Method
7. Control Unit Trouble Signals	
(a) Audible and visual	Operation of panel trouble signals shall be verified as well as ring-back feature for systems using a trouble-silencing switch that requires resetting.
(b) Disconnect switches	If control unit has disconnect or isolating switches, performance of intended function of each switch shall be verified and receipt of trouble signal when a supervised function is disconnected shall also be verified.
(c) Ground-fault monitoring circuit	If the system has a ground detection feature, the occurrence of ground-fault indication shall be verified whenever any installation conductor is grounded.
(d) Transmission of signals to off-premises location	An initiating device shall be actuated and receipt of alarm signal at the off-premises location shall be verified. A trouble condition shall be created and receipt of a trouble signal at the off-premises location shall be verified. A supervisory device shall be actuated and receipt of a supervisory signal at the off-premises location shall be verified. If a transmission carrier is capable of operation under a single- or multiple-fault condition, an initiating device shall be activated during such fault condition and receipt of a trouble signal at the off-premises location shall be verified, in addition to the alarm signal.
8. Remote Annunciators	The correct operation and identification of annunciators shall be verified. If provided, the correct operation of annunciator under a fault condition shall be verified.
9. Conductors –Metallic	
(a) Stray voltage	All installation conductors shall be tested with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Unless a different threshold is specified in the system installed equipment manufacturer's specifications, the maximum allowable stray voltage shall not exceed 1 volt ac/dc.
(b) Ground faults	All installation conductors other than those intentionally and permanently grounded shall be tested for isolation from ground per the installed equipment manufacturer's specifications.
(c) Short-circuit faults	All installation conductors other than those intentionally connected together shall be tested for conductor-to-conductor isolation per the installed equipment manufacturer's specifications. These same circuits also shall be tested conductor-to-ground.
(d) Loop resistance	With each initiating and indicating circuit installation conductor pair short-circuited at the far end, the resistance of each circuit shall be measured and recorded. It shall be verified that the loop resistance does not exceed the installed equipment manufacturer's specified limits.
(e) Supervision	Introduction of a fault in any circuit monitored for integrity shall result in a trouble indication at the control unit. One connection shall be opened at not less than 10 percent of the initiating devices, notification appliances and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit.
10. Initiating Devices	
(a) Electromechanical releasing device	
(1) Nonrestorable-type link	Correct operation shall be verified by removal of the fusible link and operation of the associated device. Any moving parts shall be lubricated as necessary.
(2) Restorable-type link	Correct operation shall be verified by removal of the fusible link and operation of the associated device. Any moving parts shall be lubricated as necessary.



**Table 1.4.2.1 Continued**

Device	Method
(b) Smoke detectors (1) System detectors and single-station smoke alarms used in other than one- and two-family dwellings	<p>The detectors shall be tested in place to ensure smoke entry into the sensing chamber and an alarm response. Testing with smoke or listed aerosol approved by the manufacturer shall be permitted as acceptable test methods. Other methods approved by the manufacturer that ensure smoke entry into the sensing chamber shall be permitted.</p> <p>Any of the following tests shall be performed to ensure that each smoke detector is within its listed and marked sensitivity range:</p> <ol style="list-style-type: none"> <li>(1) Calibrated test method</li> <li>(2) Manufacturer's calibrated sensitivity test instrument</li> <li>(3) Listed control equipment arranged for the purpose</li> <li>(4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit when its sensitivity is outside its listed sensitivity range</li> <li>(5) Other calibrated sensitivity test method approved by the authority having jurisdiction</li> </ol>
(2) Duct type	<p>Air duct detectors shall be tested or inspected to ensure that the device will sample the airstream. The test shall be made in accordance with the manufacturer's instructions.</p>
(3) Smoke detectors with control output functions	<p>It shall be verified that the control capability shall remain operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state.</p>
(c) Initiating devices, supervisory (1) Control valve switch	<p>Valve shall be operated and signal receipt shall be verified to be within the first two revolutions of the hand wheel or within one-fifth of the travel distance, or per the manufacturer's specifications.</p>
(2) High- or low-air pressure switch	<p>Switch shall be operated. Receipt of signal obtained where the required pressure is increased or decreased a maximum 70 kPa (10 psi) from the required pressure level shall be verified.</p>
(d) Mechanical, or pressure-type waterflow device	<p>Water shall be flowed through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25, <i>Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems</i>.</p>
11. Alarm Notification Appliances	
(a) Audible	<p>Sound pressure level shall be measured with sound level meter meeting ANSI S1.4a, <i>specifications for Sound Level Meter</i>3, Type 2 requirements. Levels throughout protected area shall be measured and recorded. The sound level meter shall be set in accordance with ANSI S3.41, <i>American National Standard Audible Evacuation Signal</i>, using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.</p>
(b) Visible	<p>Test shall be performed in accordance with the manufacturer's instructions.</p> <p>Appliance locations shall be verified to be per approved layout and it shall be confirmed that no floor plan changes affect the approved layout. Verify that the candela rating marking agrees with the approved drawings. It shall be confirmed that each appliance flashes.</p>

**Table 1.4.2.1 Continued**

Device	Method
12. Special Hazard Equipment	
(a) Verified, sequential, or counting zone circuit	Required sensors at a minimum of four locations in circuit shall be operated. Correct sequence with both the first and second detector in alarm shall be verified.
(b) All above devices or circuits or combinations thereof	Supervision of circuits shall be verified by creating an open circuit
13. Supervising Station Fire Alarm Systems -Receiving Equipment	
(a) All equipment	<p>Tests shall be performed on all system functions and features in accordance with the equipment manufacturer's instructions for correct operation in conformance with the applicable sections of Chapter 8.</p> <p>Initiating device shall be actuated. Receipt of the correct initiating device signal at the supervising station within 90 seconds shall be verified. Upon completion of the test, the system shall be restored to its functional operating condition.</p> <p>If test jacks are used, the first and last tests shall be made without the use of the test jack.</p>
(b) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR)	<p>Each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment shall be caused; receipt of correct signals at the supervising station shall be verified:</p> <ol style="list-style-type: none"><li>(1) AC power failure supplying the radio equipment</li><li>(2) RF receiver malfunction</li><li>(3) Indication of automatic switchover, if applicable</li></ol>
14. Interface Equipment	<p>Interface equipment connections shall be tested by operating or simulating the equipment being supervised. Signals required to be transmitted shall be verified at the control panel. Test frequency for interface equipment shall be the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised.</p>
15. Special Procedures	
(a) Alarm verification	<p>Time delay and alarm response for smoke detector circuits identified as having alarm verification shall be verified.</p>
(b) Multiplex systems	<p>Communications between sending and receiving units under both primary and secondary power shall be verified.</p> <p>Communications between sending and receiving units under open circuit and short circuit trouble conditions shall be verified.</p> <p>Communications between sending and receiving units in all directions where multiple communications pathways are provided shall be verified.</p> <p>If redundant central control equipment is provided, switchover and all required functions and operations of secondary control equipment shall be verified.</p> <p>All system functions and features shall be verified in accordance with manufacturer's instructions.</p>

1. Example:  $4000 \text{ mAh} \times 1/25 = 160 \text{ mA}$  charging current at  $25^{\circ}\text{C}$  ( $77^{\circ}\text{F}$ ).
2. The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that false ground readings (caused by induced voltages) are minimized.
3. Fusible thermal link detectors are commonly used to close fire doors and fire dampers. They are actuated by the presence of external heat, which causes a solder element in the link to fuse, or by an electric thermal device, which, when energized, generates heat within the body of the link, causing the link to fuse and separate.
4. Methods of verification of voice intelligibility should include, but not be limited to, any one of the following methods:
  - (1) Standard subject-based test methods such as described in ANSI S3.2, *Method for Measuring the Intelligibility of Speech Over Communications Systems*
  - (2) Methods and instruments that measure certain physical parameters and provide a common intelligibility scale score such as described in IEC 60849, *Sound systems for emergency purposes*

The use of test methods that provide a common intelligibility scale score may be used for existing systems but should not be used to require revisions to systems that were designed prior to the 2002 edition of this Code. Also, refer to Section 1.4.

(D) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit where its sensitivity is outside its listed sensitivity range

(E) Other calibrated sensitivity test methods approved by the authority having jurisdiction

1.4.2.2.5 Detectors or smoke alarms found to have a sensitivity outside the listed and marked sensitivity range shall be cleaned and recalibrated or be replaced.

1.4.2.2.6 The detector or smoke alarm sensitivity shall not be tested or measured using any device that administers an unmeasured concentration of smoke or other aerosol into the detector or smoke alarm.

1.4.2.3 Test frequency of interfaced equipment shall be the same as specified by the applicable NFPA standards for the equipment being supervised.

1.4.2.3.1 Two or more detectors shall be tested on each initiating circuit annually.

1.4.2.3.2 Different detectors shall be tested each year, with records kept by the building owner specifying which detectors have been tested.

1.4.2.3.3 Within 5 years, each detector shall have been tested.

1.4.2.4 For testing addressable and analog-described devices, which are affixed to either a single, molded assembly or a twist-lock type affixed to a base, testing shall be conducted using the signaling style circuits (Styles 0.5 through 7). Analog-type detectors shall be tested with the same criteria.

1.4.3 Circuits from Central Station. Tests of all circuits extending from the central station shall be made at intervals of not more than 24 hours.

#### 1.4.4 Public Fire Reporting Systems.

1.4.4.1 Emergency power sources other than batteries shall be operated to supply the system for a continuous period of 1 hour at least weekly. This test shall require simulated failure of the normal power source.

1.4.4.2 Testing facilities shall be installed at the communications center and each subsidiary communications center, if used. *Or if satisfactory to the authority having jurisdiction, those facilities for systems leased from a nonmunicipal organization that might be located elsewhere.*

#### 1.5 Maintenance.

1.5.1 Fire alarm system equipment shall be maintained in accordance with the manufacturer's instructions.

1.5.2 The frequency of maintenance of fire alarm system equipment shall depend on the type of equipment and the local ambient conditions.

1.5.3 The frequency of cleaning of fire alarm system equipment shall depend on the type of equipment and the local ambient conditions.

1.5.4 All apparatus requiring resetting to maintain normal operation shall be reset as promptly as possible after each test and alarm. All test signals received shall be recorded to indicate date, time, and type.

1.5.5 The retransmission means as defined in Section 8.2 of NFPA 72, 2002 Edition shall be tested at intervals of not more than 12 hours.

1.5.6 As a part of the testing required in 1.5.5, the retransmission signal and the time and date of the retransmission shall be recorded in the central station.

## 1.6 Records.

1.6.1 Permanent Records. After successful completion of acceptance tests approved by the authority having jurisdiction, the requirements in 1.6.1.1 shall apply.

1.6.1.1 The owner shall be responsible for maintaining records per NFPA 72, 2002 Edition for the life of the system for examination by any authority having jurisdiction. Paper or electronic media shall be permitted.

### 1.6.2 Maintenance, Inspection, and Testing Records.

1.6.2.1 Records shall be retained until the next test and for 1 year thereafter.

1.6.2.2 The records shall be on a medium that will survive the retention period. Paper or electronic media shall be permitted.

1.6.2.3 A record of all inspections, testing, and maintenance shall be provided that includes the following information regarding tests and all the applicable information requested in Figure 10.6.2.3, from NFPA 72, 2002 Edition:

- (A) Date
- (B) Test frequency
- (C) Name of property

- (D) Address
- (E) Name of person performing inspection, maintenance, tests, or combination thereof, and affiliation, business address, and telephone number
- (F) Name, address, and representative of approving agency(ies)
- (G) Designation of the detector(s) tested, for example, "Tests performed in accordance with Section XXX."
- (H) Functional test of detectors
- (I) Functional test of required sequence of operations
- (J) Check of all smoke detectors
- (K) Loop resistance for all fixed-temperature, line-type heat detectors
- (L) Other tests as required by equipment manufacturers
- (M) Other tests as required by the authority having jurisdiction
- (N) Signatures of tester and approved authority representative
- (O) Disposition of problems identified during test (e.g., owner notified, problem corrected/successfully retested, device abandoned in place)

1.6.3 Supervising Station Records. For supervising station fire alarm systems, records pertaining to signals received at the supervising station that result from maintenance for not less than 12 months. Upon request, a hard copy record shall be provided to the authority having jurisdiction. Paper or electronic media shall be permitted.