Health Care Engineers and Fire Safety

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This presentation will focus on what and how health care facility engineers should approach the reoccurring testing, preventive maintenance and documentation requirements for fire safety systems.
Code References

- NFPA 10 – Portable Fire Extinguishers
- NFPA 13 – Installation of Sprinkler Systems
- NFPA 20 – Fire Pump Installation
- NFPA 25 – Inspection, Testing, Maintenance of Water Base System
- NFPA 72 – National Fire Alarm Code
- NFPA 96 – Commercial Cooking Operations
- NFPA 99 – Standard for Healthcare Facilities
- NFPA 110 – Standard for Emergency Standby Power Systems
If you didn’t document it.
It didn’t happen!
Annual Test Dates Should Not Be More Than 365 Days Apart
3 ring binder – Min. 4”

Index Dividers – Min. 17

Make sure the management staff, facility maintenance staff know where this book it kept
Index Dividers – Tab 1

• Current building floor plan
• Building year (each addition)
• Construction type (each addition)
Index Dividers – Tab 2

- Facility emergency plan (K048)
  - You may place plan here or indicate where a current plan can be found

2000 NFPA 101 - 18.7.1.1, 19.7.1.1
Index Dividers – Tab 2

- Staff properly trained in emergency procedures (K050)
  - You may place the in-service records here or indicate where the in-service records can be found
  - 2000 NFPA 101 – 18.7.2.3, 19.7.2.3
• Smoking policy (K066)

- Smoking regulations shall be adopted and shall include not less than the following provisions:

- 2000 101 - 18.7.4, 19.7.4
Index Dividers – Tab 4

- Fire Drills – once per quarter per shift and drills held at varying times (K050)
  - You may place the fire drill records here or indicate where the fire drill records can be found
  - 2000 NFPA 101 – 18.7.1.2, 19.7.1.2
Out of service policy (fire watch) for fire sprinkler and fire alarm systems outages for more than 4 hours in 24 hour period. (K154 & K155)

Make sure the DSFM inspector name and phone numbers is included

- 2000 NFPA 101 – 9.6.1.8 , 9.7.6.1
Index Dividers – Tab 6

- Fire alarm system
  - Annual testing report (K052) see 1999 NFPA 72 – 7-5.2.2 and figure 7-5.2.2

- D.A.C.T monthly testing (K052)
  - You can record this on your fire drill report
  - Have a separate record
  - 2000 NFPA 101 – 9.6.1.4 and 1999 NFPA 72 7-3.2.1
Smoke detector sensitivity testing (K052)

- Must show the sensitivity range (low and high range), and the actual tested sensitivity for each smoke detector, and test date(s).

- 2000 NFPA 101 – 9.6.1.4 and 1999 NFPA 72 7-3.2.1
Index Dividers – Tab 8

- Resident room smoke alarm (single station)
  weekly or monthly testing per manufacturer
  instruction (K054)
• Fire sprinkler system (K056 – K062)
  – Annual test / inspection
  – Quarterly flow alarm test
  – Fire pump – Weekly and annual

  – 2000 NFPA 101 - 18.7.6, 19.7.6, 4.6.12,
    1999 NFPA 13, and 1998 NFPA 25
Index Dividers – Tab 10

- Range hood system (K069)
  - 6 month inspection report
  - Make sure system activates the building fire alarm system

- 2000 NFPA 101 - 9.2.3., 18.3.2.6, 19.3.2.6, 1998
  NFPA 96
Index Dividers – Tab 11

• Portable fire extinguishers (K064)
  – Monthly in-house inspection
  – Annual vendor service date
  – 6 year maintenance date
  – 12 year Hydrostatic test date

  – 2000 NFPA 101 - 9.7.4.1, 18.3.5.6, 19.3.5.6
  1998 NFPA 10
Index Dividers – Tab 12

- Generator (K144)
  - Weekly visual
  - Monthly 30 minute load test

- 1999 NFPA 99, 3.4.4.1, 1999 NFPA 110, 8.4.2
• Battery operated emergency lights and exit signage (K046)
  - Monthly (30 seconds)
  - Yearly (90 minutes)

Index Dividers – Tab 14

- **Fire/Smoke Damper (K067)**
  - Visually inspected / tested every 4 years

  - 2000 NFPA 101 – 9.2, 18.5.2.1, 19.5.2.1,, 18.5.2.2, 19.5.2.2, and 1999 NFPA 90A
Index Dividers – Tab 15

• Flame spread documentation
  – Drape and curtains (K074)
  – Interior walls, ceiling, and floor finishes (K014, K015, and K016)
  – Decorations (K073)

– 2000 NFPA 101 – Chapter 18 - 19
Upholstered furniture flammability

- Newly introduce upholstered furniture (K074) Since March 2003
- California technical bulletin 133 or 117, NFPA 266
• Laboratory
  - Procedure policy reviewed annually
    (K131) 1999 NFPA 99 - 10.2.1.3.2
  - Incident reviewed monthly
    (K132) 1999 NFPA 99 - 10.2.1.4.2
QUESTIONS?
Fire Alarm System Testing

Requirement

- 1999 NFPA 72
- 2000 NFPA 101
- 2007 MN State Fire Code (MSFC)
Maintenance, Inspection and Testing

- The building owner shall be responsible for ensuring that the fire and life safety systems are maintained in an operable condition at all times.

  - MSFC 907.20.5 & NFPA 72 7-1.2
Annual Testing

• Service Personnel
  – Shall be qualified and experienced in testing, inspection and maintenance of the fire alarm system
    • Factory trained or certified
    • NICET Certified
    • Certified by state or local authority

– NFPA 72 7-1.2.2
– MSFC 907.20.5
Initial Acceptance Testing

- NFPA 72 7-1.6.1 & MSFC 907.17
  - All new systems shall be inspected and tested in accordance with the requirements of Chapter 7.
  - Record of completion need to be filled out by contractor (Figure 1-6.2.1 & MSFC 907.18)
  - Kept on file for life of the building
Reacceptance Testing

- NFPA 72 7-1.6.2
  - Added or deleted system components
  - Any modifications, repairs, or adjustment to system hardware or wiring
  - Any changes to site-specific software
  - Kept on file till next reacceptance test
Annual Testing

• Documentation

  - 2 years worth of data in Life Safety Documentation book (NFPA 72 7-5.2)
  - 3 years on file per MSFC 901.6.2
Annual Testing

• Annual testing – needs to be done within a 365 day period

  – NFPA 101 – 9.6.14
  – NFPA 72 – Chapter 7
  – MSFC – 901.6
Annual Testing

• Devices
  - Manual pull stations
  - Smoke detectors
  - Heat detectors
  - Duct detectors
  - Tamper / Flow switches
  - Beam Detectors
  - Flames Detectors
  - Electromechanical releasing devices
Annual Testing

- Notification Appliances
  - Horn or Chimes
    - Horns or chimes need to be 15db above ambient sound level – measured 5 feet above floor (NFPA 72 4-3.2.2)

- Strobes
  - In sure they are working and if you can see more than 2 strobes in field of view, strobes need to be synchronized (NFPA 72 4-4.4.1.1 (4))
Annual Testing

• Detector Sensitivity testing
  - Need to be done within 1 year after installation and every alternate year thereafter. After the second required test, and all detectors has remained within listed calibration the length shall be extended out to a maximum of 5 years. You are required to kept records of all nuisance alarms.
  (NFPA 72 7-3.2.1 & MSFC 907.20.3)
Annual Testing

• Detector Sensitivity testing
  - Keep the 2 cycles of testing in book until after the 5 year test. After the 5 year test you have to go back to every alternate year for two cycles then 5 years if all pass.
  - Documentation has to show the factory setting of each smoke detector
  - The high – low, with built in +/- of detector and calibrated testing device
Annual Testing

- Detector Sensitivity testing
  - Calibrated machine
  - Newer system reports can be run from control panel
  - Circuit pulses

- NFPA 72 7-3.2.1 & MSFC 907.20.4
Annual Testing

- Batteries – All fire alarm equipment (main panel, extenders, dialers and transponders)
  - Need to have date on them
  - Need to be changed every 4 years regardless of condition or before if battery fails load test
  - Tested under load

- NFPA 72 Table 7-3.2 (6d)
Questions ?
Fire Sprinkler System Testing

Requirement

- 1999 NFPA 13
- 1998 NFPA 25
- 2000 NFPA 101
- 2007 MN State Fire Code (MSFC)
Weekly Testing

• Fire Pump  (1998 NFPA 25 5-3.2)
  – Automatic start of jockey pump
  – Automatic start of fire pump run for no flow for 10 minutes
  – Check for proper packing gland
Quarterly Testing

- **Flow alarm (1998 NFPA 25 2-3.3)**
  - Remote inspector test – record time
- **Standpipe**
  - Check valves and caps in place
- **Fire Department Connection (FDC)**
  - Check to sure collar freely turns
  - Insure 3 feet clearance around FDC
Annual Testing (1998 NFPA 25 2-2)

• Qualified person – license contractor
• Visual inspection of sprinkler system
  – Check for proper coverage area
  – Check for corroded sprinkler heads
  – Check for lint build up on sprinkler head
  – Check sprinkler heads
    • Standard response – 50 years
    • Quick response – 20 years
Annual Testing

- Check for proper orientation of sprinkler head
- Intermixing of standard and quick response sprinklers in same smoke compartments
- Spare sprinkler heads / wrench
- Dry heads – 10 year (walk-in coolers, freezers)

• Main drain test
Annual Testing

- Fire pump *(1998 NFPA 25 5-3.3)*
  - Flow testing (Hose monster)
    - Churn – no flow
    - 100%
    - 150%
  - Controller readings – all the three above test
    - Amps
    - Volts
Annual Testing

• Dry system
  - Trip test
    • Full trip every three years
      (1998 NFPA 25 9-4.4.2.2.1)
    • Partial trip test the other two years
      (1998 NFPA 25 9-4.4.2.2.2)
  - Dry valve inspection yearly
5 year testing

- **Gauges**
  - Calibrate or replaces all gauges on fire sprinkler system *(1998 NFPA 25 2-3.2)*
  - Check valves – Internal Inspection *(1998 NFPA 25 9-4.2.1)*
    - System
    - Fire Department Connection
  - Standpipe – Flow test *(1998 NFPA 25 3-3.1.1)*
5 year testing

- Pressure Reducing valve *(1998 NFPA 25 9-5.2.2)*
QUESTIONS?

Minnesota State Fire Marshal

http://www.fire.state.mn.us