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

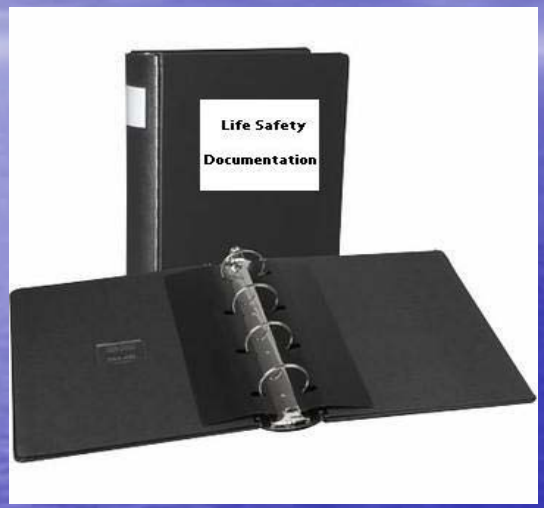
- NFPA 10 – Portable Fire Extinguishers
- NFPA 13 – Installation of Sprinkler Systems
- NFPA 20 – Fire Pump Installation
- NFPA 25 – Inspection, Testing, Maintenance of Water Base System
- NFPA 72 – National Fire Alarm Code
- NFPA 96 – Commercial Cooking Operations
- NFPA 99 – Standard for Healthcare Facilities
- NFPA 101 – Life Safety Code (2000)
- 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

Fire Life Safety Documentation



- 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

Index Dividers – Tab 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

Index Dividers – Tab 5

- 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

Index Dividers – Tab 7

– 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)

Index Dividers – Tab 9

- 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

Index Dividers – Tab 13

- Battery operated emergency lights and exit signage (K046)
  - Monthly (30 seconds)
  - Yearly (90 minutes)

  - 2000 NFPA 101 - 7.9., 18.2.9.1, 19.2.9.1.

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

Index Dividers – Tab 16

- Upholstered furniture flammability
  - Newly introduce upholstered furniture (K074) Since March 2003
  - California technical bulletin 133 or 117, NFPA 266

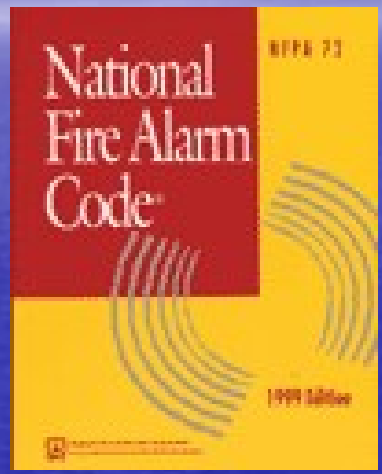
Index Dividers – Tab 17

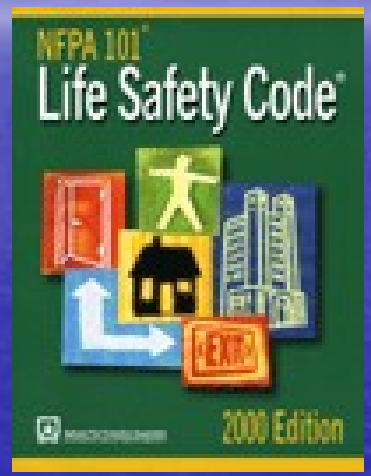
- Laboratory
  - Procedure policy reviewed annually (K131) 1999 NFPA 99 - 10.2.1.3.2
  - Incident reviewed monthly (K132) 1999 NFPA 99 - 10.2.1.4.2

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 there after. 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

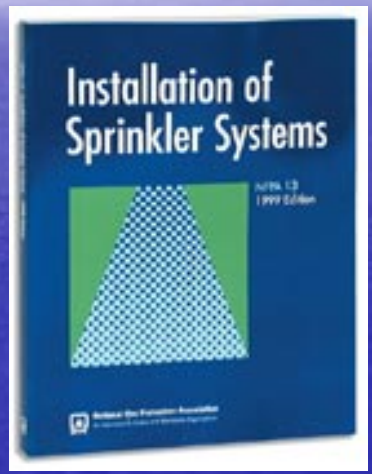
Annual Testing

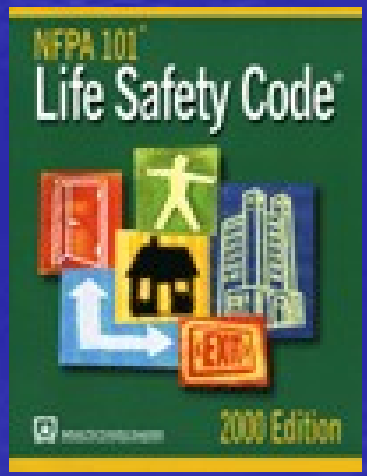
- Batteries – All fire alarm equipment (main panel, extenders, dialers and transponders)
  - Need to have date on them
  - Need to be changed every 4 years regardless of condition or before if battery fails load test
  - Tested under load
  - NFPA 72 Table 7-3.2 (6d)

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