Fire Life & Safety Systems Compliance Testing Code Update

Best Practices

Pretty Good

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March 2014
Who?

Steve O’Connell

• Fire & Life Safety Service and Sales for 23 years
• NICET II Fire Alarm, Level III Pending
• NICET I Water Based Testing, Pending
• NICET I Special Hazard, Pending
• City of Redmond Designer of Record

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March 2014
About Today

• Not a lecture
• Interactive
• Ask questions as we go
• Slides
• Yes, I am a Level 5 PowerPoint Ranger!

(at least in my own mind)
Agenda

- We’re gonna jump around a bit
- Some new stuff and some review
- Fire and Life Safety System Testing & Best Practices
- News & Trends - What is coming
- Expectations
- Submitted Questions
Why are we here?

Failure to maintain fire & life safety systems is nearly always the #5 most cited area for The Joint Commission and currently #1 for Det Norske Veritas.
Life Safety Systems are Boring but Dinner on McKinstry is Good!

- It’s annoying and complicated!
- Someone else takes care of it.
- I don’t have time
- My vendor is responsible.

"You’re not allowed to use the sprinkler system to keep your audience awake."
Perspective - What You Do
It’s all in Code

Common Testing Standards:

- NFPA 72 - How to design, install and test Fire Alarm
- NFPA 25 - How to Inspect and Test Water Based Systems

Neither tells us that we must have a fire alarm or sprinkler system!
Referenced Standards

- NFPA 99 Standard for Health Care Facilities
- NFPA 80 Standard for Fire Doors
- NFPA 13 Installation of Sprinkler Systems
- NFPA 10 Standard for Fire Extinguishers
- NFPA 76 Standard for Fire Protection of Telecom Facilities
- NFPA 2001 Clean Agent

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“The documents referenced in this chapter...shall be considered part of the requirements of this Code...”

150+ Referenced Codes!
Review - Who Picks the Code?

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No wonder you’re so tired!
So, who’s the Boss?
Which code do I follow?

Depends on the code in force by the AHJ standing in front of you

Answer #1:
The one that might get your facility shut down

Answer #2:
The most restrictive

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Healthcare Code Hierarchy – Present Day

NFPA 101
*Life Safety Code*
- 2000
- 2003
- 2006
- 2009
- 2012

NFPA 25
*Water Based Fire Systems*
- 1998
- 2002
- 2008
- 2011

NFPA 72
*Fire Alarm Systems*
- 1999
- 2002
- 2007
- 2010
- 2013

NFPA 80
*Fire Doors*
- 1999
- 2007
- 2010
- 2013
Code Confusion

- **NFPA 101**
  - Life Safety Code

- **NFPA 25**
  - Water Based Fire Systems

- **NFPA 72**
  - Fire Alarm Systems

- **NFPA 80**
  - Fire Doors
Expectations & Process

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[Image of a cartoon with a man standing in front of a fire extinguisher labeled "BREAK GLASS IN CASE OF FIRE"]
The AHJ Expects You To:

• Test your stuff on-time
• Test your stuff properly
• Document the test properly
• Account for the repair of deficiencies
• Understand your systems and documents
• Have it all available
Who Tests It?

- And, who documents it?
  - Flows, Tampers, FDC

- Inspect vs. Test
  - Typically, You Inspect - Vendor tests
  - Example: Control Valves
    - You – Inspect every month
    - Vendor – Test semi-annually

What does the code say about test methods?
Proper Test Method Example
Flow Switches

*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

*NFPA 25*

*Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
Proper Test Method Example
Tamper Switches

*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.

*NFPA 25
Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
Proper NFPA 72 Methods Notification Devices

- Audible information shall be verified to be distinguishable and understandable.
- 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.
“Documentation must indicate that each unique visual and audible device is functionally tested at the required frequency”
One way to document performance

- What is it?
- Who made it?
- What is the model number?
- Where is it located in the building?
- When was it installed?
- Did it pass inspection?
- Is it covered by warranty, or product recall?
It’s All About Paper

Basic Fire Alarm Report
8 Pages per Year

Joint Commission
Compliant Report
62 pages per Year!

Inspection & Testing

The Inspection & Testing section lists all of the items inspected in your building, which are then categorized by the applicable EC Code. The most recent inspection is listed in the far right column and is based on the Finish Date of that inspection. The latest inspection uploaded in each previous quarter appears in the four columns to the left.

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Location</th>
<th>ScanID</th>
<th>Address</th>
<th>Q4/10</th>
<th>Q3/11</th>
<th>Q2/11</th>
<th>Q1/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamper Switch</td>
<td>1st DRY SYSTEM TAMPER LOADING DOCK</td>
<td>070841856</td>
<td>1-12 0199</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamper Switch</td>
<td>1st Stairwell 2 STAIR 2 TAMPER GL G/3.9</td>
<td>07084142</td>
<td>1-12 0147</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamper Switch</td>
<td>1st Stairwell 1 STAIR 1 TAMPER GL A.5/3.8/3.9</td>
<td>07084133</td>
<td>1-12 0145</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamper Switch</td>
<td>2nd Stairwell 2 STAIR 2 TAMPER GL G/3.9</td>
<td>07084143</td>
<td>1-12 0167</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamper Switch</td>
<td>2nd Stairwell 5 TAMPER GL D/8</td>
<td>07084139</td>
<td>2-03 0150</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EC 02.03.05 EP 02
Six-month test of valve tamper switches per NFPA 72. Quarterly test of water flow devices per joint Commission.
Why we Test
Leading Causes of Sprinkler Failures

• Between 2003 and 2007,
  – Sprinklers operated in 93% of all fires large enough to cause actuation
  – Effective in 97% of the fires in which they operated

Source: Fire Protection Engineering, September 30, 2010
R. Thomas Long, Jr., P.E., Neil P. Wu, P.E. and Andrew F. Blum
Leading Causes of Sprinkler Failures

• System shut off - 38%
• Inappropriate system for the type of fire - 18%
• Water discharged did not reach fire - 12%
• Lack of maintenance - 12%
• Not enough water - 9%

Source: Fire Protection Engineering, September 30, 2010
R. Thomas Long, Jr., P.E., Neil P. Wu, P.E. and Andrew F. Blum
Let’s look at two of those...

Inappropriate system for the type of fire - 18%
- New departments/tenants replace old ones
- Walls may be removed, added, or altered
- Protected commodities can change

Lack of maintenance - 12%
- Know your code and AHJ requirements
- Test accordingly

38% + 18% + 12% = 68%!!
You Checked the Valve When?
Inspections - A Side Note
How about Fire Alarm Systems?

Inherently reliable...with simple steps

• **Supervision**
  – Failures known immediately, not at the next test
  – Helps with troubleshooting

• **Nervous system for your building**
  – Wisps of smoke & Lightening

• **What it can’t do**
  – Change its own batteries
  – Remove forgotten covers

• **Test & Inspect is Key**
What’s new?

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“Provider pulling the plug on alarm system”
KING5 - October 2013
Lightening Strikes Twice

STU/Scan Alert service to be suspended

- What’s a STU?
- Scan-Alert will be eliminated on April 30, 2014
- If STU fails, owner on hook for 24/7 fire watch

Phone Line Troubles

- Throughout 2013 - Phone Switching

Possible solution - Mesh Radio

- Lower monitoring costs
- Multiple vendors, buy or lease
How Mesh Radio Works
Time Definitions

Joint Commission defines the period of time between required activities to be as follows:

- **Weekly, or ‘every 7 days’:** Anytime during the week

- **Monthly, or ‘every 30 days’:** Anytime during the month

- **Quarterly, or ‘every 3 months’:** 3 months from the previous activity, plus or minus 10 days. As of 1/1/2014

- **Semi-annually, or ‘every 6 months’:** 6 months from the previous activity, plus or minus 20 days
Joint Commission defines the period of time between required activities to be as follows:

- **Annually, ‘every 12 months’**: 12 months from the previous activity, plus or minus 30 days
- **3-Years**: 36 months from the previous activity, plus or minus 30 days
Time Definitions

As of 1/1/2014 “Quarterly” means:

3 months, plus or minus 10 days.

What does this impact?

• Fire Drills
• Waterflow switches
• Supervisory signal devices (not tamper switches)
• Off-premises monitoring transmission equipment (usually conducted with the fire drill)
CMS Categorical Waiver 13-58

Covers several topics:

1. Medical Gas Master
2. Openings in Exit
3. Emergency Generators and Standby Power
4. Door Locking Arrangements
5. Suites
6. Extinguishing Requirements
7. Clean Waste and Patient Record Recycling Containers

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CMS Categorical Waiver 13-58

• Of interest today is #6, Extinguishing Requirements:
  – *Change in fire pump churn test frequency*
  – *Flow switch test frequency*

• Minor hoops for you to jump through
Carbon Monoxide Detection
Coming to a Hospital Near You

Carbon Monoxide Alarm Rules and Related Information

New rules effective July 1, 2013

• Deadline for installation of CO Alarms in residential settings was January 1, 2013
• Codes were updated to include Group I occupancies, effective July 1, 2013.
• Alarms must meet the requirements of NFPA-720 2012

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Carbon Monoxide Detection
Coming to a Hospital Near You

• Washington State Building Code Council added a state amendment into the 2012 IBC/IFC calling for *retroactive CO monitoring* in all Group I/Group R
  – There are several exemptions that apply - designers should read the rules carefully.

• Advice? Not a CMS requirement but driven by the building or fire code

• Changes to a facility should be coordinated with CRS and the local building/fire department.
65%
Coming Soon!
The Future - NFPA 72-2013

• Renamed “National Fire Alarm and Signaling Code”
• Will not be adopted for a while
• Gives clarity to a number of areas
• Includes Mass Notification Systems
• How codes develop

Here’s a good example...
Test Plan

Purpose of the test plan:
Document what devices were tested
What devices were not tested

“Testing emergency control functions, releasing systems, or interfaced equipment is outside the scope of NFPA-72”

Here’s an example...

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Door Testing – Best Practices

So in this case, who “Tests” the doors?

• *Release/Unlock function* is tested by the FA testing vendor under NFPA 72 & 101

• *Door Swing, Latching, & Integrity* is tested by the owner or qualified vendor under NFPA 80
How This Will be Defined
NFPA 72 - 2013

NFPA 72 & 101 Fire Alarm System

The Door Drops

The Door Latches

NFPA 80 Fire Doors

Qualified Fire Alarm Test Vendor

Qualified Door Inspection Vendor
Apropos of Nothing
What’s This?
Joint Commission – DOH
Hot Buttons

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Life Safety & Environment of Care Issues

Percentage of Hospitals that received Requirements for Improvement (RFIs) for F&LS areas:

53%  EC.02.03.05 - The hospital maintains fire safety equipment and fire safety building features.
     (Fire Alarm System and Sliding/Rolling Doors)

34%  LS.02.01.35 - The hospital provides and maintains systems for extinguishing fires.
     (Sprinklers, Fire, Extinguishers, Hoods)

These numbers are trending up!
More on Documentation

• Moving to electronic records
• Store them so someone else can find them
• How long do you keep test records?
• Accuracy, completeness, and clarity of reports

“Failure to have access to documentation or failure to completely understand it will be cited not only for the EC chapter, but also for LD.04.01.05 in the Leadership chapter.”
Joint Commission Hot Buttons

- Device inventory missing
- Device test counts match from year to year
- Air handler shutdown documentation
- How you address deficiencies
- Off Premises test and result
- Testing time intervals
Off Premises Notification

- What is it?
- Testing is required quarterly
- Time <90 seconds
- Documentation should show:
  - When test was done
  - Pass or fail
  - Actual time (?)
DOH - Common Sprinkler Issues

- Overdue tests/inspections
- Missing escutcheon plates/escutcheon rings
- Painted sprinkler heads
- Obstructed sprinkler heads
- Areas with no sprinkler protection
- Damaged or otherwise compromised sprinkler heads

Solution?

Test and Inspect!

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DOH – Common Extinguisher Issues

• Failed to assure fire extinguishers are properly maintained.
• No documentation of the portable fire extinguishers being inspected monthly for the past 12 months.

Solution?
Test and Inspect!

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On a Personal Note...

Have you:

• Tested or Replaced your home smoke detector?
• Installed or Replaced your home CO detector?
Specific Codes

“...do you have a list (Hand Out) that defines the frequency that all devices should be tested both for fire alarm as well sprinkler systems? Under what specific NFPA reference code should our vendors be testing...and should this be noted on their test documentation?”

Next Slide
Review of EP-25

The Joint Commission revised EP 2 and created a new EP 25

• EP 2 requires quarterly testing of a hospital's valve tamper switches and water flow devices, instead of the current testing every six months.

• EP 25 Changed the Documentation Requirements

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## Documentation Reference Changes for TJC

<table>
<thead>
<tr>
<th>EP-25 Reference</th>
<th>What it Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of the activity</td>
<td>Where is it, i.e. &quot;South Tower, Address, etc.&quot;</td>
</tr>
<tr>
<td>Date of the activity</td>
<td>Actual date test was performed</td>
</tr>
<tr>
<td>Required frequency of the activity</td>
<td>A reference such as &quot;Quarterly&quot; or &quot;Annually&quot;, etc.</td>
</tr>
<tr>
<td>Name and contact information, including affiliation, of the person who</td>
<td>Testing company and individual names plus contact information</td>
</tr>
<tr>
<td>performed the activity</td>
<td></td>
</tr>
<tr>
<td>NFPA standard(s) referenced for the activity</td>
<td>Actual Standard referenced, i.e. &quot;NFPA 72&quot;, etc.</td>
</tr>
<tr>
<td>Results of the activity</td>
<td>Did the device pass or fail</td>
</tr>
</tbody>
</table>

Note: For additional guidance on documenting activities, see:  
NFPA 25, 1998 edition (Section 2-1.3) and NFPA 72, 1999 edition (Section 7-5.2)....

There is no requirement to list test method
Your Questions

What scope of testing can the owner of a property do themselves? Does it require somebody or company with certs. to perform these test? What if it’s a leased property?

And the Answer Is?
Qualified and Experienced?

*The Seattle Fire Department lists 230 Test/Repair organizations with Certified Technicians.*

- How many have hospital or healthcare experience?
- Do they speak CMS-TJC-DNV?
Qualified and Experienced?

NFPA 72 *National Fire Alarm Code*, 1999 edition. Section 7-1.2.2 list examples of qualified personnel...:

- Factory trained and certified
- National Institute for Certification in Engineering Technologies (NICET), fire alarm certified
- International Municipal Signal Association (IMSA), fire alarm certified
- Certified by a state or local authority
- Trained and qualified personnel employed by an organization listed by a national testing laboratory for the servicing of fire alarm systems.
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Fire Watch

“I have to prepare ILSM packages that specify a fire watch will be provided when scheduled outages are planned to take all day. Many times, though, the outage is completed under the 4-hour mark. So, when would the first round of a fire watch start ... after the 4th hour of the outage or at the beginning of the scheduled outage?”

Group?

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Your Questions

Is it a code requirement or simply an insurance company requirement to exercise the city’s potable water valves out in the street?
Your Questions

Periodic’s – I’m guessing you’re going to touch on this, but just want to see if we’ll walk away with the testing periodic’s for each type of system. If it’s simply: look at NFPA 25 chapter 5, table 5.1.1.2, then no need. I’m also assuming we’re using the 2011 code?

I think we covered this but recall that in healthcare we are bound to the version dictated by CMS and in this case that’s the 1998 version of NFPA-25 and the 1999 version of NFPA-72.
Your Questions

Impairment plans – are you going to touch on this at all? Most of all, I’m curious where folks are finding the red tags, as I used to get them through FM global, but now we’re with a new insurance company and they don’t provide.

Group?

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Resources

- ASHE
- WSSHE
- NFPA
- TJC
- Keyes - [http://keyeslifesafety.com/](http://keyeslifesafety.com/)
- Other websites – use caution
WSSHE Spring Conference
Chelan, April 23-25, 2014

Symposium Topics will include:

- Electrical Grid in Washington State
- Electrical System Maintenance
- Emergency Generator System Confidence Testing
- New Technologies
- Case Studies at Health Care Facilities

Note: Campbell’s is Sold Out!

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General Questions?

PROOF:

PowerPoint CAUSES World Hunger

- Diagram showing the correlation between the number of PowerPoint presentations and the number of children going to bed hungry, with an increasing trend from 2003 to 2010.