Background

- Enforcement changes: 1997 UFC to 2003 IFC
- Deputy Fire Marshal’s began requesting copies
- More time spent reviewing reports
  - Deficiencies were found during regular inspections that weren’t noted on reports
  - Deficiencies noted weren’t being repaired
  - Quality of some reports provided little “confidence”
Background

<table>
<thead>
<tr>
<th>LOC. &amp; SPN</th>
<th>DEVICE TYPE</th>
<th>VISUAL CHECK</th>
<th>FUNCTIONAL TEST</th>
<th>FACTORY SETTING</th>
<th>MEAS. SETTING</th>
<th>PASS</th>
<th>FAIL</th>
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</table>

**COMMENTS:** No deficiencies found at this time

Smoke detectors in elevators tested and noted on check list in the elevator room.

Company monitoring the fire alarm system,

*Figure 7.5.2.2: Inspection and Testing Form*
GOALS AND OBJECTIVES
Goals

- Increase knowledge level for technicians
- Create means for local enforcement
- Establish means to verify systems are tested
- Develop program contractors would support

- Indirectly - improve reliability of systems
  - Decrease of fire loss in buildings with fire protection systems
  - Decrease of false alarms
FORMATIVE EVALUATION
Evaluation & Research

1. Quality of work performed in community
   - Enforcement options
     • Double permit fees, electrical licensing authority only regulates electrical portion of installation, state fire marshal’s office could only intervene for licensed sprinkler contractors
   - Initiated discussions with contractors and business owner’s
     • Is community getting what they pay for
     • How can we educate community
     • What are reasonable enforcement actions
   - Anecdotal and recent experience
Evaluation & Research

Kitchen suppression system failed to operate

Sprinkler contained fire that escaped kitchen hood
Evaluation & Research

Debris found in sprinkler that operated; obstructed stream remained effective
Evaluation & Research

• Quality of work
  – Limited enforcement options
  – Simultaneously industry was advising
    • They could see quality issues
    • Wanted a “level playing field”
    • Desire for minimum certifications for individuals
    • Need to prevent contractor from having employee do something they know they shouldn’t
  – Focused efforts on a comprehensive program
Evaluation & Research

2. Reviewed model practices and programs in place regionally as well as nationally
3. Identified model certification programs
4. Verifying fire protection systems tested & maintained by endorsed individuals
PROCESS EVALUATION
Implementation

• Involved key stakeholders
  – Periodic meetings early on
  – Quarterly meetings with each industry
  – Personal discussions
  – Newsletters
  – Draft documents sent out with comment forms

• Contractor Endorsement Program – 4 years
  – Adopted as ordinance in May 2007
  – Enforcement began in July 2009
Implementation

• Contractor Endorsement Program highlights:
  – Individual & company must possess endorsement
    • Obtaining individual endorsements require minimum industry certification; managed via administrative rule
  – Requires at least one person with endorsement be on site “supervising” the work
  – Contractors must submit copies of inspection/test reports within 30 days of the service date
  – Provided local enforcement options on contractor, individual or both
  – Adopted NFPA 96 locally
Implementation

• Ordinance passed

• Updated internal processes, training & database
  – Issuing and verifying individuals endorsements *
  – Routing and turnaround times of submittals *

• Adequate notification to community
  – Wide distribution – unknown how many contractors didn’t participate in earlier planning phase
  – Prevent plan submittal delays
  – Test reports not accepted; requiring follow up *

* Indicates quantifiable impact; no previous data
Benchmarking

- Established baseline values for future evaluation purposes
  - Determined percentages of time spent on existing inspection activities
  - Current false alarm rate due to improperly maintained fire protection systems
  - Number of occupancies that have protection systems and no record of a report
### Changes in Staff Time Allocation

- **Between 2008 and 2010,**
  - Time spent on regular “round the block” inspections dropped from 90% to 48%
  - Time spent on IT&M report reviews increased from 7% to 23%
  - Time was also redirected to Communications and handling program applications

**NOTE:** Percentages based on existing occupancy activities only, new construction & fire investigation related activities are not included

<table>
<thead>
<tr>
<th>Year</th>
<th>Communication</th>
<th>Contractor Endorsement Program</th>
<th>Document Submittals</th>
<th>Fireworks Inspection, Testing &amp; Maint.</th>
<th>Legal</th>
<th>Other</th>
<th>Regular</th>
<th>Special</th>
<th>Grand Total</th>
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IMPACT EVALUATION
Short Term Results

• Anecdotal experience identified significant changes after the implementation date
  – Multiple floors of a building tested by endorsed contractor found inoperable notification appliances; previously noted okay by contractor unable to obtain endorsement
  – Decrease in new construction inspection trips
  – Large amount of fire alarm batteries failing load test
  – Obstructed sprinkler pipes
Violation Example

Internal pipe inspection identified debris and sludge in 4” and 2” diameter pipes
Violation Example

Items removed during FDC back flush
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<tr>
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<th>Building 1</th>
<th>Building 2</th>
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<td>Alarm Initiating Devices</td>
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<td>Manual Pull Stations</td>
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<td>Ionization Detectors</td>
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<td>Horns (horn/strobe)</td>
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<td>Chimes</td>
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<tr>
<td>Building Temp.</td>
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</table>
Longer Term Results

• Increase in number of test reports submitted – number not doing tests on annual basis
• Change in violations noted on submitted reports
• Decrease in work done by contractors without endorsements
• Improved overall quality
• Decrease in false alarms
• Improved dollar losses
## Violations Counts by Code/Standard and Individual Section

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<td>05.04.01 - Sprinklers</td>
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<td>05.03.01 - Sprinklers - Testing</td>
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</table>

**Grand Total:** 765

**NFPA:** 671

**IFC 2009:** 376

**IFC 2006:** 242
OUTCOME EVALUATION
Loss Comparison: All Structure Fires When Sprinkler System Activated

- **Contents Loss**
- **Property Loss**

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
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<td>Effective</td>
<td>Not Effective</td>
<td>Effective</td>
<td>Not Effective</td>
<td>Effective</td>
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</tr>
</tbody>
</table>

Vision 20/20

MODELS IN FIRE PREVENTION

SYMPOSIUM 2012
“Cleaned” by non-endorsed contractor on 1/2/12 and caught on fire 1/10/12
Recommendations
Recommendations

• Stakeholders – primarily contractors
  – Identify stakeholders and develop avenues for disseminating information
  – Maintain open, honest, frequent communication with stakeholders
  – Allow stakeholders a means to provide feedback

• Community
  – Identify influential business owners; educate them on issues
  – Develop and provide educational material
  – Contractors will disseminate information with their customers
Recommendations

• Political impact
  – Prepare and educate local policy decision makers

• Internal processes
  – Clearly define internal business processes
  – Prepare for changes in workflow
    • Changes in activity codes
    • Training needed on data collection
    • Provide information on website and update regularly
• It’s not a perfect system
  – Human involvement (error) still exists

A single sprinkler head contained a small fire; when monitoring company did not notify
fire dept., the water filled the basement for several hours.
Reference Material Available

- Documents (.doc format)
  - Adopting Ordinance – fits within 2009 IFC *
  - Administrative Rule 9.01 – outlines requirements for obtaining each individual endorsement type
  - Administrative Rule 9.02 – interpretation regarding internal employees
  - Frequently Asked Questions
  - All necessary contractor and individual applications
  - Service report examples (fire alarm, kitchen hood)

- [http://www.vanfire.org](http://www.vanfire.org)
  - Fire Marshal > Fire Protection Contractors
Reference Material Available

• Documents (.doc format)
  – Public Information Bulletins
    • General IT&M Requirements for all Fire Protection Systems
    • Automatic Fire Sprinkler System IT&M Requirements
    • Fire Alarm System IT&M Requirements
    • Metal Thieves Target Fire Protection Equipment: Advice for Building Owners
  – Contractor selection guides
    • Selecting a Commercial Kitchen Hood/Duct Cleaning Provider
    • Selecting a Fire Alarm Service Provider
    • Selecting a Fire Sprinkler Service Provider

• [http://www.vanfire.org](http://www.vanfire.org) Fire Marshal > Business Owners
Reference Material Available

• For Firehouse Software Users, multiple files can be provided in .fhz format for installing
  – Occupancy User Fields
  – Inspection/Activity Lookup Codes
  – Inspection/Activity User Fields
  – Data Export Query & Corresponding Excel File (for those users not using FH Analytics)