Commonwealth of Virginia

Certified Automatic Sprinkler Inspector

Joshua Davis

- Assistant State Fire Marshal
- Community Risk Reduction
- Joshua.davis@vdfp.Virginia.gov

Objectives:

- Community Risk Reduction SCEF Program
- Understand changes in the Code of Virginia on certification for fire sprinkler inspector
- Learn how the certification works
- Learn what is required for recertification
- Understand remote inspection and testing

The 3 E's of fire protection:

- Education
- Engineering
- Enforcement

Statewide Collaboration and Engagement Framework (SCEF) program:

SCEF Goals

- Increase the number of working smoke alarms in the United States,
- Increase the knowledge surrounding the principles and practices of CRR,
- Integrate CRR and risk management into all disciplines within the U.S. fire and emergency services,
- Bring diversity and inclusiveness to CRR discussions at the State and National level,
- Foster a supportive environment for cultural change across the fire service to support CRR and,
- Build a nationwide coalition of diverse teams to address emerging issues and support legislation for safer, healthy and resilient communities

Community Risk Reduction:

- Education
- Enforcement
- Engineering
- Economic Development
- Emergency Response

Licensing in the Virginia:

- Senate Bill 1774 -Amends and adds sections to the Code of Virginia in particular sections 54.1-1147 and 54.1-1148 relating to the Board of Contractors; requirements for licensure; certification of fire sprinkler inspectors.

Ref. Slides and information in this presentation provided by, VSC Fire and Security

Code of Virginia -54.1-1147:

- A. No person may perform or offer to perform inspections of automatic fire sprinkler systems…unless certified…under this provision.
- B. The Board shall certify as an automatic fire sprinkler system inspector any person who receives (i) a level II or higher Inspection and Testing of Water-Based Systems certificate issued through the National Institute for Certification in Engineering Technologies (NICET) or

(ii) (similar program). The Board may suspend or revoke certification…for any person that does not maintain a certification.

Code of Virginia-54.1-1147:

- C. …A person lacking certification…but participating in a training or apprenticeship program may perform…inspections so long as (i) (they) are accompanied by a certified…inspector and (ii) …inspection forms are signed by the certified…inspector.

54.1-1148 Continuing Education:

The Board shall establish…requirements for continuing education as a prerequisite to renewal…The Board shall require evidence of knowledge of changes to the Virginia Statewide Fire Prevention Code.

These provisions shall become effective July 1, 2021.

NICET requirements for certification:

- Level I
  - 6 months full -time equivalent with water-based fire protection systems inspection and testing activities. This can include up to 3 months of any combination of
    - Water-based systems installation, service, maintenance and/or acceptance testing
    - Government enforcement of inspection and testing requirements
    - Insurance review of inspection and testing requirements
    - Water-based systems layout
    - Fire alarm inspections

NICET requirements for certification:

- Level II
  - The minimum required for Level I plus 18 months of full-time equivalent work experience in the inspection and periodic testing of water-based fire protection systems. This 18 months may include up to 3 months of any combination of
    - Water-based systems installation, service, maintenance and/or acceptance testing
    - Government enforcement of inspection and testing requirements
    - Insurance review of inspection and testing requirements
    - Water-based systems layout
    - Fire alarm inspections

NICET Recertification requirements:

- Recertification period is 3 years
- 90 points are required per certification area
- 72 points are offered for active practitioner status
- 18 points every 3 years is required for each certification area
- Crossover points are allowed where applicable

What does this mean for the Industry?

- Acceptance Testing.
- Periodic inspection and testing.
- Integrated testing

New Trends:

- Automated inspection and testing is permitted by both NFPA 25 and 72
- Not every device is suitable for automated testing

NFPA 25 Automated Testing:

Water flow switches can be automatically tested provided they produce the same action as required by NFPA 25 i.e. flow water

Recirculating type of device or a solenoid that automatically operates and 'flows' water is the method that meets the intent of the standard as currently written

If Automated testing is utilized then water flow switches must be Manually flowed (discharged) every 3 years

NFPA 72- automated testing:

- Can use a solenoid to auto test water flow switch, but the solenoid must be monitored for failure.
- FACP can self test sensitivity of a smoke detector but not the activation of a smoke detector.

Other equipment:

Transducers to monitor system pressure instead of having to read gauges

Cameras to monitor valves, stock height or to provide 'access' to areas that are usually not accessible due to safety considerations (confined Space)

Temperature sensors

Remotely operated valves –including motorized valves

Drones

Corrosion monitoring stations

Other technology:

Uses of other 'time saving' technologies is also permitted provided the same action is performed

Time savings=labor savings
Better data-remove guess work

Unfortunately, costs of ownership are not always considered during the design and construction phase

VSC (Jeff Lewis) Case study:

A customer location had 46 check valves installed in wet systems that required 5 year internal inspection:

- Visually inspect the internal components
- Verify that equipment moves freely

In addition; all gauges (46 systems) were to be replaced with one cross main and one branch line being internally inspected on ½ of the systems.

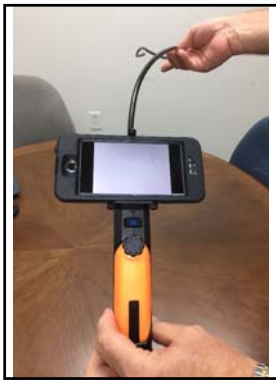
VSC had a window of 5 days to complete all work

Method:

Involved the use of 5 technicians for the 5 days and involved 2.5 to 3 hours per valve.

Each check valve coupling would have to be disassembled along with the drain connection as well as the cross main at the top. The top part of the riser would then be jacked out of position to allow for inspection. It would then be lowered back into position and everything reconnected.

Total of 200 labor hours to complete job.



Could VSC some how utilize the ½ plug?

This bore scopes has a 1/2 inch utilizes a cell phones camera cable

VSC was able to accomplish

- Were able to visually inspect the check valve and with the use of a wire verify its proper operation through its entire range of motion
- One technician utilizing this method completed all 46 valves in one day at 5 to 10 minutes per valve
- Entire project was reduced to 3 days total with 4 technicians completing all the other work in day 2 and 3
- 80 labor hours versus 200

What does all this mean for the Fire Officials?

In order to be effective automated and/or other technology must meet the same performance guidelines as the standard

It has to offset the costs of ownership, or increase productivity while maintaining fire system reliability

Why are we talking about this?

LIMITED RESOURCES-WE HAVE TO DO MORE WITH LESS

WORKING WITHIN CUSTOMERS BUDGET

WORKING WITHIN ENVIRONMENTAL CONSTRAINTS OR GOALS

Virtual and Augmented Reality:

- These two technologies are starting to make in roads into the construction industry
  - Things like construction site coordination between trades
  - Being able to see the systems in 3 D
  - Training
- VSC just completed a 90 day VR pilot program
  - 298 employees through the program
  - Each participant had to answer a set of questions before and after

Classification of deficiencies:

Not all deficiencies have the same impact on a system's performance. You may wish to treat the correction of all deficiencies in the same manner; it may not be practical

The key word is 'reasonableness'

Purpose of NFPA 25 is to provide a reasonable degree of protection

Non-critical:

- These are deficiencies that do not have a material effect on the ability of the fire protection system or unit to function in the event of a fire.
- A lightly loaded sprinkler
- Missing recessed or flush escutcheons, cover plates with deflector and operating element in the correct position
- Missing information signs

Critical:

- A deficiency that, if not corrected, can have a material effect on the system's ability or unit to function
- Leaks-dripping
- Obstructed sprinklers
- One sprinkler (standard response) and less than 50% of sprinklers within a compartment are damages, loaded, corroded etc.
- Gauges in poor condition
- Alarm switch not operating
- Improper mix of antifreeze

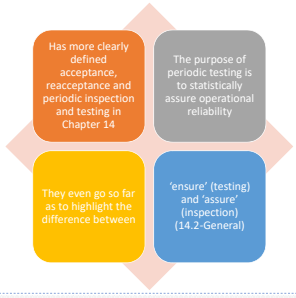
Impairments

- Highest priority-a condition where a system, unit or portion is out of order and will not work in the event of a fire
- Closed control valves
- Two or more (standard response) in a compartment that are loaded, corroded, damaged, painted etc.
- Fast response sprinklers-any
- Concealed sprinkler coverplates glued or caulked to ceiling
- Fire pump that does not start automatically

NFPA 25

Keep in mind NFPA 25 is not the standard to use for evaluating the adequacy of the design or installation of a water-based system-it is a wear and tear, operational status standard

NFPA 72



In short

- Acceptance Testing
- Commissioning
- Reacceptance testing
- Periodic inspection and testing
- Integrated testing

Periodic inspection and testing

You are allowed by NFPA standards and the IFC to inspect and test each system individually without integration:

- Elevator recall not part of a NFPA 72 inspection and test
- Central station monitor of alarms is not part of NFPA 25
- Fire doors not part of NFPA 72
- Fire dampers not part of NFPA 72
- Smoke control systems

Integrated testing

COVERED BY A NEW STANDARD - NFPA 4

IT IS A VOLUNTARY STANDARD-BY INTENTION

THERE IS NOTHING IN THE STATEWIDE FIRE PREVENTION CODE THAT REQUIRES INTEGRATED TESTING, ACCEPTANCE TESTING OR REACCEPTANCE TESTING AT PERIODIC INTERVALS-IT ALWAYS BASED UPON CHANGES THAT OCCUR WITHIN THE OCCUPANCY OR AN OCCUPANCY CHANGE

ACCEPTANCE AND REACCEPTANCE TESTING IS NOT REQUIRED TO BE AN INTEGRATED PROCESS

Integrated testing

More often than not you are dealing with multiple trades

- Fire alarm contractor
- Fire sprinkler contractor
- Kitchen Fire Suppression contractor
- Mechanical contractor (HVAC, equipment shutdowns)
- Elevator contractor
- Fire door contractor
- Smoke control

Complications

- Lease agreements:
- Often the property management is responsible for the base building services
- Tenants are responsible for any of their own equipment
  - Security equipment such as magnetic door locks, card access
  - Kitchen hood suppression
  - Clean agent systems
  - Specialty extinguishers

Examples

- Retail
  - Anchor stores are usually separate
- Lease space
  - Banking, financial, loan, mortgage and legal often have their own security systems and sometimes special extinguishing systems
- Single tenant –the tenant may have responsibility for everything
- Franchise agreements

Questions?

Joshua Davis
Assistant State Fire Marshal

- joshua.davis@vdfp.Virginia.gov
- 804 396-0525