



CT Chapter

2019 CT Private Well
Conference
Sprinkler System Basics

**Residential Homes &
Fire Suppression Systems**

April 23, 2019



Robert Hollis

- Fire sprinkler since 1971
- Owned Central Connecticut Fire Commercial and Residential Sprinklers.
- 22 years on FP Licensing
- BOD – ABC Construction Ed Center
- Tech. Advisor-Wilcox Tech
- Chair – AFSA CT Chapter

John Viola, FPE

- Fire Sprinkler since 1970
- JFV Engineering, LLC
- Owned HFP Fire Sprinkler
- Representative on NFPA 13D, 13R, and NFPA 15
- Registered FPE in MA
- Licensed AFSLT in CT
- Chair AFSA National 1998-1999



How and When Sprinklers Operate



Sprinkler Operation

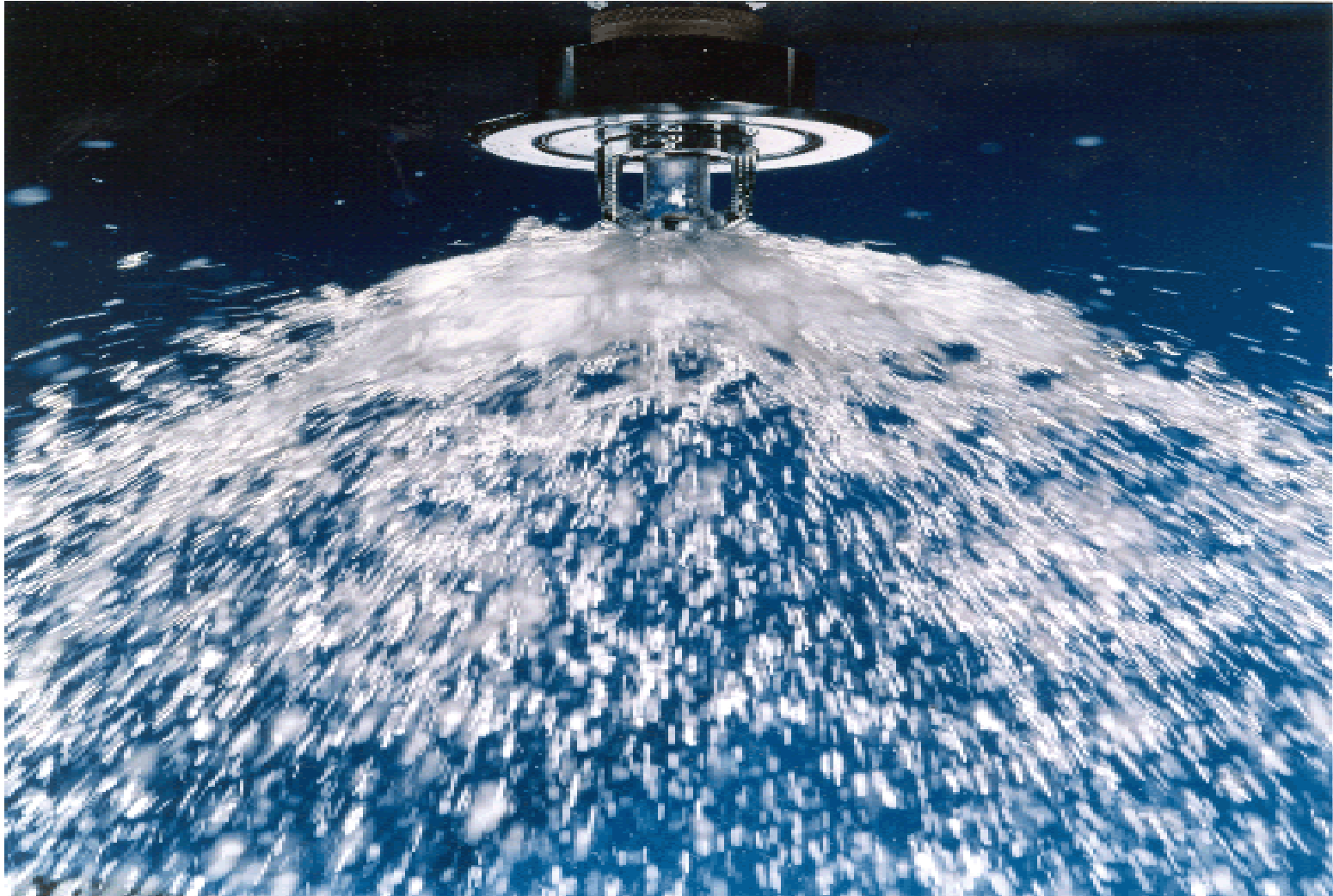
Only the sprinkler head that is effected by the heat source or is physically damaged will activate.





Sprinkler Operation

The water will continue to flow until manually shut off.





Sprinkler Demonstration

Test 1— Fire Growth & Spread with No Sprinklers



*10 Seconds
After Ignition*



*30 Seconds
After Ignition*



*45 Seconds—Near
Flash Over Conditions*

Test 2— Fire Growth & Suppression with Fire Sprinkler



*10 Seconds
After Ignition*



*22 Seconds—
Sprinkler Operates*



*35 Seconds -
Near Suppression*



Home Fire Timeline





System Demand Requirements



- Residential System
Demand is based on the sprinkler head used with flow and pressure requirement for that head. Normally two (2) heads (~30 GPM) are anticipated to go off to control a fire and allow the occupants to exit.
- Sprinkler systems water supplies are calculated for a maximum of 10 minutes. This allows enough time for the occupants to evacuate and seek refuge away from the building. It is anticipated the fire department is coming.

Code requires a properly designed system to be created by a qualified individual with qualifications and knowledge of NFPA 13D and other applicable codes and standards. Fire Department review and acceptance of the design is a critical aspect of the fire sprinkler installation.



Residential System Water Supplies

**Accepted water supplies
include: public water,
storage tanks, wells, ponds,
pools or other acceptable
sources**



Examples of self-contained water supplies with pumps



These tanks represent approximately 300 Gallon capacities





System Types



Stand Alone vs Multipurpose





Codes, Standards, Laws



How to Standards





NFPA 13D – Standard for the installation of Sprinkler Systems in One- and Two- Family Dwellings and Manufactured Homes

1.2.1 The purpose of this standard shall be to provide a sprinkler system that aids in the detection and control of residential fires and thus provides improved protection against injury and life loss.



13D Continued

1.2.2 – A Sprinkler system shall be designed and installed in accordance with this standard to prevent flashover (total involvement) in the room of the fire origin, where sprinklered, and to improve the chance for occupants to escape or be evacuated.

A flashover is the near-simultaneous ignition of most of the directly exposed combustible material in an enclosed area. When certain organic materials are heated, they undergo thermal decomposition and release flammable gases.

Flashover occurs when the majority of the exposed surfaces in a space are heated to their autoignition temperature and emit flammable gases. 900 – 1100 degrees F



The Connecticut State Building Code (IBC 2015 with CT supplement) This Code recognizes NFPA 13D, 2013 Edition as the current installation standard for residential sprinkler systems.



CT General Statutes Title 20 – Professional and Occupational Licensing.....

Chapter 399a – New Home
Construction Contractors
Section: 20-417d



New Home Construction Contractors are required to the consumer a copy of the New Home Construction Contractor's Certificate and a written notice..... ***The New Home Construction Contractor, or his agent, shall also discuss with the consumer the installation of an automatic fire extinguishing system in the home.***



Materials



Sprinkler Heads

There are hundred's of styles of sprinkler heads.





More Examples of Sprinkler Heads





Dry Sprinkler Heads

Used in unheated area's such as walk in coolers and freezers. These heads are required to be tested or replaced every 10 years.





CPVC – Pipe and fittings Chlorinated Polyvinyl Chloride – Stand Alone



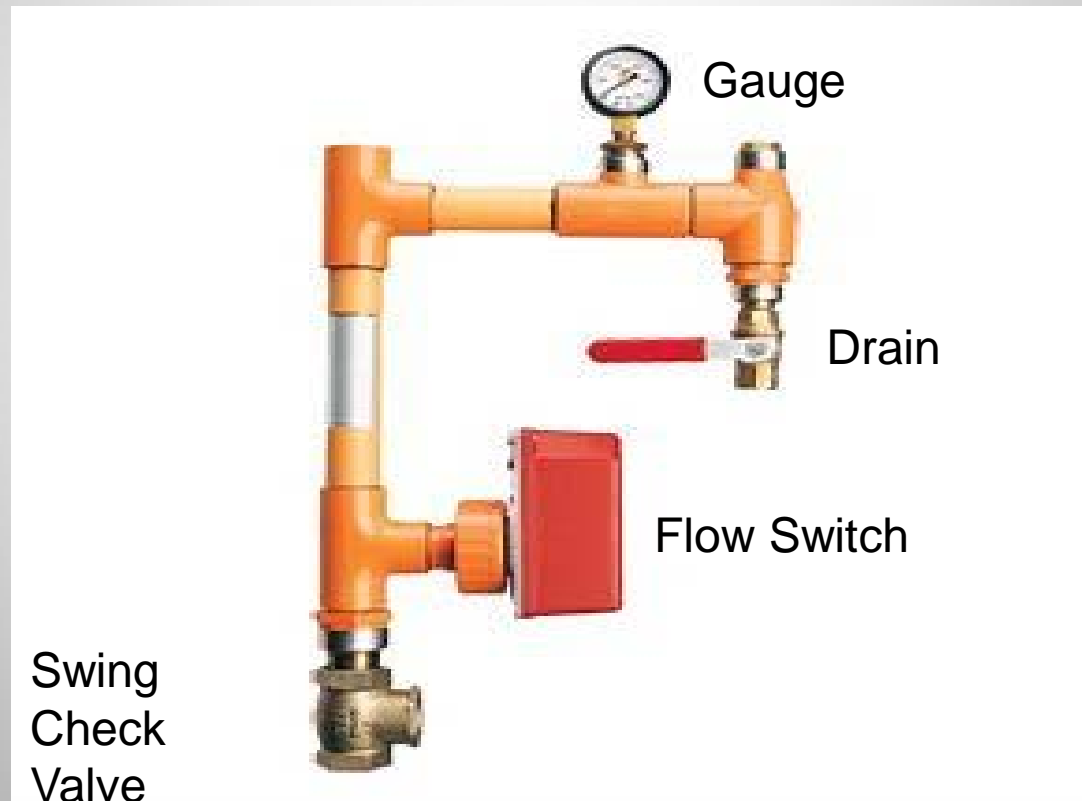


CPVC Hanger Types





Sprinkler Devices on CPVC





1" Back-Flow Preventer





PEX Sprinkler Piping System Multipurpose Systems





Typical Hanger/Fitting





Cold Water Network Piping





How can Private Wells provide the pressure and flow to residential fire sprinkler systems??



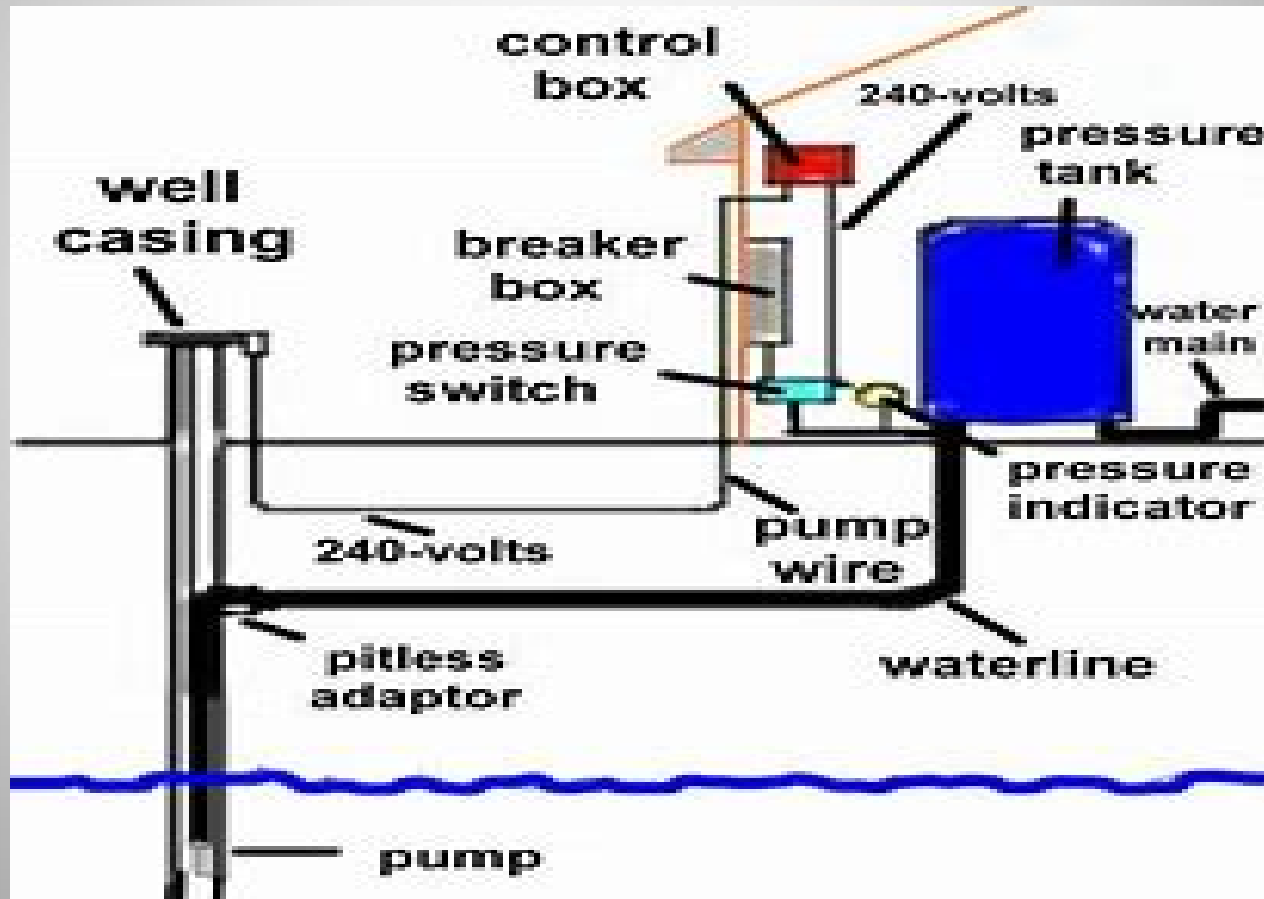
Are there submersible well pumps or well capacities that can deliver ~ 40 psi @ ~ 30 GPM?



Is there a reservoir of water
equal to ~ 300-400 gallons =
10 minute supply at 40 GPM.



Typical Private Well Figure





Questions??