National Fire Protection Association

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M E M O R A N D U M

TO: NFPA Technical Committee on Residential Sprinkler Systems (AUT-RSS)

FROM: Joanne Goyette

DATE: March 3, 2011

SUBJECT: NFPA 13D ROP TC Letter Ballot (A2012)

The ROP letter ballot for NFPA 13D is attached. The ballot is for formally voting on whether or not you concur with the committee's actions on the proposals. Reasons must accompany all negative and abstention ballots.

Please do not vote negatively because of editorial errors. However, please bring such errors to my attention for action.

Please complete and return your ballot as soon as possible but no later than **Tuesday, March 15, 2011.** As noted on the ballot form, please return the ballot to Joanne Goyette either via e-mail to jgoyette@nfpa.org or via fax to 617-984-7110. You may also mail your ballot to the attention of Joanne Goyette at NFPA, 1 Batterymarch Park, Quincy, MA 02169.

The return of ballots is required by the Regulations Governing Committee Projects.

Attachments:

Proposals
Letter Ballot

13D-1 Log #CP2 AUT-RSS Final Action: Accept in Part
(Entire Document)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Review entire document to: 1) Update any extracted material by preparing separate proposals to do so, and 2) review and update references to other organizations documents, by preparing proposal(s) as required.
Substantiation: To conform to the NFPA Regulations Governing Committee Projects.
Committee Meeting Action: Accept in Part
Revise the following to latest editions:
2.2 NFPA Publications
NFPA 25, 2008 –to 2011 edition
2.3.1 ANSI Publications
ANSI A17.7 Safety Code for Elevators and Escalators, 2004 –to 2010 edition
2.3.2 ASME Publications
ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250, 1998
- to the ASME B16.1 Cast Iron Pipe Flanges and Flanged Fittings, Classes 25, 125, and 250, 2010
ASME B16.3, Malleable Iron Threaded Fittings , Classes 150 and 300, 1998 – to the 2006 edition
ASME B16.4, Cast Iron Threaded Fittings, Classes 125 and 250, 1998 – to the
ASME B16.4, Gray Iron Threaded Fittings: (Classes 125 and 250), 2006
ASME B16.5, Pipe Flanges and Flanged Fittings, 1996 – to the
ASME B16-5, Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard, 2009
ASME B16.9, Factory-Made Wrought Steel Buttwelding Fittings, 2001 – to the ASME B16.9, Factory-Made Wrought Buttwelding Fittings, 2007
ASME B16.11, Forged Steel Fittings, Socket-Welding and Threaded, 1996 – to the 2009 edition
ASME B16.18, Cast Copper Alloy Solder Joint Pressure Fittings, 1994 - to the 2001 edition
ASME B16.22, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings, 1995 – to the 2001 edition
ASME B16.25, Buttwelding Ends, 1997 – to the 2007 edition
2.3.3 ASTM Publications
ASTM A 53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless, 2007 – to the 2010 edition
ASTM A 135, Standard Specification for Electric-Resistance-Welded Steel Pipe, 2006 to the 2009 edition
ASTM A 234, Standard Specification for Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service, 2007 – to the 2010 edition
ASTM B 88, Standard Specification for Seamless Copper Water Tube, 2003 – to the 2009 edition
ASTM B 251, Standard Specification for General Requirements for Wrought Seamless Copper and Copper-Alloy Tube, 2002 – to the 2010 edition
ASTM B 813, Standard Specification for Liquid and Paste Fluxes for Soldering Applications of Copper and Copper-Alloy Tube, 2009 – to the 2010 edition
ASTM F 437, Standard Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80, 2006 – to the 2009 edition
ASTM F 438, Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40, 2004 – to the 2009 edition
ASTM F 439, Standard Specification for Socket-Type Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80, 2006 – to the 2009 edition
ASTM F 442, Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe (SDR-PR), 2005 – to the 2009 edition
2.3.4 AWS Publications
AWS B2.1, Specification for Welding Procedure and Performance Qualification, 2005 – to the 2009 edition
Committee Statement: No extracts in Chapters 1-5. Updated references in Chapter 2.

13D-2 Log #46 AUT-RSS **Final Action: Reject**
(1.1.3)

Submitter: Larry W. Owen, Dooley Tackaberry, Inc.
Recommendation: Add text to read as follows:
1.1.3 In instances where a water mist system is installed, the specific design and installation requirements are set forth in NFPA 750 Standard on Water Mist Fire Protection Systems.
Substantiation: Water Mist has been approved and installed in a wide range of sprinkler applications globally. For installations of water mist systems in sprinkler applications, all installation requirements shall be determined by NFPA 750. This change is proposed for avoidance of confusion by AHJs in reviewing plans and installations for water mist.
Committee Meeting Action: Reject
Committee Statement: Water mist systems are not sprinkler systems and are outside the scope of the document. NFPA 13D Section 1.4 "Equivalency" would adequately cover water mist systems. NFPA 750 does not have any specific design criteria on residential water mist design that the NFPA 13D Committee could review to see if it meets the intent of NFPA 13D. For example, how can a water mist system comply with the listing requirements of a residential sprinkler that is required to comply with UL1626? The Committee is not against the concept of future water mist systems to be used to save lives in residential occupancies covered under the scope of NFPA 13D, but because there are specific requirements in NFPA 750 tat cover this issue in detail it cannot accept this code proposal.

13D-3 Log #3 AUT-RSS **Final Action: Reject**
(1.3, 1.3.1, and 1.3.2)

Submitter: Eddie Phillips, Southern Regional Fire Code Development Committee
Recommendation: Insert a new 1.3 as follows and renumber the remaining:
1.3 Application.
1.3.1 This standard shall apply to the following:
(1) Character and adequacy of water supplies
(2) Selection of sprinklers
(3) Fittings
(4) Piping
(5) Valves
(6) All materials and accessories
1.3.2 This standard shall also apply to "multipurpose piping systems" used to carry water for both fire protection and domestic needs.
Substantiation: The inclusion of an "application" section is consistent with the "manual of style" and consistent with the layout of NFPA 13. The proposed language is almost a mirror with NFPA 13 1.3 Application other than the NFPA 13 language in 1.3.2 regarding "combined service mains" has been replaced with the terminology referencing "multipurpose piping systems." Just as the "combined service main" language is important in the application section of NFPA 13, the "multipurpose piping" language is important in the application section of 13D to provide clarity on the actual applicability of the standard to these types of systems.
Committee Meeting Action: Reject
Committee Statement: This adds extra language that is not needed.

13D-4 Log #4 AUT-RSS **Final Action: Accept**
(1.4, 1.4.1, and 1.4.2)

Submitter: Eddie Phillips, Southern Regional Fire Code Development Committee
Recommendation: Revise section 1.4 as follows:
1.4 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard. ~~Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency. The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.~~
1.4.1 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.
1.4.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.
Substantiation: This is an editorial change to bring the layout of 1.4 in NFPA 13D into a consistent format with NFPA 13 and NFPA 13R. Both of those standards separate out the last two sentences in 13D's current 1.4 into two sub-sections of 1.4.1 and 1.4.2.
Committee Meeting Action: Accept

13D-5 Log #47 AUT-RSS **Final Action: Reject**
(2.2)

Submitter: Larry W. Owen, Dooley Tackaberry, Inc.
Recommendation: Add text to read as follows:
NFPA 750 Standard on Water Mist Fire Protection Systems
Substantiation: Water Mist has been approved and installed in a wide range of sprinkler applications globally and for clarity the NFPA 750 Standard on Water Mist Fire Protection Systems should be included in NFPA 13D as a Referenced Publication.
Committee Meeting Action: Reject
Committee Statement: Water mist systems are not sprinkler systems and are outside the scope of the document. NFPA 13D Section 1.4 "Equivalency" would adequately cover water mist systems. NFPA 750, *Standard on Water Mist Fire Protection Systems*, does not have any specific design criteria on residential water mist design that the NFPA 13D Committee could review to see if it meets the intent of NFPA 13D. For example, how can a water mist system comply with the listing requirements of a residential sprinkler that is required to comply with UL1626? The Committee is not against the concept of future water mist systems to be used to save lives in residential occupancies covered under the scope of NFPA 13D, but because there are specific requirements in NFPA 750 that cover this issue in detail it cannot accept this code proposal.

13D-6 Log #7 AUT-RSS **Final Action: Accept in Principle**
(2.3.2 and Table 5.2.5)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add the following to 2.3.2:
ASME B16-15 Cast Bronze Threaded Fittings
Add the following to table 5.2.5
Cast Bronze Threaded Fittings ASME B16-15
Substantiation: Brass is an allowable fitting material in plumbing codes. Many purveyors do not allow galvanized fittings prior to backflow prevention. This standard should recognize it as allowable.
Committee Meeting Action: Accept in Principle
Add the following to 2.3.2:
ANSI/ASME B16.15 Cast Bronze Threaded Fittings
Add the following to Table 5.2.5
Cast Bronze Threaded Fittings ANSI/ASME B16.15
Committee Statement: Corrected the reference to use correct designation.

13D-7 Log #92 AUT-RSS **Final Action: Reject**
(2.3.3 and 5.2.1.1)

Submitter: Mark Fessenden, Tyco Fire Suppression and Building Products
Recommendation: Add new text to Section 2.3.3:
ASTM B 43, Standard Specification for Seamless Red Brass Pipe, Standard Sizes, 2009.
Add new text to Table 5.2.1.1.
Standard Specification for Seamless Red Brass Pipe ASTM B 43.
Substantiation: NFPA 13D does not currently include a reference to a brass pipe standard. The specific benefit of the proposed modification would be the allowance of brass pipe nipples on system risers or on test connections.
Committee Meeting Action: Reject
Committee Statement: There is not enough substantiation to adequately address material types and associated pressures.

13D-8 Log #8 AUT-RSS **Final Action: Reject**
(2.3.3 and Table 5.2.1.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add the following to 2.3.3:
ASTM B687-99 Standard Specification for Brass, Copper and Chromium-Plated Nipples
Add the following to table 5.2.1.1
Standard Specification for Brass, Copper and Chromium-Plated Nipples ASTM B687-99
Substantiation: Brass is an allowable piping material in plumbing codes. Many purveyors do not allow galvanized piping prior to backflow prevention. This standard should recognize it as allowable.
Committee Meeting Action: Reject
Committee Statement: There is not enough substantiation to adequately address material types and associated pressures.

13D-9 Log #9 AUT-RSS **Final Action: Reject**
(2.3.3 and Table 5.2.1.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add the following to 2.3.3:
ASTM B43-09 Standard Specification for Seamless Red Brass Pipe
Add the following to table 5.2.1.1
Standard Specification for Seamless Red Brass Pipe ASTM B43-09
Substantiation: Brass is an allowable piping material in plumbing codes. Many purveyors do not allow galvanized piping prior to backflow prevention. This standard should recognize it as allowable.
Committee Meeting Action: Reject
Committee Statement: There is not enough substantiation to adequately address material types and associated pressures.

13D-10 Log #6 AUT-RSS Final Action: Reject

(3.3.x Antifreeze Sprinkler System (New))

Submitter: Glossary of Terms Technical Advisory Committee,

Recommendation: Adopt the preferred definition of Antifreeze Sprinkler System from NFPA 13.

Antifreeze Sprinkler System. A wet pipe sprinkler system employing automatic sprinklers that are attached to a piping system that contains an antifreeze solution and that are connected to a water supply. ~~The antifreeze solution is discharged, followed by water, immediately upon orientation of sprinklers opened by heat from a fire.~~

Substantiation: The second sentence should be provided as an annex note because definitions should be in a single sentence. In this case, the second sentence describes the functions of the system, and not the system itself. This definition is the preferred definition from the Glossary of Terms. Changing to this definition complies with the Glossary of Terms Project.

Your technical committee has the following options:

a) Adopt the preferred definition

b) Modify the term to make it unique

c) Request that the Standards Council reassign responsibility for the term

d) Request that the standards council authorize a second *preferred* definition

Committee Meeting Action: Reject

Committee Statement: There is no rule that definitions need to be limited to a single line.

The proposed recommendation does not adequately represent the committee view of an antifreeze system.

13D-11 Log #89 AUT-RSS Final Action: Reject

(3.3.3 Dwelling)

Submitter: Dana Haagensen, MA Department of Fire Services

Recommendation: Revise definition to read as follows:

3.3.3 Dwelling. Any detached building~~, or any part of a townhouse structure that is separated from the remainder of the townhouse structure with fire resistance rated assemblies in accordance with local building code,~~ that contains no more than two dwelling units intended to be used, rented, leased, let or hired out to be occupied or that are occupied for habitation purposes.

Substantiation: This recommended change removes the expansion of the NFPA 13D scope that occurred with the 2010 edition with no technical substantiation. According to the NFPA Residential Sprinkler Handbook, NFPA 13D was originally intended for one/two-family detached homes and manufactured homes, an entirely different fire problem than for multiple family structures such as townhouses. The entire NFPA 13D standard is based on nationally collected fire data that is specific only to detached one/two-family homes. Using NFIRS data reporting codes, townhouses are specifically required to be entered with a Multi-Family Property Use Code while the reporting code for One/Two-Family Dwellings is specifically limited to detached One/Two-Family Dwellings. To properly justify the 2010 edition scoping change for NFPA 13D, the entire nation's fire reporting system would have to be changed and allowed to run for several years before any trends could be analyzed.

Committee Meeting Action: Reject

Committee Statement: Present intent of NFPA 13D is life safety.

NFPA 13D is intended to be applied to townhomes which apply with applicable building codes for one-and-two family homes.

13D-12 Log #CP3 AUT-RSS Final Action: Accept
(3.3.9.1, 4.1.4, 5.2.7, 8.3.2, 8.3.3, A.4.1.4)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Revise text as follows:

1. Undo all of the changes made by TIA No. 10-1 (Log #994) to sections 3.3.9.1, 4.1.4, 5.2.7, 8.3.2 and 8.3.3 returning NFPA 13D to the text of the published 2010 edition with the following changes:

2. Add a new definition as 3.3.9.1.1 and related annex note to read as follows:

3.3.9.1.1* Premixed Antifreeze Solution. A mixture of an antifreeze material with water that is prepared and factory-mixed by the manufacturer with a quality control procedure in place that ensures that the antifreeze solution remains homogeneous.

A.3.3.9.1.1 Where a tank is used as the water supply for the sprinkler system, the tank is not permitted to be filled with antifreeze.

3. Revise 4.1.4 and related annex note to read as follows:

4.1.4* Antifreeze Systems. ~~Before freezing weather each year, the following procedure shall be performed:~~

~~(1) Empty solution in the entire antifreeze system into convenient containers~~

~~(2) Bring solution to the proper specific gravity by adding concentrated liquid as needed, or prepare a new solution, in accordance with 8.3.3~~

~~(3) Refill system with the new or remixed solution~~

A.4.1.4 ~~Tests should be made by drawing a sample of the solution from valve B, as shown in Figure 8.3.3.3.1.1, two or three times during the freezing season, especially if it has been necessary to drain the building sprinkler system for reasons such as repairs or changes. A small hydrometer should be used so that a small sample is sufficient. Where water appears at valve B or where the test sample indicates that the solution has become weakened, the entire system should be emptied and then recharged as previously described.~~ Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the lower portion of the system than in the upper portions of the system. If the concentration is acceptable near the top, but too low near the water connection, it may mean that the system is becoming diluted near the water supply. If the concentration is either too high or too low in both the samples, it may mean that the wrong concentration was added to the system.

On an annual basis, test samples should be drawn from test valve B as shown in Figure 8.3.3.2.1(1), especially if the water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described.

Where systems are drained in order to be refilled, it is not typically necessary to drain drops that are less than 36 inches in length. Most systems with drops have insufficient volume to cause a problem, even if slightly higher concentration solutions collect in the drops. For long drops with significant volume, consideration should be given to draining drops if there is evidence that unacceptably high concentrations of antifreeze have collected in these long drops.

When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discarding it.

4.1.4.1 Annual Antifreeze Solution Test and Replacement Procedure.

4.1.4.1.1 Samples of antifreeze solution shall be collected by qualified individuals in accordance with 4.1.4.1.1.1 or 4.1.4.1.1.2 on an annual basis.

4.1.4.1.1.1 The system shall be drained to verify that (a) the solution is in compliance with 8.3.3, and (b) the solution provides the necessary freeze protection. Solution samples shall be taken near the beginning and near the end of the draining process.

4.1.4.1.1.2* Solution samples shall be taken at the highest practical elevation and the lowest practical elevation of the system.

A.4.1.4.1.1.2 If not already present, test connections (valves) for collection of solution samples should be installed at the highest and lowest practical locations of the system or portion of the system containing antifreeze solution.

4.1.4.1.2 The two samples collected in accordance with the procedures specified in 4.1.4.1.1.1 or 4.1.4.1.1.2 shall be tested to verify that the specific gravity of both samples is similar and that the solution is in compliance with 8.3.3. The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a

scale calibrated for the antifreeze solution.

4.1.4.1.3* If concentrations of the two samples collected in accordance with the procedures above are similar and in compliance with 8.3.3, then (a) the solution drained in accordance with 4.1.4.1.1.1 can be used to refill the system, or (b) the existing undrained solution tested in accordance with 4.1.4.1.1.2 shall be permitted to continue to be used. If the two samples are not similar and not in compliance with 8.3.3, then a solution in compliance with 8.3.3 shall be used to refill the system.

A.4.1.4.1.3 In the past, for some existing systems subject to extremely low temperatures, antifreeze solutions with concentrations greater than what is now permitted by NFPA 13D were used. Such high concentrations of antifreeze are no longer permitted. In situations where extremely low temperatures are anticipated, refilling the fire sprinkler system with a concentration of antifreeze solution currently permitted by the standard might not provide sufficient freeze protection without additional measures. Such measures might include converting the antifreeze system to another type of sprinkler system.

4.1.4.1.4 A tag shall be attached to the riser indicating the date the antifreeze solution was tested. The tag shall also indicate the type and concentration of antifreeze solution (by volume) with which the system is filled, the date the antifreeze was replaced (if applicable), the name of the contractor that tested and/or replaced the antifreeze solution, the contractor's license number, a statement indicating if the entire system was drained and replaced with antifreeze, and a warning to test the concentration of the antifreeze solutions at yearly intervals per NFPA 13D.

4. Add an asterisk to 8.3.3 and add a new A.8.3.3 to read as follows:

8.3.3* Antifreeze Systems.

A.8.3.3 Where protection of pipes from freezing is a concern, options other than antifreeze are available. Such alternatives include running the piping in warm spaces, tenting insulation over pipe, dry-pipe systems, and preaction systems.

5. Revise 8.3.3.2.1 to read as follows:

8.3.3.2.1* ~~For the purposes of this standard, pure glycerine shall mean chemically pure or United States Pharmacopeia 96.5 percent grade.~~ Unless permitted by 8.3.3.2.1.1, antifreeze solutions shall be limited to premixed antifreeze solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5%) at a maximum concentration of 48% by volume, propylene glycol at a maximum concentration of 38% by volume, or other solutions listed specifically for use in fire protection systems.

6. Add a new 8.3.3.2.1.1 to read as follows:

8.3.3.2.1.1. For existing systems, antifreeze solutions shall be limited to premixed antifreeze solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5%) at a maximum concentration of 50% by volume, propylene glycol at a maximum concentration of 40% by volume, or other solutions listed specifically for use in fire protection systems.

7. Delete 8.3.3.2.2 and 8.3.3.2.3 and related Annex material A.8.3.3.2.3.

~~8.3.3.2.2 Where sprinkler systems are supplied by public water connections, the use of antifreeze solutions other than water solutions of pure glycerine or propylene glycol shall not be permitted.~~

~~8.3.3.2.3* Percent solution by volume of glycerine–water and propylene glycol–water mixtures shall be in accordance with Table 8.3.3.2.3, Figure 8.3.3.2.3(a), and Figure 8.3.3.2.3(b).~~

8. Move Table 8.3.3.2.3 to the annex and renumber as Table A.8.3.3.2.1 while deleting the rows in the table dealing with glycerine and 40% water, glycerine and 30% water, propylene glycol and 50% water and propylene glycol and 40% water. Add an annex note so that the annex and Table would appear as follows:

A.8.3.3.2.1 See Table A.8.3.3.2.1.

****Insert Table A.8.3.3.2.1 Properties of Glycerine and Propylene Glycol Here****

9. Renumber 8.3.3.2.3.1 to 8.3.3.2.2.

8.3.3.2~~.3.1.~~2 The concentration of antifreeze solutions shall be limited to the minimum necessary for the anticipated minimum temperature.

10. Delete 8.3.3.2.4, 8.3.3.2.5 and Table 8.3.3.2.5.

~~8.3.3.2.4 Where public water is not connected to sprinklers, water solutions of glycerine, diethylene glycol, ethylene~~

Table A.8.3.3.2.1 Properties of Glycerine and Propylene Glycol

Material	Solution (by volume)	Specific Gravity at 60ºF (15.6ºC)	Freezing Point	
			ºF	ºC
Glycerine (C.P. or U.S.P. grade)	50% water	1.145	-20.9	-29.4
Hydrometer scale 1.000 to 1.200				
Propylene glycol	60% water	1.034	-6	-21.1
Hydrometer scale 1.000 to 1.200 (subdivisions 0.002)				

C.P.: Chemically Pure; U.S.P.: United States Pharmacopoeia 96.5%.

~~glycol, and propylene glycol shall be permitted to be used in antifreeze solutions.~~

~~8.3.3.2.5 Percent solution by volume of diethylene glycol=water and ethylene glycol=water shall be in accordance with Table 8.3.3.2.5.~~

~~Table 8.3.3.2.5 Antifreeze Solution to Be Used If Nonpotable Water Is Connected to Sprinklers~~

11. Renumber 8.3.3.2.6 as 8.3.3.2.3 and renumber A.8.3.3.2.6 as A.8.3.3.2.3. Also renumber Figure A.8.3.3.2.6 as Figure A.8.3.3.2.3.

8.3.3.2~~.6~~.3* An antifreeze solution with a freezing point below the expected minimum temperature for the locality shall be installed.

A.8.3.3.2~~.6~~.3 Beyond certain limits, an increased proportion of antifreeze does not lower the freezing point of the solution (*see Figure A.8.3.3.2.3*). Glycerine, diethylene glycol, ethylene glycol, and propylene glycol never should be used without mixing with water in the proper proportions, because these materials tend to thicken near 32°F (0°C).

12. Renumber 8.3.3.2.7 as 8.3.3.2.4 and revise to read as follows:

8.3.3.2~~.7~~.4 The specific gravity of the antifreeze shall be checked by a hydrometer with a scale having 0.002 subdivisions in accordance with Figure 8.3.3.2.4(a) and 8.3.3.2.4(b).

13. Renumber Figure 8.3.3.2.3(a) as Figure 8.3.3.2.4(a) and delete the 50% curve.

14. Renumber Figure 8.3.3.2.3(b) as Figure 8.3.3.2.4(b) and delete the 60% and 70% curves.

Substantiation: This TIA was developed in response to an NFPA Standards Council directive on the subject of antifreeze use in sprinkler systems. Those members of the NFPA Technical Committee (TC) on Residential Sprinkler Systems that participated in conference call meetings on October 15, 2010 and October 22, 2010, and a task group of the committee that met via conference call on October 20, 2010 developed this proposed TIA. Via a vote of 14 in favor and 4 against, a majority of the members present on the October 22, 2010 conference call meeting finalized the language of this TIA and agreed to move forward with the processing of the TIA.

The action of TIA 10-1 (SC 10-8-18 / TIA Log #994), that was issued by the Standards Council and that has the effect of banning antifreeze systems in all dwelling units, makes this TIA necessary. The ban on all antifreeze systems in dwelling units is more stringent than it needs to be. There are lower concentrations of antifreeze solutions that are effective at preventing the sprinkler system from freezing and have been proven not to contribute to the heat release rate of the fire, but the previous TIA's have banned these concentrations of antifreeze from being used, placing a hardship on the design of fire sprinkler systems in residential occupancies.

This proposed TIA puts back the option of using antifreeze systems in NFPA 13D with a number of new limitations. In addition, the language of NFPA 13D that requires the annual test of the antifreeze has been modified to meet the new criteria (which will also be consistent with NFPA 25). The new material for NFPA 13D is defended as follows:

1. Ethylene glycol and diethylene glycol have been eliminated because they are poisons and because we know them to be combustible liquids. Research has not been performed to determine the extent that they may or may not contribute to the heat release rate of a fire. In the absence of such data, and knowing that such a small percentage of sprinkler systems utilize these solutions, they have been banned until such time as more research can be performed to quantify their experience. This is not considered to create a problem because a substitute solution (glycerine) is available.

2. Glycerine solutions up to 50% (by volume) are permitted under certain conditions because testing performed by both UL and the FPRF showed that solutions at this concentration had the same effect as pure water on the fire hazards considered by the test program under certain conditions of system pressure and sprinkler orifice size. The committee is aware that a 55% glycerine solution produced unsatisfactory results for certain fire scenarios; however, the committee believes that the conditions under which the 50% gyclerine solution is permitted includes a sufficient safety factor when only premixed solutions are permitted. Additionally, the manufacturers of glycerine antifreeze solutions indicate that the quality of the premixed solutions can be held to ± 1% of the specified concentration which is believed to be sufficient for the intended use.

3. Propylene glycol solutions up to 40% (by volume) are permitted under certain conditions because the testing performed by both UL and the FPRF showed that solutions up to this concentration had the same effect as pure water on the fire hazards considered by the test program under certain conditions of system pressure and sprinkler orifice size.

4. The language was expanded to include other listed antifreeze products that may be developed in the future. The committee is aware of at least one project underway to get a non-combustible antifreeze recognized and there are some

other products that have potential. A listing process would allow these products to come to the market without having to process another TIA.

5. The use of factory premixed solutions is required because solutions that are not mixed properly have a possibility of separating from the water, which allows the pure concentrate (which is heavier than water) to drop out of solution and collect in drops or low points of the system. Such concentrations are combustible and could present problems during fires.

6. The Table on specific gravity of antifreeze solutions was moved to the annex since it is informational in nature and not intended to be a limit on the kind of antifreeze that can be used. The table has been modified by eliminating the concentrations that are no longer permitted. Lower percentage solutions are permitted by NFPA 13, but the specific gravity is not known at this time.

7. The density curves for ethylene glycol were eliminated because these solutions are not longer permitted.

8. Guidance has been provided in an annex note for dealing with drops. Small drops might end up with slightly higher concentrations of antifreeze solutions, but the volumes involved are not likely to cause the problems seen in the field with larger volume solutions. It is impractical to believe that all of the small drops in a system can be completely drained each time the system is drained. Where larger volume drops might have higher concentrations of solutions, consideration needs to be given to draining these larger drops.

9. The information on testing the antifreeze systems is necessary because the Standards Council action on TIA 994 eliminated the rules for maintaining antifreeze systems. Even if antifreeze systems are never again installed in new systems, we still need some rules for testing the existing systems that were installed in accordance with previous editions of NFPA 13D and could not be converted to some other type of system.

10. Glycerine solutions up to 50% (by volume) are permitted for existing systems because testing performed by both UL and the FPRF showed that solutions at this concentration had the same effect as pure water on the fire hazards considered by the test program. This test program included extremely severe fire scenarios coupled with small orifice sprinklers specifically designed to create small water droplets, which were shown in the phase 1 tests to be conducive to igniting antifreeze mixtures. The fact that the 50% glycerine solutions did so well in the tests, shows that they can be used in existing systems. The NFPA has acknowledged this in their technical alert bulletins giving people guidance on what to do until TIAs can be processed for all of the applicable NFPA documents. A slightly different threshold is being proposed for existing systems rather than new systems due to the inability for existing sprinkler systems to be redesigned. Once a sprinkler system has been installed in a climate that needs 50% glycerine, it is a very difficult and expensive task to change that sprinkler system in order to use a lower percentage concentration. The fire testing performed to date has shown no reason to spend such an effort. Use of 50% glycerine solutions is only permitted by NFPA 13D where the climate is such that the solution is needed. Where temperatures are warmer, lower concentration antifreeze solutions are required. Similar logic applies for the use of 40% propylene glycol.

11. For new fire sprinkler systems, a different threshold has been established because the sprinkler system can be designed around the freeze protection available from the solution. If the climate is such that a higher concentration solution is needed, it is not necessary to install an antifreeze system. Other options are available. But for existing system, those other options are too expensive to justify eliminating the use of a solution that we know works.

Emergency Nature:

1. The proposed TIA intends to correct a previously unknown existing hazard.

2. The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation.

Committee Meeting Action: Accept

13D-13 Log #33 AUT-RSS Final Action: Reject

(3.3.9.1 Antifreeze Sprinkler System, 4.1.4, 5.2.7, 8.3.3, and A.8.3.3.1)

Note: This Proposal originates from Tentative Interim Amendment 13D-10-1 (TIA 994) issued by the Standards Council on August 5, 2010.

Submitter: Maurice M. Pilette, Mechanical Designs Ltd.

Recommendation: 1. Delete 3.3.9.1 and renumber remainder of subsection 3.3.9.

2. Delete entire subsection 4.1.4, Antifreeze Systems.

3. Revise 5.2.7 to read as follows:

Joints for the connection of copper tube for wet type systems shall be soldered joints or be brazed." (delete the words "and antifreeze systems).

4. Delete Item (2) of subsection 8.3.2 and renumber (3) as (2).

5. Revise section 8.3.3.1 to read:

8.3.3.1 Antifreeze shall not be permitted in sprinkler systems.

6. Delete A.8.3.3.1.

7. Delete all subsections and accompanying Annex A paragraphs commencing with 8.3.3.2 and ending with 8.3.3.5.

Substantiation: As a result of information obtained through a report from the Fire Protection Research Foundation titled *Antifreeze Solutions in Home Fire Sprinkler Systems* dated May 28, 2010 and data compiled in a UL document titled *Fire Test Data Summary for Residential Sprinklers Discharging Antifreeze Mixtures* dated May 26, 2010 sufficient technical documentation now exists to highlight safety concerns and knowledge gaps regarding the provisions permitting antifreeze in sprinkler systems protecting dwelling units.

Until such time that appropriate research has been conducted to satisfy these concerns and knowledge gaps, the safe use of antifreeze solutions within sprinkler systems protecting dwelling units cannot be assured. Therefore NFPA-13D should not be permitting the use of antifreeze systems within the standard.

Emergency Nature:

1. The proposed TIA intends to correct a previously unknown existing hazard.

2. The proposed TIA intends to offer to the public a benefit that would lessen a recognized (known) hazard or ameliorate a continuing dangerous condition or situation.

Note: Supporting material is available for review at NFPA Headquarters.

Committee Meeting Action: Reject

Committee Statement: Antifreeze is an acceptable solution at appropriate concentrations. See 13D-12 (Log #CP3).

13D-14 Log #74 AUT-RSS Final Action: Accept in Principle

(3.3.9.1.1 Premixed Antifreeze Solution (New), 4.1.4, and 8.3.3)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.

Recommendation:

****Insert Include 13D_L74_R Here****

Substantiation: Regardless of what happens with all of the NFPA TIA's, the entire section on antifreeze systems needs to be rewritten. This rewrite is based on the latest tests as of 10/1/10 and is consistent with the findings in those tests. The specific changes are justified as follows:

1. Ethylene glycol and diethylene glycol have been eliminated because they are poisons and because we know them to be combustible liquids. Research has not been performed to determine the extent that they may or may not contribute to the heat release rate of a fire. In the absence of such data, and knowing that such a small percentage of sprinkler systems utilize these solutions, they have been banned until such time as more research can be performed to quantify their experience. This is not considered to create a problem because a substitute solution (glycerine) is available.
2. Propylene glycol has also been eliminated because it can only be used at concentrations of 40% or lower, which does not provide significant protection from freezing. There has always been a problem in the industry in identifying whether an installation has propylene glycol or glycerine in it after the installation. Sprinkler contractors have also mistakenly put propylene glycol into sprinkler systems containing CPVC pipe, which causes problems for the CPVC pipe. By eliminating propylene glycol from use, we eliminate the confusion caused by having different products on the marketplace that are not all compatible with all system components. This is not expected to cause a hardship because the glycerine provides better freeze protection and can be used as a substitute for propylene glycol at 40% concentration.
3. Glycerine solutions up to 50% (by volume) are permitted because the extensive testing performed by both UL and the FPRF showed that solutions up to this concentration had the same effect as pure water on some very severe fire challenges. We are aware that 55% glycerine did not do as well in some fire scenarios; however, we believe that the safety factor is sufficient when only premixed solutions are permitted and when people are suggested to use k-4.7 sprinklers at pressures lower than 70 psi. The manufacturers of glycerine assure us that they can hold the quality of the solutions to $\pm$ 1%, which should be sufficient for the use we are proposing.
4. The language was expanded to include other listed antifreeze products that may be developed in the future. We are aware of at least one project underway to get a non-combustible antifreeze recognized and there are some other products that have potential. A listing process would allow these products to come to the market without having to process another TIA.
5. The Table on specific gravity of antifreeze solutions was moved to the annex since it is informational in nature and not intended to be a limit on the kind of antifreeze that can be used. The table has been modified to only glycerine at 50% solutions because higher solutions are no longer permitted. Lower percentage solutions are permitted by NFPA 13, but the specific gravity is not known at this time.
6. The density curves for ethylene glycol and propylene glycol were eliminated because these solutions are not longer permitted.
7. The density curves for glycerine were eliminated because they are percentages by weight and we need the information in percentages by volume. Such curves will need to be generated in the future, but they are not necessary for the immediate use of NFPA 13. People will still have access to this information if they need it from earlier versions of the standard.
8. The piping and equipment arrangements have been simplified without changing the intent of the standard. Rather than writing a section with a number of exceptions and exceptions within exceptions, a simple list of acceptable options has been presented, preserving all of the options in the 2010 edition of the standard.

1) Add a new definition as section 3.3.9.1.1 as follows:

3.3.9.1.1 **Premixed Antifreeze Solution**. A mixture of an antifreeze material with water that is thoroughly mixed by the manufacturer or distributor with a quality control procedure in place that assures that the antifreeze material will not drop out of solution after standing in system piping for long periods of time.

2) Revise section 4.1.4 and its annex note as follows:

4.1.4* Antifreeze Systems. Before freezing weather each year, the following procedure shall be performed:

(1) Using installation records, maintenance records, information from the owner, chemical tests, or other reliable sources of information, the type of antifreeze in the system shall be determined.
   a. If the type of antifreeze is found to be anything but glycerine or a type of antifreeze listed for fire protection, then the system shall be drained completely and replaced with premixed glycerine of an acceptable concentration or listed antifreeze used in accordance with its listing.
   b. If the type of antifreeze cannot be reliably determined, then the system shall be drained completely and replaced with premixed glycerine of an acceptable concentration or listed antifreeze used in accordance with its listing.

(2) For glycerine or listed antifreeze systems, test samples shall be taken at the top of each system and at the bottom of each system.
   a. If the most remote portion of the system is not near the top or the bottom of the system, an additional sample shall be taken at the most remote portion.
   b. If the connection to the water supply piping is not near the top or the bottom of the system, an additional sample shall be taken at the connection to the water supply.

(3) The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution.

(4) If any of the samples exhibits a concentration in excess of 50% by volume, the system shall be emptied and refilled with new premix solution of 50% glycerine by volume or less. If a concentration greater than 50% was necessary to keep the fluid from freezing, then alternate methods of preventing the pipe from freezing shall be employed, which shall be permitted to include a premix solution of up to 50% glycerine along with other methods of limiting the temperature to which the piping is exposed.

(5) If any of the samples exhibits a concentration lower than what is necessary to keep the fluid from freezing, the system shall be emptied and refilled with a new premix solution of the proper concentration.

A.4.1.4 Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the

lower portion of the system than in the upper portions of the system. If the concentration is acceptable near the top, but too low near the water connection, it may mean that the system is becoming diluted near the water supply. If the concentration is too high in both the samples, or too low in both the samples, it may mean that the wrong concentration was added to the system to begin with.

Two or three times during the freezing season, test samples can be drawn from test valve B as shown in Figure 8.3.3.2.1(1), especially if the water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described.

When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discarding the old solution.

3) Delete all of section 8.3.3 on antifreeze systems and replace it with the following new section 8.3.3 and associated annex material:

8.3.3 Antifreeze Systems.

8.3.3.1* General.

8.3.3.1.1 The use of antifreeze solutions shall be in conformity with state and local health regulations.

8.3.3.1.2* Antifreeze solutions shall be limited to Premixed Antifreeze Solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5%) at a maximum concentration of 50% by volume or other solutions listed specifically for use in fire protection systems.

8.3.3.1.3 Where pendent sprinklers are used and hydrostatic testing is conducted with water, the water shall be drained from the entire system after hydrostatic testing is complete.

8.3.3.1.4 Where pendent sprinkler are used and hydrostatic testing is conducted with properly mixed antifreeze solutions permitted by NFPA 13D, the system is not required to be drained after hydrostatic testing.

8.3.3.1.5 Where antifreeze systems are remote from the system riser, a placard shall be mounted on the system riser that indicates the number and location of all remote antifreeze systems supplied by that riser.

8.3.3.1.6 A placard shall be placed on the antifreeze system main valve that indicates the manufacture type and brand of the antifreeze solution, the concentration of the antifreeze solution used, and the volume of the antifreeze solution used in the system.

8.3.3.1.7* The antifreeze solution used in a system shall have a freezing point below the expected minimum temperature to which the pipe containing the solution will be exposed.

8.3.3.1.8* The concentration of the antifreeze solution shall not exceed the concentration necessary for the anticipated minimum temperature.

8.3.3.1.9 Prior to filling a system with antifreeze solution, the specific gravity of the solution shall be checked by a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution involved.

8.3.3.2 Arrangement of Supply Piping and Valves

8.3.3.2.1 The connection between the water supply piping and the antifreeze portion of the system shall be arranged in accordance with one of the following:

(1)* An antifreeze loop and a check valve with a 1/32 inch hole drilled in the clapper as shown in Figure 8.3.3.2.1(1).

(2)* A backflow preventer and a listed expansion chamber as shown in Figure 8.3.3.2.1(2). The expansion chamber shall be properly sized taking into account the precharge air pressure and precharge air temperature. The size of the expansion chamber shall be such that the maximum system pressure does not exceed the rated pressure for any components of the antifreeze system.

(3) Where the antifreeze system volume does not exceed 40 gallons, a backflow preventer and a listed pressure relief valve as shown in Figure 8.3.3.2.1(3).

(4) A check valve with an arrangement of equipment that keeps the pressure on the system side of the check valve higher than on the supply side. The arrangement shall comply with all three of the following provisions:

(a) A pressure pump or other apparatus automatically keeps the pressure on the system side higher than on the water supply side of the check valve separating the antifreeze system from the water supply.

(b) Provision is made to automatically release solution to prevent overpressurization due to thermal expansion of the solution.

(c) Provision is made to automatically supply premixed solution as needed to restore system pressure due t thermal contraction.

****Insert Artwork Here

Figure 8.3.3.2.1(1)

****Insert Artwork Here****
Figure 8.3.3.2.1(2)

****Insert Artwork Here****

Figure 8.3.3.2.1(3)

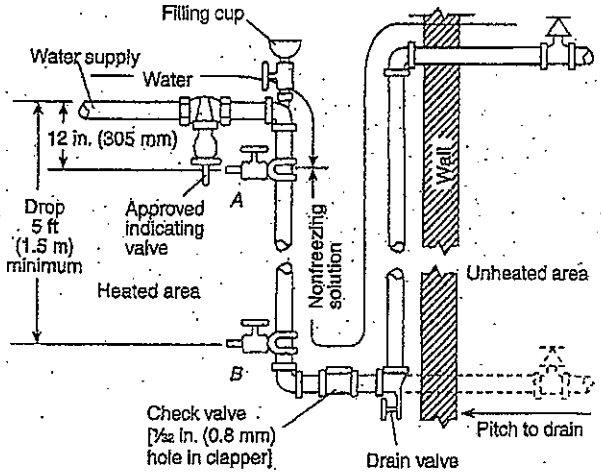
8.3.3.2.2* A drain/test connection shall be installed at the most remote portion of the antifreeze system.

8.3.3.2.3 For systems with a capacity larger than 150 gal (567.8L), an additional test connection shall be provided for every 100 gal (378.5L).

A.8.3.3.1 The definition of an antifreeze system states that water will discharge after the antifreeze leaves the pipes. Systems that are all antifreeze, including tanks of antifreeze solution that will not discharge plain water, are not true antifreeze systems. Such systems should not be used without consideration to issues such as the combustibility of the antifreeze solution and the friction loss in the piping during cold conditions.

A.8.3.3.1.2 Antifreeze solutions have been limited to glycerine for several reasons. First, glycerine is the only antifreeze that has been found so far to be compatible with CPVC piping. Second, other antifreeze solutions such as propylene glycol would need to be limited to concentrations of 40% or less to insure that they do not contribute to the heat release of a fire. Such a low concentration has a freezing point much higher than glycerine, making the use of propylene glycol impractical. The use of premixed solutions is required because concentrations of glycerine of 55% or more have been shown to contribute to the heat release of fires. Having the solution premixed insures that the glycerine will not drop out of solution and collect in drops or low points of the system at concentrations in excess of 50%. The properties of glycerine are shown in Table A.8.3.3.1.2.

Due to the fact that 55% glycerine has been shown to be a problem in some circumstances, it is recommended that when 50% glycerine is used, sprinklers with k-factors of at least 4.7 be used and water supply pressures only up to 70 psi be used in order to create a better safety factor.



Notes:
1. Check valves are permitted to be omitted where sprinklers are below the level of valve *A*.
2. The 1/32 in. (0.8 mm) hole in the check valve clapper is needed to allow for expansion of the solution during a temperature rise, thus preventing damage to sprinklers.

Figure 8.3.3.2.1(1)

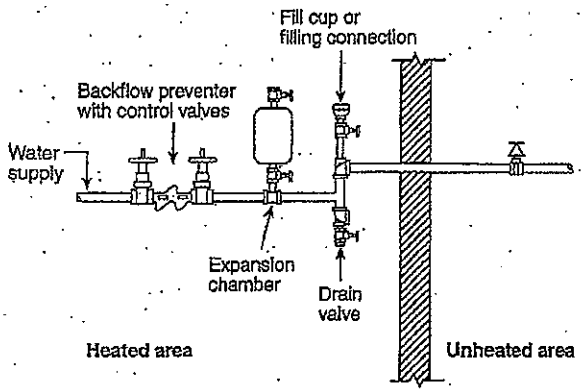
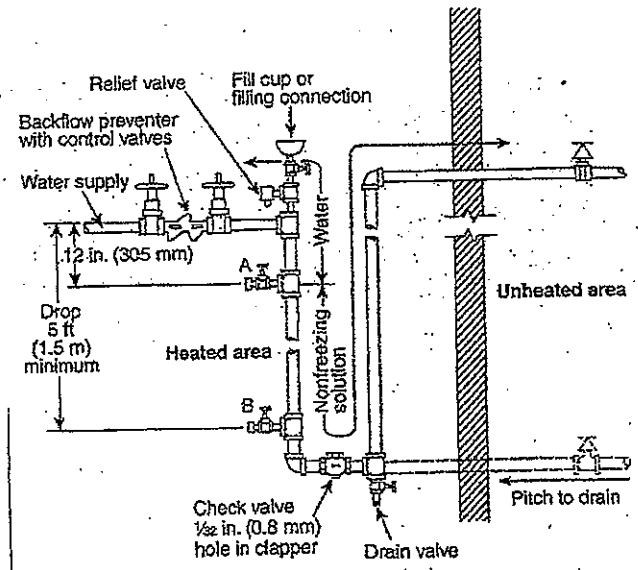


Figure 8.3.3.2.1(2)

NFPA 13D
Log #74 (A2012) ROP
Figure 8.3.3.2.1(1) &
Figure 8.3.3.2.1(2)



Notes:
1. Check valve can be omitted where sprinklers are below the level of valve A.
2. The 1/32 in. (0.8 mm) hole in the check valve clapper is needed to allow for expansion of the solution during a temperature rise, thus preventing damage to sprinklers.

Figure 8.3.3.2.1(3)

NFPA 13D
Log #74 (A2012) ROP
Figure 8.3.3.2.1(3)

Table A.8.3.3.1.2 Properties of Glycerine

Material	Solution (by volume)	Specific Gravity at 60ºF (15.6ºC)	Freezing Point	
			ºF	ºC
Glycerine (C.P. or U.S.P. grade)	50% water	1.145	-20.9	-29.4
Hydrometer scale 1.000 to 1.200				

CP. = Chemically Pure: U.S.P.: United States Pharmacopoeia 96.5%.

A.8.3.3.1.7 See Figure A.10.5.1 of NFPA 13 for expected minimum air temperatures in 48 of the United States and parts of Canada where the lowest one-day mean temperature can be used as one method of determining the minimum reasonable air temperature. In situations where the piping containing the antifreeze solution is protected in some way from exposure to the outside air, higher minimum temperatures can be anticipated.

A.8.3.3.1.8 Since glycerine solutions have been shown to contribute to the heat release rate of fires above 55% concentrations, it would make sense to use only that amount of glycerine that is necessary to keep the fluid in the pipe from freezing. If the goal of keeping the pipe from freezing can be accomplished with 40% glycerine, then NFPA 13D requires the use of 40% glycerine instead of 50% glycerine.

A.8.3.3.2.1(1) Glycerine antifreeze solutions are heavier than water. The loop allows the heavier liquid to drop below the lighter liquid and prevents the diffusion of water into the unheated areas.

A.8.3.3.2.1(2) An expansion chamber is necessary to compensate for thermal expansion of the antifreeze solution. To properly compensate for thermal expansion, the chamber needs to be sized correctly and precharged to an appropriate pressure. One formula for sizing the chamber and determining the precharge pressure is as follows. Other methods exist.

$$\Delta L = S_V\left(\frac{D_L}{D_H} - 1\right)$$

where:
ΔL = change in antifreeze solution volume (gal) due to thermal expansion
S_V = volume (gal) of antifreeze system, not including the expansion chamber
D_L = density (gm/ml) of antifreeze solution at lowest expected temperature
D_H = density (gm/ml) of antifreeze solution at highest expected temperature

This method is based on the following information:

$$\frac{P_0V_0}{T_0} = \frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

where:
V_{EC} = minimum required volume (gal) of expansion chamber
V_0 = air volume (gal) in expansion chamber at precharge (before installation)
V_1 = air volume (gal) in expansion chamber at normal static pressure
V_2 = air volume (gal) in expansion chamber at post-expansion pressure (antifreeze at high temperature)
P_0 = absolute precharge pressure (psia) on expansion chamber before installation
P_1 = absolute static pressure (psi) on water (supply) side of backflow preventer
P_2 = absolute maximum allowable working pressure (psi) for antifreeze system
T_0 = temperature (°R) of air in expansion chamber at precharge
T_1 = temperature (°R) of air in expansion chamber when antifreeze system piping is at lowest expected temperature
T_2 = temperature (°R) of air in expansion chamber when antifreeze system piping is at highest expected temperature

This equation is one formulation of the ideal gas law from basic chemistry. The amount of air in the expansion chamber will not change over time. The pressure, temperature, and volume of the air at different times will be related in accordance with this formula:

$$V_2 = V_1 - \Delta L$$

The antifreeze in the system is essentially incompressible, so the air volume in the expansion chamber will decrease by an amount equal to the expansion of the antifreeze.

It is assumed that there is no trapped air in the system piping, so the only air in the system is in the expansion chamber. This is a conservative assumption, since more air is better. In reality, there will be at least some trapped air. However, only the air in the expansion chamber can be relied upon to be available when needed.

$$V_{EC} = V_0$$

At precharge, the chamber will be completely full of air.

$$V_{EC} = \frac{P_1 T_0 P_2 \Delta L}{P_0 \left(P_2 T_1 - P_1 T_2 \right)}$$

In cases where the normal static pressure on the sprinkler system is close to the maximum working pressure, antifreeze systems are not advisable if the connection to the wet pipe system will incorporate a backflow device. In these cases, expansion of the antifreeze solution during warm weather will cause the antifreeze system to exceed the maximum working pressure, regardless of the size of the expansion chamber. The normal static pressure is too close to the maximum working pressure if the preceding formula for VEC yields a negative result. If this occurs, use a dry pipe system instead or install a pressure reducing valve before the backflow preventer.

A.8.3.3.2.2 Systems larger than 40 gal (151L) are required by NFPA 25 to check the concentration levels at the supply inlet to the antifreeze system and at a remote point of the system.

9. The annex text has been revised to reflect the state-of-the-art with respect to testing that has been performed and the requirements of this TIA.

This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.

Committee Meeting Action: Accept in Principle

Committee Statement: See Committee Action on 13D-12 (Log #CP3).

13D-15 Log #10 AUT-RSS **Final Action: Accept in Principle**

(3.3.9.3 Multipurpose Piping System)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.

Recommendation: Revise as follows:

3.3.9.3* *Multipurpose Piping System*. A piping system intended to serve both domestic and fire protection needs from one piping system throughout the dwelling unit.

Substantiation: Many people mistakenly assume that a common line from the water supply to a point in the dwelling unit that then splits to feed domestic and fire protection is a multipurpose system. This new language will clarify that a multipurpose system is one system throughout the dwelling unit that feeds both fire protection and domestic fixtures.

Committee Meeting Action: Accept in Principle

Revise as follows:

3.3.9.3* *Multipurpose Piping System*. A piping system intended to serve both domestic and fire protection needs from a common ~~one~~ piping system throughout the dwelling unit(s).

Committee Statement: Clarifies confusion about common piping.

13D-16 Log #72 AUT-RSS **Final Action: Accept in Principle**

(3.3.9.9 Passive Purge System)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.

Recommendation: Insert a new definition as follows:

3.3.9.9 Passive Purge System. A type of stand-alone sprinkler system that serves a single toilet in addition to the fire sprinklers. The toilet needs to be on a remote portion of the system or the system needs to be designed as a loop so that water moves through a majority of the system when the toilet is flushed. This type of system is also called a “Flow Through System” in much of North America.

Substantiation: Many authorities require this kind of system and it is good to have it defined in the standard. The general purpose of such a system is to provide some circulation of the water in the sprinkler system, which allows a water authority to feel good about eliminating a requirement for backflow preventers.

This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.

Committee Meeting Action: Accept in Principle

Insert a new definition as follows:

3.3.9.9 Passive Purge System. A type of ~~stand-alone~~ sprinkler system that serves a single domestic plumbing fixture ~~toilet~~ in addition to the fire sprinklers.

Change the word “toilet” to “domestic plumbing fixture” in the definition 3.3.9.9.

Move the following to the Annex:

The domestic plumbing fixture should be on a remote portion of the system or the system should to be designed as a loop so that water moves through a majority of the system when the fixture is used. This type of system is also called a “Flow Through System” in much of North America.

Committee Statement: Some of the material was moved to the annex as it's informational and can not be used in a definition. It's more appropriate to reference an appliance instead of a particular fixture.

13D-17 Log #57 AUT-RSS **Final Action: Accept in Principle**

(3.3.9.9 Stand Alone Sprinkler System (New))

Submitter: Gary Johnson, Lubrizol Advanced Materials

Recommendation: Add new text to read as follows:

3.3.9.9 Stand Alone Sprinkler System. A sprinkler system where the aboveground piping serves only fire sprinklers. Underground piping is permitted to serve domestic use as well as sprinkler system use, but once the split is made between systems, the piping serving fire sprinklers only serves the fire sprinklers.

Substantiation: This definition would clearly identify standalone fire sprinkler systems as an alternative to multipurpose systems which are already defined in NFPA 13D. Standalone is a commonly used term and this would provide a specific meaning. Other organizations are developing fire sprinkler documents and they have begun to create their own definitions of various terms. This would provide for more consistency.

This is not original material; its reference/source is as follows:

Technical Committee on Residential Sprinkler Systems, proposal 13D-15, A2009.

Committee Meeting Action: Accept in Principle

Add new text to read as follows:

3.3.9.9 Stand Alone Sprinkler System. A sprinkler system where the aboveground piping serves only fire sprinklers.

Move the following to the annex as follows:

Underground piping is permitted to serve domestic use as well as sprinkler system use, but once the split is made between systems, the piping serving fire sprinklers only serves the fire sprinklers.

Committee Statement: Informational material was moved to the annex.

13D-18 Log #48 AUT-RSS **Final Action: Reject**

(3.3.9.9 Water Mist System)

Submitter: Larry W. Owen, Dooley Tackaberry, Inc.

Recommendation: Add text to read as follows:

3.3.9.9 Water Mist System. A distribution system connected to a water supply or water and atomizing media supplies that is equipped with one or more nozzles capable of delivering water mist intended to control, suppress, or extinguish fires and that has been demonstrated to meet the performance requirements of its listing and this standard.

Substantiation: Water Mist Systems have been approved and installed in a wide range of sprinkler applications globally. For clarity the definition should be included in NFPA 13D section 3.3.9 “Systems” definitions. The definition has been taken from NFPA 750 to harmonize the two standards.

This is not original material; its reference/source is as follows:

NFPA 750 Standard on Water Mist Fire Protection Systems, 2010 Edition, Chapter 3, Page 750-8, Section/Paragraph 3.3.22.

Committee Meeting Action: Reject

Committee Statement: The term water mist is not used in the standard and therefore a definition is not needed and can not be added.

13D-19 Log #44 AUT-RSS Final Action: Reject
(4.2)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Add text to read as follows:

4.2 ~~Hydrostatic~~ System Tests

4.2.1 Where a fire department pumper connection is not provided, the system shall be hydrostatically tested for leakage at normal system operating pressure prior to concealment of sprinkler piping.

4.2.2 Where a fire department pumper connection is provided, the system shall pass a hydrostatic test performed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems,* prior to concealment of sprinkler piping.

4.2.3 Prior to final system acceptance, the system shall be tested by opening the test connection and verifying water flow at the test location.

4.2.3.1 On systems utilizing a pump, prior to final system acceptance, the system shall be tested by opening the test connection. The pump shall sense flow, turn on, and flow water for the duration required by Section 6.1 without interruption.

~~6.2.1* Prior to system acceptance, a system utilizing a pump shall be tested by opening the drain/test connection.~~

~~6.2.1.1 The pump shall sense the flow, turn on, and flow water for the required duration of 6.1.2 or 6.1.3 without interruption.~~

Substantiation: Hydrostatic tests are performed to locate leaks in the system prior to concealment of the sprinkler piping. NFPA 13D does not address any criteria to verify the system will flow water. Some systems have separate supplies for the sprinkler system and domestic water. Unlike combined supplies, these have no measure of actual flow. Additionally, verifying water flow during final system acceptance testing insures that check valves, shut off valves, etc. are installed correctly, and that the supply is free of obstructions.
Sections 6.2.1 and 6.2.1.1 should be removed from Chapter 6 Water Supply. The requirements for system acceptance would be covered under the revisions to Section 4.2.
This is not original material; its reference/source is as follows:
Extracted from NFPA 13 and 13D.
Committee Meeting Action: Reject
Committee Statement: Conducting the hydrostatic test prior to concealment of the piping is desirable. However, in some situations concealment of piping sections may be necessary prior to this testing. In regard to the text proposed for 4.2.3, the test connection is only required to be provided when water flow alarms are supplied and this should not be a mandatory requirement. In regard to 4.2.3.1, the text in 6.2.1 and 6.2.1.1 are proposed to be included in a new Chapter at the end of the standard.

13D-20 Log #87 AUT-RSS **Final Action: Reject**
(4.2)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
4.2 ~~Hydrostatic~~ System Tests
4.2.1 Where a fire department pumper connection is not provided, the system shall be hydrostatically tested for leakage at normal system operating pressure prior to concealment of sprinkler piping.
4.2.2 Where a fire department pumper connection is provided, the system shall pass a hydrostatic test performed in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, prior to concealment of sprinkler piping.
4.2.3 Prior to final system acceptance, the system shall be tested by opening the test connection and verifying water flow at the test location.
4.2.3.1 On systems utilizing a pump, prior to final system acceptance, the system shall be tested by opening the test connection. The pump shall sense flow, turn on, and flow water for the duration required by 6.1 without interruption.
~~6.2.1* Prior to system acceptance, a system utilizing a pump shall be tested by opening the drain/test connection.~~
~~6.2.1.1 The pump shall sense the flow, turn on, and flow water for the required duration of 6.1.2 or 6.1.3 without interruption.~~
Substantiation: Hydrostatic tests are performed to locate leaks in the system prior to concealment of the sprinkler piping. NFPA 13D does not address any criteria to verify the system will flow water. Some systems have separate supplies for the sprinkler system and domestic water. Unlike combined supplies, these have no measure of actual flow. Additionally, verifying water flow during final system acceptance testing insures that check valves, shut off valves, etc. are installed correctly, and that the supply is free of obstructions.
Sections 6.2.1 and 6.2.1.1 should be removed from Chapter 6 Water Supply. The requirements for system acceptance would be covered under the revisions to Section 4.2.
This is not original material; its reference/source is as follows:
Extracted from NFPA 13, 13D
Committee Meeting Action: Reject
Committee Statement: The committee believes that conducting the hydrostatic test prior to concealment of the piping is desirable. However, in some situations concealment of piping sections may be necessary prior to this testing. In regard to the text proposed for 4.2.3, the test connection is only required to be provided when water flow alarms are supplied and this should not be a mandatory requirement. In regard to 4.2.3.1, the text in 6.2.1 and 6.2.1.1 are proposed to be included in a new Chapter at the end of the standard.

13D-21 Log #11 AUT-RSS **Final Action: Accept in Principle**
(5.1.1.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new section:
5.1.1.1 Spare sprinklers are not required to be provided.
Substantiation: Codifies that spare sprinklers are not required.

Committee Meeting Action: Accept in Principle
Change "are not" to "shall not be"
Committee Statement: Conforms with the Manual of Style.

13D-22 Log #61 AUT-RSS **Final Action: Accept in Principle**
(5.2.1.2)

Submitter: Eric J. Skare, Uponor, Inc.
Recommendation: Revise section 5.2.1.2 to read as follows:
5.2.1.2 Pipe used in sprinkler systems other than those addressed in 5.2.1.3 shall be designed to withstand a working pressure of not less than 175 psi (12.1 bar) and shall be provided with a listed relief valve not less than ½ in. (12 mm) in size and set to operate at 175 psi (12.1 bar) or 10 psi (0.7 bar) in excess of the maximum system pressure, whichever is greater, unless auxiliary air reservoirs are installed to absorb pressure increases.
Substantiation: Section 7.1.2 of NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, requires a listed pressure relief valve in all wet pipe systems unless an auxiliary air reservoir is installed to absorb pressure increases. The addition of the proposed text will align NFPA 13D with the requirements of NFPA 13. Currently there are no provisions in the NFPA 13D Standard that ensure the system pressure will be maintained at or below 175 psi.
Committee Meeting Action: Accept in Principle
Do not revise 5.2.1.2 as proposed but add annex material as follows:
Add new A.5.2.1.2 as follows: In most installations, pressure increases due to temperature fluctuations or pressure surges do not cause the system pressure to exceed the pressure rating rating of the pipe. In situations where the system pressure has the potential to exceed the pipe pressure rating, installation of a relief valve should be considered.
Committee Statement: The committee believes that new Annex text related the potential need for installation of a relief valve in certain installations is appropriate.

13D-23 Log #71 AUT-RSS **Final Action: Reject**
(5.2.1.3)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Revise the sections to read:
5.2.1.3 Nonmetallic pipe used in ~~multipurpose~~ piping systems not equipped with a fire department connection and not exceeding 80 psi in incoming water pressure shall be designed to withstand a working pressure of not less than 130 psi at 120°F.
Substantiation: A rated pressure of 130 psi at 120°F is a reasonable pressure rating for piping in a fire sprinkler system that does not have a fire department connection. This pipe has already been used for many years in multipurpose fire protection systems and has shown no adverse experience, even when people go away for long periods of time and do not use their systems. The pipe should be allowed for stand-alone systems.
The incoming water pressure has been limited to 80 psi as a safety factor. This can be provided by a water supply directly or through a pressure reducing valve, which would be necessary for the home's domestic system anyway.
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Reject
Committee Statement: Water supply pressures may vary over time and there is no assurance that the 80 psi value would not be exceeded.

13D-24 Log #73 AUT-RSS **Final Action: Accept**
(5.2.1.3 and 5.2.5.3)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Add "and passive purge systems" after "multipurpose systems" in both sections
Substantiation: This is a fall-back proposal in case the stand alone proposal is not accepted. This is the compromise position that the committee successfully balloted last cycle.
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Accept

13D-25 Log #37 AUT-RSS **Final Action: Reject**
(5.2.1.4)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Add text to read as follows:
5.2.1.4 On systems with a pump, any type of pipe or tube acceptable under the applicable plumbing code for aboveground supply pipe shall be acceptable from the water source to the pump inlet.
Substantiation: There is no clear guideline for where the sprinkler system piping begins on pump/tank systems.
Committee Meeting Action: Reject
Committee Statement: 13D will allow black steel in stand alone systems. The plumbing code will not allow black steel. Therefore it would be inappropriate to restrict the use of black steel under 13D criteria.

13D-26 Log #86 AUT-RSS **Final Action: Reject**
(5.2.1.4)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Add as follows:
5.2.1.4 On systems with a pump, any type of pipe or tube acceptable under the applicable plumbing code for aboveground supply pipe shall be acceptable from the water source to the pump inlet.
Substantiation: There is no clear guideline for where the sprinkler system piping begins on pump/tank systems.
Committee Meeting Action: Reject
Committee Statement: 13D will allow black steel in stand alone systems. The plumbing code will not allow black steel. Therefore it would be inappropriate to restrict the use of black steel under 13D criteria.

13D-27 Log #62 AUT-RSS **Final Action: Accept in Principle**
(5.2.1.4 and 5.2.5.4)

Submitter: Eric J. Skare, Uponor, Inc.
Recommendation: Add new Subsections 5.2.1.4 and 5.2.5.4:
5.2.1.4 Nonmetallic pipe used in wet pipe sprinkler systems equipped with a listed pressure relief valve set no higher than 130 psi shall be designed to withstand a working pressure of not less than 130 psi (8.9 bar) at 120°F (49°C).
5.2.5.4 Nonmetallic fittings used in wet pipe sprinkler systems equipped with a listed pressure relief valve set no higher than 130 psi shall be designed to withstand a working pressure of not less than 130 psi (8.9 bar) at 120°F (49°C).
Substantiation: NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, requires a listed pressure relief valve in wet pipe systems. The addition of these sections acknowledges the acceptance of these devices in fire sprinkler systems and allows for thermoplastic sprinkler pipe and fittings already carrying listings for fire protection service to be used where they are installed.
Committee Meeting Action: Accept in Principle
Revise text in 5.2.1.4 as follows: Nonmetallic pipe used in wet pipe sprinkler systems equipped with a listed pressure ~~relief~~ regulating valve set no higher than ~~130~~ 80 psi shall…".
Revise text in 5.2.5.4 as follows: Nonmetallic fittings used in wet pipe sprinkler systems equipped with a listed pressure ~~relief~~ regulating valve set no higher than ~~130~~ 80 psi shall…".
Also change 5.2.1.2 to add "or 5.2.1.4" after "5.2.1.3".
Also change 5.2.5.2 to add "or 5.2.5.4" after "5.2.5.3".
Committee Statement: The use of a pressure regulating valve with a setting of 80 psi, provides a level of assurance that the pressure rating of the pipe and fittings will not be exceeded.

13D-28 Log #78 AUT-RSS Final Action: Reject
(5.2.2.1 and 5.2.9.1)

Submitter: Andy Olah, Lubrizol Advanced Materials, Inc.

Recommendation: Revise text to read as follows:

5.2.2.1 Pipe differing from those specified in Table 5.2.1.1 shall be installed in accordance with their listings and the manufacturer's installation instructions. Pipe used in systems other than multipurpose systems shall be listed for use without protection (exposed).

5.2.9.1 Fittings differing from those specified in Table 5.2.5 shall be installed in accordance with their listings and the manufacturer's installation instructions. Fittings used in systems other than multipurpose systems shall be listed for use without protection (exposed).

Substantiation: While multipurpose sprinkler systems are installed as part of the plumbing system and are enclosed, standalone systems often must be installed in areas where no protection for the pipe and fittings is available.

Survivability of nonmetallic pipe and fittings during a fire is tied to water flow through the pipe. When a fire occurs in an area that is protected by sprinklers, the activation of a sprinkler provides that flow.

In the event of a fire in an unanticipated location in the sprinkler system, demand from the plumbing system would cause a multipurpose system to periodically flow water in the system. In the same situation the water in a standalone system would be stationary and therefore the pipe and fittings need to have a greater resistance to fire than a multipurpose system.

Currently pipe and fittings may be listed for either concealed or exposed installations. This change would assure that there is a higher level of performance required for fire sprinkler systems that are not part of the plumbing system.

Committee Meeting Action: Reject

Committee Statement: Current listings are adequate for applications of non metallic piping.

13D-29 Log #CP8 AUT-RSS Final Action: Accept
(Table 5.2.2.2, Table 5.2.9.2,)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Remove the word Special or Specially throughout the Standard when used with the term listing as follows:

Table 5.2.2.2 ~~Specially~~ Listed Pipe or Tube Materials and Dimensions

Materials and Dimensions Standard
Nonmetallic Piping: Standard Specification for Chlorinated Poly
ASTM F 442 (Vinyl) Chloride (CPVC) Pipe

Table 5.2.9.2 Specially Listed Fittings Materials and
Table 5.2.9.2 ~~Specially~~ Listed Fittings Materials and Dimensions

Dimensions Materials and Dimensions Standard
Standard Specification for Schedule 80
ASTM F 437 CPVC Threaded Fittings Standard Specification for Schedule 40
ASTM F 438 CPVC Socket-Type Fittings Standard Specification for Schedule 80
ASTM F 439 CPVC Socket-Type Fittings

8.4 Pipe Sizing.
8.4.1 The pipe sizes shall be verified for each of the single sprinkler and multiple sprinkler design discharge.
8.4.2 For ~~specially~~ listed piping products, friction loss for pipe and fittings shall be permitted to be calculated based on the manufacturer's data.
8.4.3 Minimum Pipe Size.
8.4.3.1 The minimum size of steel pipe shall be 1 in. (25.4 mm).
8.4.3.2 The minimum size of pipe other than steel pipe shall be $^{3}/_{4}$ in. (19 mm) unless smaller sizes are permitted by 8.4.3.3.
8.4.3.3* Along with listed ~~special~~ fittings, $^{1}/_{2}$ in. (12.7 mm) nonmetallic pipe and $^{1}/_{2}$ in. (12.7 mm) copper pipe shall be permitted to be used only in network systems under the following conditions:….
A.8.4.3.3 Any ~~special~~ listing of products covered in 8.4.3.3 should include certification by the manufacturer of personnel involved in the layout, calculation, and installation of their
product.
Substantiation: There is no difference in meaning between listing and special listing. The word special or specially does not add or change the meaning of any current requirement in the Standard. The Certification Laboratories determine compliance of devices with the Certification requirements and do not designate products that comply as special listed or specially listed when published in the certification list. Rather the published listing and/ or the installation instructions indicates the application parameters or limitations for the intended use. Removing this reference will clarify the requirements and eliminate the implication that there is some difference between listed and special listed.
Committee Meeting Action: Accept

13D-30 Log #60 AUT-RSS **Final Action: Accept in Principle in Part**
(5.2.2.3)

Submitter: Andy Olah, Lubrizol Advanced Materials, Inc.
Recommendation: Add text to read as follows:
5.2.2.3 Cross linked polyethylene (PEX) pipe shall comply with ASTM F876 and shall be listed for a Material Designation Code of PEX 5006 as defined by that standard.
Substantiation: The PEX industry has determined that a material designation code is useful in classifying the various PEX pipe products. The first digit in the material designation code identifies the ability of a particular PEX pipe to withstand the effect of chlorine, which is commonly used to treat water. The "5" indicates that the PEX tubing meets minimum performance requirements after being exposed to continuously recirculating water at 140T This provides the highest level of assurance that the PEX tubing can withstand the
effects of chlorine over time. PEX used in a life safety system needs to be durable and of the highest quality in order to assure that it
will perform when needed.
The second digit identifies the ability of the PEX to resist ultraviolet light and the third and fourth characters define the hydrostatic design stress. Zero in the second position indicates that the PEX is not tested or rated for UV exposure and the 06 in the third and fourth positions means that the PEX tubing meets the minimum acceptable pressure bearing capability.
Committee Meeting Action: Accept in Principle in Part
Revise 5.2.2.2 as follows: Chorinated polyvinyl chloride (CPVC) pipe and cross linked polyethylene (PEX) pipe shall… ".
Also, add ASTM F876 (with title) to Table 5.2.2.2
Committee Statement: The reference to the material code is more appropriately referenced in the product standard. The reference to the PEX ASTM standard is being included 5.2.2.2.

13D-31 Log #CP6 AUT-RSS **Final Action: Accept**
(5.2.4, A.5.2.4)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Renumber 5.2.4 to 5.2.3.1 and move A-5.2.4 text to A-5.2.9.2.
Substantiation: Existing numbering incorrect.
Committee Meeting Action: Accept

13D-32 Log #88 AUT-RSS Final Action: Accept in Principle
(6.2.1)

Submitter: Ed Van Walraven, Rep. Aspen Fire Protection District
Recommendation: Add text to read as follows:
6.2.1* Prior to system acceptance, a system utilizing a pump shall be tested by opening the drain/test connection.
6.2.1.1 The pump shall sense the flow, turn on, and flow water for the required duration of 6.1.2 or 6.1.3 without interruption.
6.2.1.2 Where a pump is the pressure source for the fire sprinkler system but is not a portion of the domestic water system, the following shall be met:
(1)A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system.
(2)Pump motors using ac power shall be connected to a 240 V normal circuit.
(3)Any disconnecting means for the pump shall be approved.
(4)The pump shall not be permitted to sit directly on the floor.

Substantiation: If the intent, as stated in *NFPA 13D & 13R 2010 Edition, Automatic Sprinkler Systems For Residential Occupancies Handbook*, of NFPA 13D 6.2.2 "...are to avoid potential system operational problems, such as tripped circuits due to "normal" pump start up as well as providing additional guidance for proper pump location in order to avoid installations where water could easily get into motor housings and cause problems.
The requirement for 240 V service is needed, because the current draw at start-up of a 110 V motor can draw more current than the typical 15 amp circuit breaker can stand. Larger circuit breakers are not common in residential service. Use of the 240 V service cuts the current demand in half and will not allow the use of typical residential circuit breakers, while minimizing the potential of circuit interruption."
Would not this same philosophy also apply to systems that utilize pumps without a tank i.e. city or other private water supply?

This is not original material; its reference/source is as follows:
NFPA 13D & 13R 2010 Edition, Automatic Sprinkler Systems For Residential Occupancies Handbook
Committee Meeting Action: Accept in Principle
Add a new 6.2.1.2 as follows:
6.2.1.2 Where a pump is the source of pressure for the water supply for a fire sprinkler system but is not a portion of the domestic water system, the following shall be met:
(1) A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system.
(2) Pump motors using ac power shall be connected to a 240 V normal circuit.
(3) Any disconnecting means for the pump shall be approved.
(4) The pump shall not be permitted to sit directly on the floor.
Revise 6.2.2 to read as follows:
6.2.2 Where a pump and tank is the source of supply for a fire sprinkler system but is not a portion of the domestic water system, the requirements of paragraph 6.2.1.2 and the following shall be met:
(1) ~~A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system.~~ The test connection shall return water to the tank.
~~(2) Pump motors using ac power shall be connected to a 240 V normal circuit.~~
~~(3) Any disconnecting means for the pump shall be approved.~~
(~~4~~2) A method for refilling the tank shall be piped to the tank.
(~~5~~3) A method of ~~seeing~~ determining the water level in the tank shall be provided without having to open the tank.
~~(6) The pump shall not be permitted to sit directly on the floor.~~
Committee Statement: Committee rearranged the requirements so that the provisions would not need to be repeated.

13D-33 Log #41 AUT-RSS Final Action: Reject
(6.2.1.2)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Add text to read as follows:

6.2.1.2 Systems with a pump supplying only the sprinkler system shall meet the following:
(1) All wetted components of the pump shall be constructed of corrosion resistant materials equivalent to or exceeding that of brass or bronze alloys, or series 300 stainless steel.
(2) Pump shall be provided with an automatic air release valve or vent tube, excluding self-venting pumps
(3) A circulation relief valve shall be installed, except when pump does not develop temperatures exceeding 180º F (82º C) at the pump casing during no flow conditions.
(4) A test connection shall be provided downstream of the pump that creates a flow of water equal to or smaller than the smallest sprinkler installed in the system.
(5) Pump motors using ac power shall be connected to a 240 V normal circuit.
(6) The pump shall not be permitted to sit directly on the floor.
(7) A by-pass connection shall be provided from the domestic supply.
(8) A single electric disconnect switch arranged to shut off both the pump and a house lighting circuit shall be installed unless a separate disconnect switch for the pump is installed per 6.2.1.2 (9).
(9) Any separate electrical disconnect switch installed shall have its operation supervised by one of the following methods:
(a) Central station, proprietary, or remote station signal device
(b) Local signaling service that causes the sounding of an audible signal.
(c) A disconnect switch that is locked ON.

Substantiation: It is likely that systems installed in residential one- and two- family homes will not be maintained on a routine basis and should be installed in accordance with a criteria and materials that can withstand long periods of time between maintenance intervals.

There are three (3) items critical to the operation of a pump system; mechanical operation of the pump, water flow, and electrical supervision. The build up of corrosion in the pump housing and other wetted components can lead to mechanical failure, blockage to water flow, and increased electric load resulting in failure of pump operation. The use of corrosion resistant materials will significantly reduce the build up of corrosion deposits and potential pump failure.

The best practice is to provide a pump by-pass connection to take advantage of any contribution the domestic supply can provide.

Pump casings must be provided with a means to vent air to prevent air-lock in the system.

Loss of electric power to pump must be supervised to notify the owner of an electrical problem that may otherwise go unnoticed. Pump disconnect switches should be treated the same as water shut off valves; unknown closure of either can lead to the same potentially catastrophic results.

This is not original material; its reference/source is as follows:
NFPA 13, 13D, UL 448B.

Committee Meeting Action: Reject

Committee Statement: The committee believes that the proposal goes beyond the intent of NFPA 13D with regard to the reliability of water supplies for residential sprinkler systems in one-and two-family dwellings and manufactured homes. The committee also notes that some of the recommendations put forth by the submitter have been addressed by proposal 13D-32 (Log #88).

13D-34 Log #81 AUT-RSS Final Action: Reject
(6.2.1.2)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Add text to read as follows:
6.2.1.2 Systems with a pump supplying only the sprinkler system shall meet the following:
(1) All wetted components of the pump shall be constructed of corrosion resistant materials equivalent to or exceeding that of brass or bronze alloys, or series 300 stainless steel.
(2) Pump shall be provided with an automatic air release valve or vent tube, excluding self-venting pumps
(3) A circulation relief valve shall be installed, except when pump does not develop temperatures exceeding 180º F (82º C) at the pump casing during no flow conditions.
(4) A test connection shall be provided downstream of the pump that creates a flow of water equal to or smaller than the smallest sprinkler installed in the system.
(5) Pump motors using ac power shall be connected to a 240 V normal circuit.
(6) The pump shall not be permitted to sit directly on the floor.
(7) A by-pass connection shall be provided from the domestic supply.
(8) A single electric disconnect switch arranged to shut off both the pump and a house lighting circuit shall be installed unless a separate disconnect switch for the pump is installed per 6.2.1.2 (9).
(9) Any separate electrical disconnect switch installed shall have its operation supervised by one of the following methods:
(a) Central station, proprietary, or remote station signal device
(b) Local signaling service that causes the sounding of an audible signal.
(c) A disconnect switch that is locked ON.

Substantiation: It is likely that systems installed in residential one- and two- family homes will not be maintained on a routine basis and should be installed in accordance with a criteria and materials that can withstand long periods of time between maintenance intervals.

There are three (3) items critical to the operation of a pump system; mechanical operation of the pump, water flow, and electrical supervision. The build up of corrosion in the pump housing and other wetted components can lead to mechanical failure, blockage to water flow, and increased electric load resulting in failure of pump operation. The use of corrosion resistant materials will significantly reduce the build up of corrosion deposits and potential pump failure.

The best practice is to provide a pump by-pass connection to take advantage of any contribution the domestic supply can provide.

Pump casings must be provided with a means to vent air to prevent air-lock in the system.

Loss of electric power to pump must be supervised to notify the owner of an electrical problem that may otherwise go unnoticed. Pump disconnect switches should be treated the same as water shut off valves; unknown closure of either can lead to the same potentially catastrophic results.

This is not original material; its reference/source is as follows:
NFPA 13, 13D, UL448B

Committee Meeting Action: Reject

Committee Statement: The committee believes that the proposal goes beyond the intent of NFPA 13D with regard to the reliability of water supplies for residential sprinkler systems in one-and two-family dwellings and manufactured homes. The committee also notes that some of the recommendations put forth by the submitter have been addressed by proposal 13D-32 (Log #88).

13D-35 Log #42 AUT-RSS **Final Action: Accept in Principle in Part (6.2.2)**

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
6.2.2 Where a ~~pump and~~ tank is the primary source of supply for a fire sprinkler system ~~but is not a portion of the domestic water system,~~ the following shall be met:
~~(1) A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system. The connection shall return water to the tank.~~
~~(2) Pump motors using ac power shall be connected to a 240 V normal circuit~~.
~~(3) Any disconnecting means for the pump shall be approved.~~
~~(4)~~ (1) A method for refilling the tank shall be piped to the tank.
~~(5)~~ (2) A method of ~~seeing~~ determining water level in the tank shall be provided without having to open the tank.
~~(6) The pump shall not be permitted to sit directly on the floor.~~
(5) The tank shall be constructed of corrosion resistant material.

Substantiation: Tanks should be corrosion resistant to minimize any deposits that could cause damage to the pump. It is important to have an easy means to assure the tank is always full.
This is not original material; its reference/source is as follows:
NFPA 13, 13D, Montgomery County, MD fire code.
Committee Meeting Action: Accept in Principle in Part
Accept the submitter's recommendation to item five which is being renumbered by proposal 13D-32 (Log #88). The result of this action is to replace the term "seeing" with "determining". Reject the reminder of the proposal.
Committee Statement: The concepts of primary source of water supply and corrosion resistant material as submitted are not defined by the submitter and would be ambiguous in the application of the standard. See committee action and statement in 13D-32 (Log #88) concerning other items.

13D-36 Log #80 AUT-RSS **Final Action: Accept in Principle in Part (6.2.2)**

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
6.2.2 Where a ~~pump and~~ tank is the primary source of supply for a fire sprinkler system ~~but is not a portion of the domestic water system,~~ the following shall be met:
~~(1) A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system. The connection shall return water to the tank.~~
~~(2) Pump motors using ac power shall be connected to a 240 V normal circuit.~~
~~(3) Any disconnecting means for the pump shall be approved.~~
~~(4)~~ (1) A method for refilling the tank shall be piped to the tank.
~~(5)~~ (2) A method of ~~seeing~~ determining water level in the tank shall be provided without having to open the tank.
~~(6) The pump shall not be permitted to sit directly on the floor.~~
(5) The tank shall be constructed of corrosion resistant material
Substantiation: Tanks should be corrosion resistant to minimize any deposits that could cause damage to the pump. It is important to have an easy means to assure the tank is always full.
This is not original material; its reference/source is as follows:
NFPA 13, 13D, Montgomery County, MD fire code
Committee Meeting Action: Accept in Principle in Part
Accept the submitter's recommendation to item five which is being renumbered by proposal 13D-32 (Log #88). The result of this action is to replace the term "seeing" with "determining". Reject the reminder of the proposal.
Committee Statement: The concepts of primary source of water supply and corrosion resistant material as submitted are not defined by the submitter and would be ambiguous in the application of the standard. See committee action and statement to 13D-32 (Log #88) concerning other items.

13D-37 Log #65 AUT-RSS **Final Action: Reject**
(6.2.2(4))

Submitter: Shannon Snead, Metropolitan Fire Protection
Recommendation: Delete the following text:
~~(4) A method for refilling the tank shall be piped to the tank~~
Substantiation: The requirement to have a refill source creates an additional cost to the installer and end-user. Furthermore, a coordination problem between multiple trades could arise (ex: plumber would have to pipe refill source to tank).
Metropolitan Fire Protection has performed inspections of fire sprinkler systems with a pump and tank water supply, 15 years old (or older), and the water levels in each tank as inspected was shown to be sufficient.
Committee Meeting Action: Reject
Committee Statement: For some installations, evaporation of the water supply is a concern. In addition, the committee believes that refilling of the tank is necessary when conducting maintenance and testing of equipment.

13D-38 Log #39 AUT-RSS **Final Action: Reject**
(7.1)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.1.1 A single control valve arranged to shut off both the domestic system and the sprinkler system shall be installed ~~unless a separate shutoff valve for the sprinkler system is installed in accordance with 7.1.2.~~
7.1.2 The sprinkler system piping shall not have a separate control valve ~~unless supervised by one of the following methods:~~
~~(1) Central station, proprietary, or remote station alarm service~~
~~(2) Local alarm service that causes the sounding of an audible signal at a constantly attended location~~
~~(3) Valves that are locked open~~
Substantiation: Changes to agree with the 2009 International Residential Code for One-and Two-Family Dwellings section P2904.3.2 Shutoff valves prohibited.
This is not original material; its reference/source is as follows:
NFPA 13, 13D, 2009 IRC.
Committee Meeting Action: Reject
Committee Statement: The committee believes that many variables need to be accounted for during the installation of residential sprinkler systems, and that the revisions proposed by the submitter would eliminate the options necessary to comply with the requirements of local amendments of various jurisdictions.

13D-39 Log #83 AUT-RSS **Final Action: Reject**
(7.1)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.1.1 A single control valve arranged to shut off both the domestic system and the sprinkler system shall be installed ~~unless a separate shutoff valve for the sprinkler system is installed in accordance with 7.1.2~~
7.1.2 The sprinkler system piping shall not have a separate control valve ~~unless supervised by one of the following methods:~~
~~(1) Central station, proprietary, or remote station alarm service~~
~~(2) Local alarm service that causes the sounding of an audible signal at a constantly attended location~~
~~(3) Valves that are locked open~~
Substantiation: Changes to agree with the 2009 International Residential Code for One- and Two- Family Dwellings section P2904.3.2 Shutoff valves prohibited.
This is not original material; its reference/source is as follows:
NFPA 13, 13D, 2009 IRC
Committee Meeting Action: Reject
Committee Statement: The committee believes that many variables need to be accounted for during the installation of residential sprinkler systems, and that the revisions proposed by the submitter would eliminate the options necessary to comply with the requirements of local amendments of various jurisdictions .

13D-40 Log #12 AUT-RSS **Final Action: Accept in Principle**
(7.1.4)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new section 7.1.4:
<u>If provided, a backflow prevention assembly shall be considered a control valve, and an additional control valve shall not be required.</u>
Substantiation: Allows a backflow to act a system control valve. Language is similar to NFPA 13R.

This is not original material; its reference/source is as follows:
NFPA 13R 6.8.7
Committee Meeting Action: Accept in Principle
Accept the submitter's proposal and revise as follows:
7.1.4 If provided, a backflow prevention assembly <u>that includes a shutoff valve</u> shall be considered a control valve, and an additional control valve shall not be required.
Committee Statement: The committee wants to ensure that the installed backflow assembly contains a shut-off valve if no other system control valves are installed.

13D-41 Log #13 AUT-RSS **Final Action: Accept in Principle**
(7.2.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Modify as follows:
Each sprinkler system shall have a <u>minimum 3/4 in.</u> drain on the system side of the control valve.
Substantiation: NFPA 13D is a minimum standard and therefore should not leave a requirement open ended. ¾" was chosen arbitrarily.
Committee Meeting Action: Accept in Principle
Revise text to read as follows:
Each sprinkler system shall have a <u>minimum 1/2 ~~3/4~~ in.</u> drain on the system side of the control valve.
Committee Statement: Committee agrees a minimum drain size is needed and 1/2 inch is acceptable.

13D-42 Log #43 AUT-RSS **Final Action: Reject**
(7.2.1)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.2.1 Each sprinkler system shall have a ~~drain~~ test connection on the system side of the control valve.
Substantiation: There is currently no performance test requirement of an NFPA 13D system. A residential water service can have a "kinked" underground, or debris in the underground that can go unnoticed at typical domestic flow. However, the increased flow required by a sprinkler activation can be severely restricted or completely blocked by movement of debris in the line. Additionally, some systems have separate supplies for the sprinkler system and domestic water and unlike combined supplies, these have no measure of actual flow. A test connection provides a simple method of assuring sufficient water flow to the system.
This is not original material; its reference/source is as follows:
NFPA 13, 13D.
Committee Meeting Action: Reject
Committee Statement: The proposed revision would make no substantial change to the standard. The committee believes that test connections are adequately addressed in paragraphs 7.2.4 and 7.2.5.

13D-43 Log #79 AUT-RSS **Final Action: Reject**
(7.2.1)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.2.1 Each sprinkler system shall have a ~~drain~~ test connection on the system side of the control valve.
Substantiation: There is currently no performance test requirement of an NFPA 13D system. A residential water service can have a "kinked" underground, or debris in the underground that can go unnoticed at typical domestic flow. However, the increased flow required by a sprinkler activation can be severely restricted or completely blocked by movement of debris in the line. Additionally, some systems have separate supplies for the sprinkler system and domestic water and unlike combined supplies, these have no measure of actual flow. A test connection provides a simple method of assuring sufficient water flow to the system.
This is not original material; its reference/source is as follows:
NFPA 13, 13D
Committee Meeting Action: Reject
Committee Statement: The proposed revision would make no substantial change to the standard. The committee believes that test connections are adequately addressed in paragraphs 7.2.4 and 7.2.5.

13D-44 Log #84 AUT-RSS **Final Action: Reject**
(7.2.4)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.2.4 ~~Where waterflow alarms are provided, inspector's~~ Test connections shall be installed at locations that allow flow testing of water supplies, connections, and alarm mechanisms.
Substantiation: All systems should be provided with a test connection on the system side of the control valve, not just where waterflow alarms are provided.
This is not original material; its reference/source is as follows:
NFPA 13, 13D
Committee Meeting Action: Reject
Committee Statement: The committee believes that the existing requirements in 7.2 for a system drain adequately address the submitter's concerns and that test connections are not necessary for all systems.

13D-45 Log #CP7 AUT-RSS **Final Action: Accept**
(7.2.4, 7.2.5)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: In 7.2.4 and 7.2.5, delete the word "inspectors".
Substantiation: The term is not necessary.
Committee Meeting Action: Accept

13D-46 Log #38 AUT-RSS **Final Action: Reject**
(7.2.4 and 7.2.5)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.2.4 ~~Where water flow alarms are provided, inspector's~~ Test connections shall be installed at locations that allow flow testing of water supplies, connections, and alarm mechanisms.
7.2.5 The ~~inspector's~~ test connections shall contain an orifice equal to or smaller than the smallest sprinkler installed in the system.
Substantiation: All systems should be provided with test connection on the system side of the control valve, not just where water flow alarms are provided.
This is not original material; its reference/source is as follows:
NFPA 13 and 13D.
Committee Meeting Action: Reject
Committee Statement: The committee believes that the existing requirements in 7.2 for a system drain adequately address the submitter's concerns and that test connections are not necessary for all systems.

13D-47 Log #14 AUT-RSS **Final Action: Accept in Principle**
(7.2.5)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Renumber 7.2.5 to 7.2.4.1.
Substantiation: As 7.2.5, this can be construed as a requirement to provide an inspector's test on all systems. This requirement for an orifice is more appropriate to 7.2.4 which requires test connections when flow switches are provided.

Committee Meeting Action: Accept in Principle
Revise 7.2.5 to read as follows:
7.2.5 The ~~inspector's~~ test connections, where provided, shall contain an orifice
equal to or smaller than the smallest sprinkler installed in the system.
Committee Statement: Test connections are not mandated by the standard. Also removed "inspectors" as its not necessary.
The committee believes that the existing requirements in 7.2 for a system drain adequately address the submitter's concerns and that test connections are not necessary for all systems.

13D-48 Log #85 AUT-RSS **Final Action: Accept in Principle**
(7.2.5)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.2.5 The ~~inspector's~~ test connection~~s~~ shall contain an orifice equal to or smaller than the smallest sprinkler installed in the system.
Substantiation: All systems should be provided with a test connection on the system side of the control valve, not just where waterflow alarms are provided.
This is not original material; its reference/source is as follows:
NFPA 13, 13D
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-45 (Log #CP7).

13D-49 Log #15 AUT-RSS **Final Action: Reject**
(7.3.3)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new section 7.3.3
Pressure gauges shall not be required for wet systems.
Substantiation: Codifies that gauges are not required on wet systems.
Committee Meeting Action: Reject
Committee Statement: The standard specifically indicates the conditions under which pressure gauges are mandated. The standard does not require pressure gauges for wet systems. The committee believes the submitter's language is not necessary.

13D-50 Log #40 AUT-RSS **Final Action: Reject**
(7.4)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revised text to read as follows:
7.4.1 Listed pipe shall be supported in accordance with any listing limitations.
7.4.2 Pipe that is not listed, and listed pipe with listing limitations that do not include piping support requirements, shall be supported from structural members using listed hangers, ~~methods comparable to those required by applicable local plumbing codes.~~
7.4.3 Piping laid on open joists or rafters shall be supported in a manner that prevents lateral movement.
7.4.4 Sprinkler~~s~~ piping shall be supported using listed restraints. ~~in a manner that prevents the movement of piping upon sprinkler operation.~~
Substantiation: The requirement outlined in Section 7.4.4 cannot be determined without testing and a complete understanding of the potentially reactive forces caused by a sprinkler activation. The requirement for listed restraints provides a reasonable minimum standard. There are currently many listed hangers and restraints on the market at reasonable cost.
This is not original material; its reference/source is as follows:
Extracted from NFPA 13 and 13D.
Committee Meeting Action: Reject
Committee Statement: Committee believes that the proposal goes beyond the intent of NFPA 13D with regard to the support of sprinkler system piping.

13D-51 Log #82 AUT-RSS **Final Action: Reject**
(7.4)

Submitter: Peter Miller, Miller Fire Protection
Recommendation: Revise text to read as follows:
7.4.1 Listed pipe shall be supported in accordance with any listing limitations.
7.4.2 Pipe that is not listed, and listed pipe with listing limitations that do not include piping support requirements, shall be supported from structural members using listed hangers. ~~methods comparable to those required by applicable local plumbing codes.~~
7.4.3 Piping laid on open joists or rafters shall be supported in a manner that prevents lateral movement.
7.4.4 Sprinklers ~~piping~~ shall be supported using listed restraints. ~~in a manner that prevents the movement of piping upon sprinkler operation~~
Substantiation: The requirement outlined in Section 7.4.4 cannot be determined without testing and a complete understanding of the potentially reactive forces caused by a sprinkler activation. The requirement for listed restraints provides a reasonable minimum standard. There are currently many listed hangers and restraints on the market at reasonable cost.
This is not original material; its reference/source is as follows:
Extracted from NFPA 13, 13D
Committee Meeting Action: Reject
Committee Statement: Committee believes that the proposal goes beyond the intent of NFPA 13D with regard to the support of sprinkler system piping.

13D-52 Log #16 AUT-RSS **Final Action: Accept in Principle**
(7.5.3)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Revise as follows:
Listed ~~standard~~ quick response dry-pendent or dry-sidewall sprinklers shall be permitted to be extended into unheated areas not intended for living purposes.
Substantiation: Although this section is for sprinklers in areas that generally are not required to be protected by this standard, they should be at least quick response since they will be adjacent to the dwelling unit. The term standard could refer to the response time or the protection area. If there is sufficient pressure for extended coverage, then they should be allowed.
Committee Meeting Action: Accept in Principle
Revise 7.5.3 to read as follows:
7.5.3 Listed ~~standard~~ residential or quick response standard spray dry-pendent or dry-sidewall sprinklers shall be permitted to be extended into unheated areas not
intended for living purposes.
Committee Statement: The revised wording better address the relevant concerns.

13D-53 Log #90 AUT-RSS **Final Action: Accept in Principle**
(7.5.3.1 (New))

Submitter: Mark Fessenden, Tyco Fire Suppression and Building Products
Recommendation: Add new text to read as follows:
7.5.3.1 Listed residential dry-pendent or dry-sidewall sprinklers shall be permitted to be installed in accordance with their listing.

Substantiation: Residential Dry Type Sprinklers are now commercially available .
Committee Meeting Action: Accept in Principle
Committee Statement: See committee action and statement to proposal 13D-52 (Log #16).

13D-54 Log #77 AUT-RSS **Final Action: Accept in Principle in Part**
(7.5.5 (New))

Submitter: Ken Dias, Tyco Fire Suppression and Building Products
Recommendation: Add text to read as follows:
7.5.5 Listed quick response sprinklers may be used in compartmentalized areas of dwellings that do not allow for the use of Listed residential sprinkler due to various construction features. The area density method of calculation of 0.1 gpm/ft^2 minimum shall be used in this compartmentalized area only. Sprinklers would not be required in adjacent combustible concealed spaces above this area. Listed residential and quick response sprinklers shall not be mixed in the same compartment.
Substantiation: Due to the limitations of residential sprinklers, e.g.,: beamed construction, a method of protecting these areas without requiring a full NFPA 13 system needs to be addressed.
Committee Meeting Action: Accept in Principle in Part
Add an annex note to 7.5.1 to read as follows:
A.7.5.1 See A.8.1.2.
Committee Statement: The committee is of the opinion that adequate guidance for addressing sprinkler installations under unique construction features is currently provided in existing annex section A.8.1.2. As part of its action, the committee has provided specific reference in chapter 7 to this annex text. The committee further believes that the specific language proposed by the submitter has not been properly substantiated.

13D-55 Log #59 AUT-RSS **Final Action: Accept in Principle**
(7.5.5, A.7.5.5, and 7.5.5.3(4))

Submitter: Thomas G. Wellen, American Fire Sprinkler Association, Inc.
Recommendation: Add new section and renumber remaining:
7.5.5* High temperature spray sprinklers shall be permitted to be used in areas such as saunas.
A.7.5.5 A small self-contained sauna unit that is not fixed in place does not require sprinkler protection when located inside a room equipped with sprinklers. A large sauna fixed in place or built into the home as a permanent room should have sprinkler protection.
7.5.65.3 (4) Sprinklers installed in saunas where the maximum ambient ceiling temperatures are between 151 F and 225 F (67 C to 107 C) shall be high temperature-rated spray sprinklers.
Substantiation: This will provide guidance for saunas.
Committee Meeting Action: Accept in Principle
Revise section 7.5.1 to read as follows:
7.5.1 Listed residential sprinklers shall be used unless another
type is permitted by 7.5.3 , 7.5.4 or 7.5.5.
Add a new section 7.5.5 to read as follows and renumber existing sections accordingly.
7.5.5* Standard response spray sprinklers shall be permitted to be used in saunas and steam rooms in accordance with section 7.5.6.3(4).
A.7.5.5 Corrosion resistant sprinklers should be considered for use in steam rooms.
Add a new section 7.5.5.3(4) that is to be renumbered as 7.5.6.3(4) to read as follows:
(4) Sprinklers installed in saunas and steam rooms where the maximum ambient ceiling temperatures are between 151°F and 225°F (67°C to 107°C) shall be high temperature-rated spray sprinklers.
Committee Statement: This action meets the intent of the submitter and provides needed guidance for installation of sprinkler in saunas and steam rooms.
No data has been provided for why sprinklers are not required in portable saunas.

13D-56 Log #17 AUT-RSS **Final Action: Accept in Principle**
(7.5.5.1 and 7.5.5.4)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: 1. Modify 7.5.5.1 to read
"...shall be ordinary temperature-rated sprinklers unless modified by the requirements of 7.5.5.3 or 7.5.5.4.
2. Add the following new section 7.5.5.4:
It shall be acceptable to install intermediate temperature sprinklers throughout the entire dwelling unit provided the minimum listing requirements (pressure and gallons) can be met.

Substantiation: Intermediate temperature residential sprinklers undergo the same UL 1626 test as an ordinary temperature sprinkler. It should be allowed to install all intermediate temperature sprinklers if so desired and it can be proven that they meet their listing. This allows greater flexibility in placement to heat sources and also allows installation companies to have a reduced inventory.
Committee Meeting Action: Accept in Principle
Revise to read as follows:
7.5.5.1 Sprinklers installed where maximum ambient ceiling temperatures do not exceed 100F (38C) shall be ordinary temperature-rated or intermediate temperature-rated sprinklers throughout unless modified by 7.5.5.3.
Committee Statement: The Committee agrees with the intent of the submitter, but revised the wording to be clearer.

13D-57 Log #64 AUT-RSS **Final Action: Reject**
(7.6)

Submitter: Shannon Snead, Metropolitan Fire Protection
Recommendation: Delete the following text:
~~7.6* Local waterflow alarms shall be provided on all sprinkler systems in homes not equipped with smoke alarms or smoke detectors in accordance with *NFPA 72, National Fire Alarm and Signaling Code.*~~
Substantiation: Since it is a requirement of the NEC code to have smoke alarms installed in each bedroom and on each floor, it seems that this section is irrelevant, and may lead to confusion.
Committee Meeting Action: Reject
Committee Statement: Not everyone has a smoke alarm.

13D-58 Log #66 AUT-RSS **Final Action: Reject**
(7.6)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Delete “in homes not equipped with smoke alarms or smoke detectors in accordance with NFPA 72, National Fire Alarm and Signaling Code” from section 7.6. The section will then read as follows:
7.6 Alarms. Local waterflow alarms shall be provided on all sprinkler systems.
Substantiation: Fire sprinkler systems need waterflow alarms. It is irresponsible to design a fire sprinkler system that does not produce some sort of signal when water is flowing in the system. Last cycle, NFPA 13D was clarified to show that the alarm is only required to be a local alarm. No monitoring of the signal is required. The cost is minimal and can be made up in the savings when waterflow is detected and shut down, minimizing the amount of water that will flow. Most of the communities that pass ordinances that require sprinklers in these residential occupancies pass additional requirements for waterflow alarms. This means that NFPA 13D is not in line with the needs of its own users.
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Reject
Committee Statement: Sprinkler systems in 13D systems are for life safety not property protection. Smoke alarms are already required by the model codes. Concerns with accidental discharges from the public has already been addressed by many proponents of sprinklers has been very negligible.

13D-59 Log #18 AUT-RSS **Final Action: Reject**
(7.6.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new section 7.6.1
Local waterflow alarms shall be provided on all sprinkler systems located in buildings with more than one dwelling unit.
Substantiation: Since NFPA 13D systems can be used in duplexes or multiple townhouse buildings with proper separation, notification of a fire in one of the units carries more importance than that of a single dwelling unit. Even with fire separations, the fire can spread to adjacent units so early notification is appropriate.
Committee Meeting Action: Reject
Committee Statement: Sprinkler systems in 13D systems are for life safety not property protection. Smoke alarms are already required by the model codes. Concerns with accidental discharges from the public has already been addressed by many proponents of sprinklers has been very negligible. Notification between the units in a multi-dwelling building is not required.

13D-60 Log #5 AUT-RSS **Final Action: Reject**
(Chapter 8)

Submitter: Eddie Phillips, Southern Regional Fire Code Development Committee
Recommendation: Extract the hydraulic calculation procedure from Chapter 22 of NFPA 13 into Chapter 8 of NFPA 13D. Extract the hydraulic symbols section 1.7.2 and table 1.7.2 from NFPA 13 and insert it into a new 1.5.2 renumbering the existing into 1.5.1.1, 1.5.1.2, etc. consistent with NFPA 13.

Substantiation: There are numerous locations in Chapter 8 that currently refer the user to NFPA 13 hydraulic calculation procedures. This forces the user into another document rather than being able to utilize 13D as a stand-alone design standard. As an example, 8.4.4, 8.4.7, 8.4.8, and 8.4.9 all point the user to NFPA 13. This procedure should be contained within NFPA 13D for ease of use and application. The hydraulic symbols chart in NFPA 13 1.7.2 is relevant to the extract text from the NFPA 13 hydraulic calculation procedures.
Committee Meeting Action: Reject
Committee Statement: The intent of NFPA 13D is to keep the fire protection requirements simple. The user has the option of performing hydraulic calculations or using one of several different prescriptive techniques for determining an adequate water supply. The people that choose to perform hydraulic calculations, already know the rules of NFPA 13 and do not need them repeated here.

13D-61 Log #CP13 AUT-RSS **Final Action: Accept**
(Chapter 8)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Change the title of the Chapter to "Sprinkler Position and Location"
Substantiation: The present chapter 8 is being proposed to be split up into three separate chapters to make the document more "user friendly". In conjunction with the two other proposals, this chapter title is the best description of the material that will be left in Chapter 8.
Committee Meeting Action: Accept

13D-62 Log #19 AUT-RSS **Final Action: Accept**
(8.1.1.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Delete 8.1.1.1, 8.1.1.1.1 & 8.1.1.1.2 and renumber accordingly.
Substantiation: There are no residential sprinklers without specific discharge criteria available and have not been for several cycles.
Committee Meeting Action: Accept

13D-63 Log #67 AUT-RSS **Final Action: Accept**
(8.1.1.1)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Delete all of section 8.1.1.1.

Substantiation: There are no residential sprinklers that are not listed with specific discharge characteristics. The industry has evolved beyond the generic 18 gpm and 13 gpm listing requirements. This section just confuses the users and provides no helpful information.
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Accept

13D-64 Log #20 AUT-RSS **Final Action: Accept**
(8.1.1.2.1 and 8.1.1.2.2)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Delete section 8.1.1.2.1 and corresponding annex. Renumber 8.1.1.2.2 to 8.1.1.2.1 and modify as follows:
The system shall provide at least the flow required to produce a minimum discharge density of 0.05 GPM/sq ft (2.04 mm/min) or the sprinkler listing, whichever is greater, to the design sprinklers.
Substantiation: Current listings do not reference a single and multiple sprinkler listing. These were eliminated during the .05 minimum density revisions and revisions to UL1626. Moved the requirement to adhere to the listing to the next section.
Committee Meeting Action: Accept

13D-65 Log #21 AUT-RSS **Final Action: Accept in Principle**
(8.1.2)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Revise as follows:
The number of design sprinklers ~~under flat, smooth, horizontal ceilings~~ shall include ~~all~~ sprinklers within a compartment, up to a maximum of two adjacent sprinklers, ~~that~~ which requires the greatest hydraulic demand.
Substantiation: Currently UL tests sprinklers for use under sloped ceilings. Since the UL 1626 test only allows 2 sprinklers to operate for a passing condition, the reference to only flat smooth ceilings should be eliminated. We should not say all and then 10 words later say up to two. Also with the FPRF testing on sloped ceilings I would assume we will see other proposals in regards to slopes.
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-67 (Log #CP9).

13D-66 Log #36 AUT-RSS Final Action: Accept in Principle
(8.1.2)

Submitter: James E. Golinveaux, Tyco Fire Suppression & Building Products
Recommendation: Revise text to read as follows:

8.1.2* Number of Design Sprinklers. The number of design sprinklers under flat, smooth, horizontal ceilings and smooth sloped ceilings with a pitch up to a maximum 8/12, shall include all sprinklers within a compartment, up to a maximum of two sprinklers, that require the greatest hydraulic demand

A.8.1.2 All residential sprinklers have been investigated and are currently listed for use under flat, smooth, horizontal ceilings. Research from the Fire Protection Research Foundation has shown that sprinklers tested under flat, smooth, horizontal ceilings will provide the prescribed level of safety when installed under smooth sloped ceilings with a pitch up to and including 8/12. Special Listings for smooth sloped ceilings with a pitch up to and including 8/12 are not required, using the flat sprinkler design criteria will provide the performance required. Some residential sprinklers have been investigated and listed for use under ~~specific smooth sloped or~~ horizontal beamed ceilings. Where ceilings have configurations outside the scope of current listings, special sprinkler system design features such as larger flows, a design of three or more sprinklers to operate in a compartment, or both can be required. Figure A.8.1.2(a) and Figure A.8.1.2(b) show examples of design configurations. Questions are frequently asked regarding the minimum two sprinkler design when certain sprinkler performance statistics have indicated that in a majority of the cases (with residential sprinklers) the fire is controlled or suppressed with a single sprinkler. While these statistics may or may not be correct, the water supplies for the fire sprinkler systems under which these statistics were generated were designed for two or more sprinklers in the first place. When the fires occurred, the first sprinkler operated in excess of its individual design flow and pressure because the sprinkler system's water supply was strong enough to handle multiple sprinklers and only a single sprinkler opened. At these higher flows and pressures, the discharge from a single sprinkler was sufficient to limit or suppress the heat generated from the fire. This concept is called "hydraulic increase." Hydraulic increase can also occur when a water supply's capabilities during the fire event exceeded that required by the minimum design requirements of the standard. Since none of the data used to generate the previously mentioned statistics captured the capabilities of the water supply in relation to the design requirements, the impact of the hydraulic increase on the number of single sprinkler activations cannot be determined. But if the minimum water supply requirement of the standard is reduced to only be capable of handling a single sprinkler, then there could be no hydraulic increase safety factor. When the first sprinkler opens, it will only get the flow and pressure that were originally designed for it, and the potential is significant for that to be insufficient to control the fire given any obstructions and the layout of the space where the fire starts. The National Institute for Standards and Technology (NIST), under a grant from the United States Fire Administration, studied this concept several years ago in the hopes of being able to propose a single sprinkler flow for the 2007 edition of NFPA 13D (see NIST Report NIST GCR 05-875 prepared by Underwriters Laboratories with a publication date of February 2004). Unfortunately, the research did not support the design of a sprinkler system with only the flow for a single sprinkler, even under conditions of small rooms with flat, smooth ceilings. Without the hydraulic increase associated with the two sprinkler design, the fire scenarios were too many where the first sprinkler to open would have insufficient flow to control the fire and then multiple sprinklers would open, causing the room to reach untenable conditions and the water supply to be overrun. These same fire scenarios were easily controlled by a sprinkler system designed for a two sprinkler water supply from the start. In addition to the NIST tests, the National Fire Sprinkler Association conducted a series of full-scale fire tests in simulated bedrooms that were 14 ft × 14 ft with an adjoining hallway, each with flat, smooth, 8 ft high ceilings. The tests were performed to determine better rules for keeping sprinklers clear of obstructions like ceiling fans, but baseline tests were also performed without any obstructions at the ceiling. In nine out of the twelve tests, including the two baseline tests without obstructions at the ceiling, a sprinkler in the hall outside the room of fire origin opened first, followed by the sprinkler in the room of origin. Even though the room of origin met all of the rules of NFPA 13D as a compartment, a sprinkler outside of this room was opening first. All of these fires were controlled by the sprinklers, but if the water supply had only been sufficient for a single sprinkler, the sprinklers would never have been able to provide fire control.

Substantiation: Testing performed by the Fire Protection Research Foundation has shown that sprinklers installed on smooth sloped ceilings up to a maximum slope of 8/12 will adequately provide the prescribed level of safety if calculated using the Listed flows of the residential flat (up to 2/12 slope) sprinklers. The real world performance of the first sprinkler discharging more than the minimum flow tested in the Listing certification significantly helps overcome the delay of sprinkler operation due to the slope ceiling.

Note: Supporting material is available for review at NFPA Headquarters.

Committee Meeting Action: Accept in Principle

Committee Statement: See Committee Action on 13D-67 (Log #CP9).

13D-67 Log #CP9 AUT-RSS Final Action: Accept
(8.1.2)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Replace the existing text in Sections 8.1.2 and 8.1.3 and associated annex text with the following text:

8.1.2* Number of Design Sprinklers.

8.1.2.1 For each of the following situations, the number of sprinklers in the design area shall be all of the sprinklers within a compartment, up to a maximum of two sprinklers, that require the greatest hydraulic demand:

(1) A flat, smooth, horizontal ceiling with no beams up to a maximum of 24 ft above the floor.

(2) A smooth, flat, sloped ceiling with no beams up to a maximum slope of 8 in 12. The highest portion of the ceiling shall not be more than 24 ft above the floor. The highest sprinkler in the sloped portion of the ceiling shall be above all openings from the compartment containing the sloped ceiling into any communicating spaces.

(3) A sloped ceiling with beams up to 14 inches deep with pendent sprinklers under the beams. The compartment containing the sloped, beamed ceiling shall be a maximum of 600 sq ft in area. The slope of the ceiling shall be between 2 in 12 and 8 in 12. The highest portion of the ceiling shall not be more than 24 ft above the floor. The highest sprinkler in the sloped portion of the ceiling shall be above all openings from the compartment containing the sloped ceiling into any communicating spaces.

(4) A sloped ceiling with beams of any depth with sidewall or pendent sprinklers in each pocket formed by the beams. The compartment containing the sloped, beamed ceiling shall be a maximum of 600 sq ft in area. The slope of the ceiling shall be between 2 in 12 and 8 in 12. The highest portion of the ceiling shall not be more than 24 ft above the floor.

8.1.2.2 For situations not meeting one of the conditions in 8.1.2.1, residential sprinklers listed for use in specific ceiling configurations shall be permitted to be used in accordance with their listing.

8.1.2.3* For situations not meeting one of the conditions in 8.1.2.1 and 8.1.2.2, the number of sprinklers in the design area shall be determined in consultation with the authority having jurisdiction as appropriate for the conditions.

8.1.3 Sprinkler Coverage

8.1.3.1 Residential Sprinklers.

8.1.3.1.1 Sprinklers shall be installed in accordance with their listing where a type of ceiling configuration is referenced in the listing.

8.1.3.1.2* Where construction features or other special conditions exist that are outside the scope of sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitations.

A.8.1.2 All residential sprinklers have been investigated under a flat, smooth, 8 ft. high horizontal ceiling. Some residential sprinklers have been investigated and listed for use under specific ceiling configurations such as a horizontal beamed ceiling. The performance of residential sprinklers under flat, smooth, horizontal ceilings has been well documented throughout the life of NFPA 13D. Prior to 2010, several manufacturers of residential sprinklers had performed testing and received listings for residential sprinklers under certain slopes and in certain beam conditions. In 2010, the Fire Protection Research Foundation (FPRF) conducted research project consisting of 76 FDS simulations and 12 full-scale fire tests. The results have been used to develop system design criteria in a generic manner in order to simplify the use of residential sprinklers. Some residential sprinkler listings still exist for situations beyond the scope of the generic design. See the FPRF report, Analysis of the Performance of Residential Sprinkler Systems with Sloped or Sloped and Beamed Ceilings dated July 2010 for more information.

Questions are frequently asked regarding the minimum two sprinkler design when certain sprinkler performance statistics have indicated that in a majority of the cases (with residential sprinklers) the fire is controlled or suppressed with a single sprinkler. While these statistics may or may not be accurate, the water supplies for the fire sprinkler systems under which these statistics were generated were designed for two or more sprinklers in the first place. When the fires occurred, the first sprinkler operated in excess of its individual design flow and pressure because the sprinkler system's water supply was strong enough to handle multiple sprinklers and only a single sprinkler opened. At these higher flows and pressures, the discharge from a single sprinkler was sufficient to limit or suppress the heat generated from the fire. This concept is called "hydraulic increase." Hydraulic increase can also occur when a water supply's capabilities during the fire event exceeded that required by the minimum design requirements of the standard. Since none of the data used to generate the previously mentioned statistics captured the capabilities of the water supply in relation to the design requirements, the impact of the hydraulic increase on the number of single sprinkler activations cannot be determined.

But if the minimum water supply requirement of the standard is reduced to only be capable of handling a single sprinkler, then there could be no hydraulic increase safety factor. When the first sprinkler opens, it will only get the flow and pressure that were originally designed for it, and the potential is significant for that to be insufficient to control the fire given any obstructions and the layout of the space where the fire starts.

The National Institute for Standards and Technology (NIST), under a grant from the United States Fire Administration, studied this concept several years ago in the hopes of being able to propose a single sprinkler flow for the 2007 edition of NFPA 13D (see NIST Report NIST GCR 05-875 prepared by Underwriters Laboratories with a publication date of February 2004). Unfortunately, the research did not support the design of a sprinkler system with only the flow for a single sprinkler, even under conditions of small rooms with flat, smooth ceilings. Without the hydraulic increase associated with the two sprinkler design, the fire scenarios were too many where the first sprinkler to open would have insufficient flow to control the fire and then multiple sprinklers would open, causing the room to reach untenable conditions and the water supply to be overrun. These same fire scenarios were easily controlled by a sprinkler system designed for a two sprinkler water supply from the start.

In addition to the NIST tests, the National Fire Sprinkler Association conducted a series of full-scale fire tests in simulated bedrooms that were 14 ft × 14 ft with an adjoining hallway, each with flat, smooth, 8 ft high ceilings. The tests were performed to determine better rules for keeping sprinklers clear of obstructions like ceiling fans, but baseline tests were also performed without any obstructions at the ceiling. In nine out of the twelve tests, including the two baseline tests without obstructions at the ceiling, a sprinkler in the hall outside the room of fire origin opened first, followed by the sprinkler in the room of origin. Even though the room of origin met all of the rules of NFPA 13D as a compartment, a sprinkler outside of this room was opening first. All of these fires were controlled by the sprinklers, but if the water supply had only been sufficient for a single sprinkler, the sprinklers would never have been able to provide fire control.

For examples of selecting a compartment for consideration, see Figure A.8.1.2(a) and Figure A.8.1.2(b), which show examples of design configurations for compartments based on the presence of lintels to stop the flow of heat.

A.8.1.2.3 A number of variables exist that would influence the number of sprinklers that might open during a fire. In many of the fire tests that led to the development of the residential sprinkler, and in many of the subsequent tests including the testing conducted as a part of the previously referenced FPRF sloped ceiling research project, more than two sprinklers have opened during certain fire tests, but the water supply, sized for only two sprinklers, was still capable of controlling the fire for ten minutes and meeting the goals of NFPA 13D. While there is no guarantee that this would always happen, it is believed that the two sprinkler design criteria is appropriate for ceiling constructions and room configurations that are within the limitations referenced 8.1.2.1 and 8.1.2.2.

For the ceiling constructions and room configurations that are beyond the scope of the two sprinkler discharge criteria referenced in 8.1.2.1 and 8.1.2.2, a greater number of design sprinklers and/or higher discharge flows should be considered in the system design. As of this date, there is limited fire test data available to include specific design criteria in this standard. In these situations, sprinklers can be installed in a manner acceptable to the authority having jurisdiction to achieve the results specified in this standard. In making these determinations, consideration should be given to factors influencing sprinkler system performance, such as sprinkler response characteristics, impact of obstructions on sprinkler discharge, and number of sprinklers anticipated to operate in the event of a fire.

For the situation of flat, smooth, horizontal ceilings with beams at the ceiling, there are a number of variables that could cause many sprinklers to open during a fire. Residential sprinklers used in accordance with all of the restrictions of their listing, can be used to protect this circumstance.

A.8.1.3.1.2 See A.8.1.2 and A.8.1.2.3.

Substantiation: This proposal incorporates the findings of the Fire Protection Research Foundation's project on residential sprinklers and sloped and beamed ceilings into NFPA 13D. The limitations of the test facility have been translated into limitations on the generic use of residential sprinklers. The maximum ceiling height of 24 ft. and limitation on communicating spaces considers the data generated under the FPRF project as well as other fire tests conducted at other times. For more information, see the FPRF report, Analysis of the Performance of Residential Sprinkler Systems with Sloped or Sloped and Beamed Ceilings.

Committee Meeting Action: Accept

13D-68 Log #30 AUT-RSS Final Action: Reject
(8.1.3.1.2)

Submitter: Stephen J. DiGiovanni, Clark County Fire Department
Recommendation: Add text to read as follows:
8.1.3.1.2 Where construction features or other special conditions exist that are outside the scope of sprinkler listings, listed sprinklers shall be permitted to be installed beyond their listing limitation, where approved by the authority having jurisdiction.
Substantiation: The base code allows sprinklers to be used outside of their listings. The particular issue with this code section is that the allowance to deviate from sprinkler listing is not subject to regulation, due to the inclusion of the language "...shall be permitted" This phrase can be interpreted to say that the authority having jurisdiction must approve an alternate design when built conditions are not described in sprinkler listings. While it is oftentimes necessary to approve alternate methods of achieving protection consistent with the intent of adopted codes, invariably these alternate methods are subject to prior approval by the authority having jurisdiction. This code section may be the only instance in regularly adopted codes where alternate means of design are pre-approved without requiring the approval of the authority having jurisdiction. By adding the phrase "...where approved by the authority having jurisdiction," the code section will still allow alternate methods of design where conditions warrant, but will provide the authority having jurisdiction approval authority over the alternate design.
Committee Meeting Action: Reject
Committee Statement: Where residential sprinklers are not available the intent of NFPA 13D is still to require residential sprinklers. The committee position is stated in A.8.1.3.1.2

13D-69 Log #22 AUT-RSS Final Action: Accept in Principle
(8.1.3.1.4)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new section 8.1.3.1.4:
In rooms or compartments 600 Sq Ft and less with beamed ceilings, it shall be acceptable to install pendent sprinklers in the bottom of the beams regardless of the requirements in 8.2.1.1 and 8.2.1.2.
Substantiation: Research was done by Tyco Fire in regards to sloped ceilings with beams. (See link below for report). It was apparent that sprinklers positioned at the bottom of the beams seemed to react faster than sprinklers installed in the flat panels or pockets created by the beams. In many dwelling units, beamed ceilings are present. Currently to comply with the standard for deflector distance and obstructions, one must place a sprinkler in every pocket. In a 20'x20' room with 12" deep beams spaced 5'-0" on center in both directions, this would require 16 sprinklers. There are some sprinklers with listings for beamed ceilings but the listings are so exact that a broader code exception is needed.

http://www.tyco-fire.com/index.php?P=show&B=&CP=1&id=ResSteepPitch1207&BK=lit&BL=Technical%20Reports%20and%20White%20Papers

This is not original material; its reference/source is as follows:
Tyco Fire white paper by James Golinveaux
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-67 (Log #CP9).

13D-70 Log #93 AUT-RSS Final Action: Accept in Principle
(8.2.x (New))

Submitter: Mark Fessenden, Tyco Fire Suppression and Building Products
Recommendation: Copy 13R Section 6.2.3.5 Sprinkler Positioning and add before Section 8.2.5

XXXX Sprinklers shall be positioned so that the response time and discharge are not unduly affected by obstructions such as ceiling slope, beams, or light fixtures.

XXXX Small areas created by architectural features such as planter box windows, bay windows, and similar features shall be evaluated as follows:

(1) Where no additional floor area is created by the architectural feature, no additional sprinkler protection is required.

(2) Where additional floor area is created by an architectural feature, no additional sprinkler protection is required,provided all of the following conditions are met:

(a) The floor area shall not exceed 18 ft2 (1.7 m2).

(b) The floor area shall not be greater than 2 ft (0.61 m) in depth at the deepest point of the architectural feature to the plane of the primary wall where measured along the finished floor.

(c) The floor shall not be greater than 9 ft (2.7 m) in length where measured along the plane of the primary wall.

(d) Measurement from the deepest point of the architectural feature to the sprinkler shall not exceed the maximum listed spacing of the sprinkler.

(3) The hydraulic design is not required to consider the area created by the architectural feature.

XXXX* Except as otherwise permitted in 6.2.3.3, 6.2.3.4, and 6.2.3.5.4, residential sprinklers shall provide, in conjunction with survivability enhancement, complete coverage of the floor area within the compartment.

XXXX* Small potentially blocked or shadowed floor areas shall be permitted on a horizontal plane in compartments of 800 ft2 (74.3 m2) or less as long as all of the following conditions are met:

(1) The maximum area of any single individual contiguous shadowed floor area, regardless of geometric configuration, shall not exceed 3 ft2 (0.28 m2).

(2) The maximum area summation of any number of individual shadowed floor areas shall not exceed 12 ft2 (1.11 m2) per compartment.

(3) The maximum total summation of shadowed floor areas and allowances made by 6.2.3.3 shall not exceed 30 ft2 (2.79 m2) per dwelling unit.

Delete A.8.2.5 Paragraph 3 & 4

~~Small areas created by architectural features such as planter box windows, bay windows, and similar features can be evaluated as follows:~~

~~(1) Where no additional floor area is created by the architectural feature, no additional sprinkler protection is required.~~

~~(2) Where additional floor area is created by an architectural feature, no additional sprinkler protection is required, provided all of the following conditions are met:~~

~~(a) The floor area does not exceed 18 ft2 (1.7 m2).~~

~~(b) The floor area is not greater than 2 ft (0.65 m) in depth at the deepest point of the architectural feature to the plane of the primary wall where measured along the finished floor.~~

~~(c) The floor area is not greater than 9 ft (2.9 m) in length where measured along the plane of the primary wall.~~

~~Measurement from the deepest point of the architectural feature to the sprinkler should not exceed the maximum listed spacing of the sprinkler. The hydraulic design is not required to consider the area created by the architectural feature.~~

Substantiation: Additional criteria from 13R would be beneficial to a 13D designer.
Committee Meeting Action: Accept in Principle

Do three things:

1) Insert a new 8.2.5.7 as follows: 8.2.5.7 Shadow Areas. Dry areas shall be permitted in the protection area of a sprinkler where walls or partitions block direct spray patterns from reaching the floor as long as the dry areas do not exceed 15 sq ft.

2) Insert an annex note as follows: A.8.2.5.7 Corridors being protected with sidewall sprinklers will frequently have small areas behind the sprinklers that are inset for a doorway. Even though these areas are slightly behind the sprinklers, it isi not the intent of NFPA 13D to require additional sprinkler protection in these doorways.

3) Delete the 3rd and 4th paragraphs of annex note A.8.2.5 as suggested by the submitter (keeping the rest of the annex note in tact).

Committee Statement: This language accomplishes a similar goal as to what the submitter was trying to accomplish while keeping the text similar to NFPA 13 and NFPA 13R. See Log 73 in the NFPA 13R ROP for more details on the

intent of the language and the justification for the 15 sq ft limit.

13D-71 Log #CP16 AUT-RSS **Final Action: Reject**
(8.2.1, 8.2.1.1, 8.2.1.2, 8.2.1.3, 8.2.1.4)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Revise as follows:

8.2.1 Pendent and Upright Sprinklers.

8.2.1.1 Pendent and upright sprinklers that have not been listed with specific positioning criteria shall be positioned so that the deflectors are within 1 in. to 4 in. (25.4 mm to 102 mm) from the ceiling.

8.2.1.2 Pendent and upright sprinklers that have been listed with specific positioning criteria shall be positioned in accordance with the listing unless permitted otherwise by 8.2.1.3.

8.2.1.3 In rooms not exceeding 400 sq. ft. in area, the distance from any single wall to the sprinkler shall be permitted to be 2 feet greater than the maximum wall distance specified in accordance with the sprinkler's positioning criteria in its listing.

8.2.1.3~~4~~ Pendent and upright sprinklers shall be located a minimum of 4 in. (102 mm) from a wall.

Substantiation: Similar to the small room design criteria in NFPA 13, Section 8.6.3.2.4, NFPA 13R will provide this criterion to help address obstructions such as electrical fixtures and ceiling fans in small rooms so as not to require additional sprinklers in such small rooms.
Committee Meeting Action: Reject
Committee Statement: The committee is seeking public comment on this proposal. The proposed wording needs more work to be accepted.

13D-72 Log #75 AUT-RSS **Final Action: Accept in Principle**
(8.2.2.3 (New))

Submitter: Ken Dias, Tyco Fire Suppression and Building Products
Recommendation: Add text to read as follows:

8.2.2.3 Residential horizontal sidewall sprinkler deflectors shall be located no more than 6 in. from the wall on which they are mounted.

Substantiation: Although deflector to ceiling distances are given, there are no guidelines for deflector to wall distances for residential sidewall sprinklers.
Committee Meeting Action: Accept in Principle
Revise 8.2.2.3 to read: 8.2.2.3 Residential horizontal sidewall sprinkler deflectors shall be located no more than 6 inches from the face of the wall or soffit on which they are mounted.
Committee Statement: Clarification of how to perform the measurement, especially with a soffit. The critical issue is the distance of the sprinkler from the soffit face, not the adjacent wall.

13D-73 Log #23 AUT-RSS **Final Action: Accept in Principle**
(8.2.5.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add text as follows:
In all closets and compartments, including those closets housing mechanical equipment, that are not larger than 400 cu ft (11.3 cu m) in size, a single sprinkler at the highest ceiling space ~~in the closet~~ shall be sufficient without regard to obstructions or minimum distance to wall.
Substantiation: Correlates with NFPA 13R.
Committee Meeting Action: Accept in Principle
Delete the word "closets" before "housing" and change "distance" to "distances" so that the section reads, "In all closets and compartments, including those housing mechanical equipment, that are not larger than 400 cu ft (11.3 cu m) in size, a single sprinkler at the highest ceiling space shall be sufficient without regard to obstructions or minimum distances to wall.
Committee Statement: Editorial correction to make sure that the concept of applying this section to all small compartments is the same whether or not the compartment is a closet.

13D-74 Log #24 AUT-RSS **Final Action: Accept in Principle**
(8.2.5.7)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new 8.2.5.7 Sprinkler Positioning
8.2.5.7.1 Sprinklers shall be positioned from obstructions such as ceiling slope, beams, light fixtures, fans, etc. in accordance with this standard or the manufacturer's installation guidelines.
8.2.5.7.2 Small areas created by architectural features such as planter box windows, bay windows, and similar features shall be evaluated as follows:
(1) Where no additional floor area is created by the architectural feature, no additional sprinkler protection is required.
(2) Where additional floor area is created by an architectural feature, no additional sprinkler protection is required, provided all of the following conditions are met:
(a) The floor area shall not exceed 18 sq ft (1.7 m Sq)
(b) The floor area shall not be greater than 2 ft (0.61 m) in depth at the deepest point of the architectural feature to the plane of the primary wall where measured along the finished floor.
(c) The floor shall not be greater than 9 ft (2.7 m) in length where measured along the plane of the primary wall.
(d) Measurement from the deepest point of the architectural feature to the sprinkler shall not exceed the maximum listed spacing of the sprinkler.
(3) The hydraulic design is not required to consider the area created by the architectural feature.
8.2.5.7.3 Except as otherwise permitted by 8.2.5.7.2 and 8.2.5.7.4 residential sprinklers shall provide complete coverage of the floor area within compartments requiring sprinkler protection.
8.2.5.7.4 Small potentially blocked or shadowed floor areas shall be permitted on a horizontal plane in compartments of 800 sq ft (74.3 sq m) or less as long as the following conditions are met:
(1) The maximum area of any single individual contiguous shadowed floor area, regardless of geometric configuration, shall not exceed 3 sq ft (0.28 sq m).
(2) The maximum area summation of any number of individual shadowed floor areas shall not exceed 12 sq ft (1.11 sq m) per compartment.
(3) The maximum total summation of shadowed floor areas and allowances made by 8.2.5.7.2 (2) shall not exceed 30 sq ft (2.79 sq m) per dwelling unit.
Substantiation: Adds architectural feature and shadow rules from NFPA 13R
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-70 (Log #93).

13D-75 Log #34 AUT-RSS Final Action: Accept
(8.2.6)

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Add a new 8.2.6 and an annex note as follows:
8.2.6* Where dry sprinklers are connected to wet pipe sprinkler systems protecting areas subject to freezing temperatures, the minimum exposed length of the barrel of the dry sprinkler shall be in accordance with Table 8.2.6(a) or Table 8.2.6(b). The minimum barrel length shall be measured from the face of the fitting to which the dry sprinkler is installed to the inside surface of the insulation, wall or ceiling leading to the cold space, whichever is closer to the fitting.

INSERT TABLE 13D_ L34_8.2.6(A)

INSERT TABLE 13D_L34_8.2.6(B)

A.8.2.6 Dry sprinklers must be of sufficient length to avoid freezing of the water-filled pipes due to conduction along the barrel. The values of exposed barrel length in Tables 8.2.6(a) and 8.2.6(b) have been developed using an assumption of a properly sealed penetration and an assumed maximum wind velocity on the exposed sprinkler of 30 mph (48 km/h). Where higher wind velocity is expected, longer exposed barrel lengths will help avoid freezing of the wet piping. The total length of the barrel of the dry sprinkler must be longer than the values shown in Tables 8.2.6(a) and 8.2.6(b) because the length shown in the tables is the minimum length of the barrel that needs to be exposed to the warmer ambient temperature in the heated space. See Figure A.8.2.6(1) for an example of where the measure the exposed barrel length for a sidewall sprinkler penetrating an exterior wall and Figure A.8.2.6(2) for an example of where to measure the exposed barrel length for a pendent sprinkler penetrating a ceiling or top of a freezer.

INSERT FIGURE 13D_FIG.A.8.2.6(1)

INSERT FIGURE 13D_FIG.A.8.2.6(2)

Substantiation: NFPA 13R currently has no requirements for minimum barrel length. A minimum barrel length is necessary to prevent the cold temperatures from conducting down the barrel and freezing the wet pipe to which it is connected. All of the sprinkler manufacturer members of the NFSA have agreed that these are the proper values for barrel length and that this is the proper way to measure the exposed barrel length. This proposal is consistent with what is being proposed to NFPA 13.
This proposal is being submitted by the NFSA Engineering and Standards Committee.

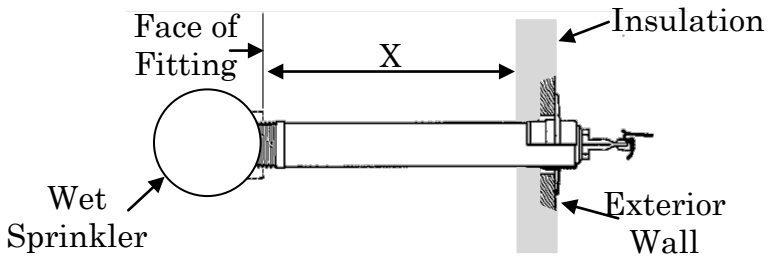
Committee Meeting Action: Accept

Table 8.2.6(a) Exposed Barrel Lengths for Dry Sprinklers (US Customary Units)

Ambient Temperature Exposed to Discharge End of Sprinkler (°F)	Minimum Exposed Barrel Length when Exposed to 40°F (inches)	Minimum Exposed Barrel Length when Exposed to 50°F (inches)	Minimum Exposed Barrel Length when Exposed to 60°F (inches)
40	0	0	0
30	0	0	0
20	4	0	0
10	8	1	0
0	12	3	0
-10	14	4	1
-20	14	6	3
-30	16	8	4
-40	18	8	4
-50	20	10	6
-60	20	10	6

Table 8.2.6(b) Exposed Barrel Lengths for Dry Sprinklers (Metric Units)

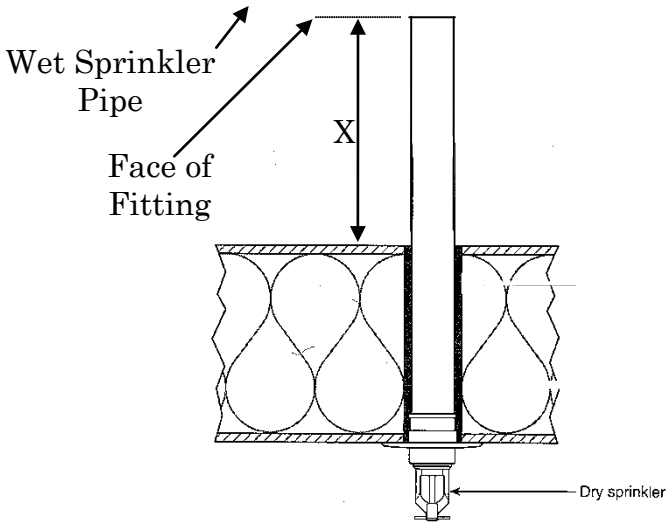
Ambient Temperature Exposed to Discharge End of Sprinkler (°C)	Minimum Exposed Barrel Length when Exposed to 4.4°C (mm)	Minimum Exposed Barrel Length when Exposed to 10°C (mm)	Minimum Exposed Barrel Length when Exposed to 15.6°C (mm)
4.4	0	0	0
-1	0	0	0
-6.7	102	0	0
-12.2	203	25	0
-17.8	305	76	0
-23.3	356	102	25
-28.9	356	152	76
-34.4	406	203	102
-40	457	203	102
-45.6	508	254	152
-51.1	508	254	152



X = Minimum Exposed Barrel Length

X is measured from the face of the sprinkler fitting
to the inside surface of the exterior wall or insulation
whichever is closer to the fitting

Figure A.8.2.6(1) Dry Sidewall Sprinkler Through Wall



X = Minimum Exposed Barrel Length

X is measured from the face of the sprinkler fitting
to the inside surface of the freezer or insulation
whichever is closer to the fitting

Figure A.8.2.6(2) Dry Pendent Sprinkler Through Ceiling or Top of a Freezer

13D-76 Log #32 AUT-RSS **Final Action: Accept in Principle**
(8.3.2)

Submitter: Brian Larkin, Tyco Thermal Controls
Recommendation: Add text to read as follows:
(1) Dry pipe system and preaction systems in accordance with 8.3.4
(2) Antifreeze system in accordance with 8.3.3
(3) Listed standard dry-pendent or dry-sidewall sprinklers extended from pipe in heated areas into unheated areas not intended for living
purposes
(4) Listed heat tracing, provided that it is installed and insulated in accordance with the manufacturer's specifications.
(5) Where listed heat tracing is utilized for residential sprinkler systems, it shall be specifically listed for use on fire sprinkler systems.

Substantiation: Electrical heat-tracing is a viable means to protect sprinkler piping from freezing and is currently allowed under NFPA-13 2010. Add these two methods to be consistent with NFPA-13 2010 heat tracing allowances. The parameters for heat tracing should be consistent NFPA standards.
Committee Meeting Action: Accept in Principle
Revise text as follows:
(4) Listed heat tracing provided that it is installed and insulated in accordance with manufacturer's instructions. Heat tracing used on branch lines shall be specifically listed for branch lines of fire sprinkler systems.
Do not accept the change to part (5).
Committee Statement: The allowance for heat tracing can be combined into a single statement. It is important to have the heat tracing listed for branch lines to make sure that the concerns of not heating the sprinkler to its activation point and to make sure that the obstructions to the sprinkler spray are taken care of.

13D-77 Log #76 AUT-RSS **Final Action: Accept**
(8.3.2(4) (New))

Submitter: Ken Dias, Tyco Fire Suppression and Building Products
Recommendation: Add text to read as follows:
8.3.2 Where system piping is located in areas not maintained above 40°F, the pipe shall be protected against freezing by use of one of the following methods:
(4) Listed residential dry-pendent or dry sidewall sprinklers extended from pipe in heated areas into unheated areas.
Substantiation: Clarifies option to use residential dry sprinklers.
Committee Meeting Action: Accept

13D-78 Log #45 AUT-RSS **Final Action: Accept in Principle**
(8.3.3.1)

Submitter: Mark A. Novak, Tahoe Douglas Fire Protection District
Recommendation: Revise text to read as follows:
8.3.3.1 ~~Antifreeze shall not be permitted in sprinkler systems.~~
8.3.3.2.3 Percent solution by volume of glycerine-water shall not exceed 50%, propylene glycol -water mixtures shall not exceed 40%. Restore full text of Section 4.1.4. Restore all related sections of annex.
Substantiation: The Fire Protection Research Foundation Report titled Home Fire Sprinklers and Antifreeze Solutions, Phase II, unequivocally demonstrated that glycerine solutions not exceeding 50% and glycol solutions not exceeding 40% do not contribute to fire growth. The use of anti-freeze solutions is crucial in the reliability of residential sprinkler systems. Particularly in areas with cold climates, history of prolonged power outages and a high incidence of seasonal or transient occupancy.
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-12 (Log #CP3).

13D-79 Log #51 AUT-RSS **Final Action: Accept in Principle in Part**
(8.3.3.2.1)

Submitter: Andy Olah, Lubrizol Advanced Materials, Inc.
Recommendation: Add new 8.3.3.2.1 Antifreeze solutions shall be listed and shall be premixed by the manufacturer.
Renumber subsequent sections in 8.3.3.2.
Substantiation: In order to insure that the antifreeze solution is effective it must be listed. Listing requires an initial qualification evaluation and periodic follow up inspections and testing to assure continued product quality. Antifreeze solutions have been determined to have the potential to create dangerous flash fires and this is a reasonable precaution for such a critical component of the sprinkler system.
Antifreeze solutions that are mixed by the manufacturer are produced under controlled conditions. Manufacturers are the ones who are the most prepared to maintain the proper mixture of the components of the antifreeze solution.
Committee Meeting Action: Accept in Principle in Part
Anti freeze is not required to be listed.
Committee Statement: It is not the intent to require antifreeze to be listed. See Committee Action on 13D-12 (Log #CP3).

13D-80 Log #52 AUT-RSS **Final Action: Accept in Principle**
(8.3.3.2.2 and A.8.3.3.2)

Submitter: Andy Olah, Lubrizol Advanced Materials, Inc.
Recommendation: Revise text to read as follows:
8.3.3.2.2 Where sprinkler systems are supplied by public water connections. the use of antifreeze solutions other than water solutions of pure glycerine (C.P. or U.S.P. 96.5 percent grade), ~~or~~ propylene glycol or listed antifreeze solutions shall not be permitted.
A.8.3.3.2 listed CPVC sprinkler pipe and fittings should be protected from freezing with glycerine or antifreeze solutions listed for use in CPVC sprinkler systems only.
Substantiation: Currently NFPA 13 makes no specific allowance for antifreeze solutions other than glycerine and propylene glycol which are shown in the standard. It is important to allow for new technologies to be permitted. Such technologies need to be evaluated by listing agencies who are capable of determining the necessary performance of such antifreeze solutions.
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-12 (Log #CP3).

13D-81 Log #25 AUT-RSS **Final Action: Accept**
(8.4.1)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Delete 8.4.1 and renumber accordingly.
Substantiation: Residential sprinklers do not have separate listings for single and multiple discharge designs. This section is now obsolete.
Committee Meeting Action: Accept

13D-82 Log #CP18 AUT-RSS **Final Action: Reject**
(8.4.4(4))

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Add to 8.4.4 (4)
(d) For Flows higher than the manufacturer's allowable continuous flow, table 8.4.4(g) shall be permitted to be used.

In Table 8.4.4(g)
Add 40 PSI to the 39 GPM column

In table 8.4.10.2(b)
Add 14 PSI for 22 GPM
Add 16 PSI for 24 GPM
Add 21 PSI for 26 GPM
Add 23 PSI for 28 GPM
Add 25 PSI for 30 GPM
Add 28 PSI for 32 GPM

Substantiation: This change incorporates the results of the Fire Protection Research Foundation project.
Committee Meeting Action: Reject
Committee Statement: The committee has rejected this proposal and is asking for public comments.

13D-83 Log #CP11 AUT-RSS **Final Action: Accept**
(8.4.4(a) thru 8.4.4(e))

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Renumber the tables as 8.4.4(a) through (e) and change the "Tee Run" column to "Tee or Cross (flow straight through)"
Substantiation: If the standard is going to require the friction loss to be calculated when the water goes straight through a tee, then it also needs to have the friction loss calculated when the water goes straight through a cross. Also, the term "run" is not as clear as just stating that the water is going straight through the fitting without making a change in direction.
Committee Meeting Action: Accept

13D-84 Log #68 AUT-RSS **Final Action: Accept**
(8.4.4(5))

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: Change 0.434 in line (a) to 0.433.
Substantiation: The pressure loss/gain due to elevation is 0.433 psi per ft. This is calculated using the specific weight of water (lb/ft^3) and dividing by the number of square inches in a square foot (144). The specific weight of water varies by the temperature of the water. At 32°F, the specific weight of water is 62.42, which, when divided by 144, yields 0.43347 psi/ft, which rounds to 0.433 when using the rules of rounding.

The specific weight of water goes down for most temperatures above 32. At 70° for example, the specific weight is 62.3, which, when divided by 144, yields 0.4326 psi/ft, which also rounds to 0.433.

The only temperature for which water has a higher specific weight is 40°F, which has a specific weight of 62.43. When divided by 144, this yields 0.43354, which also rounds to 0.433 using the rules of rounding. (When the next digit to the right is 1-4, round down; when the next digit to the right is 6-9, round up. When the digit in question is 5, odd numbers get rounded down and even numbers get rounded up. Since 3 is an odd number, the number is rounded down.)
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Accept

13D-85 Log #CP10 AUT-RSS **Final Action: Accept**
(Table 8.4.4(c), 8.4.4(d))

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Move Table 8.4.4(a) and Table 8.4.4(b) to the annex, add tables for CPVC and PEX and change the parenthetical statement at the end of A.8.4.4 to read, [See Figure A.8.4.4(a), Figure A.8.4.4(b), Table A.8.4.4(a), Table A.8.4.4(b), Table A.8.4.4(c) and Table A.8.4.4(d).]

****Insert Tables 8.4.4(c) and 8.4.4(d) Here****
Substantiation: The tables regarding friction loss per ft of pipe belong in the annex as explanatory information rather than in the body of the document as mandatory requirements. You cannot change or regulate the friction loss per ft of pipe.
Committee Meeting Action: Accept

13D-86 Log #2 AUT-RSS **Final Action: Reject**
(8.6.2)

Submitter: Michael J. Mulcahy, Berkeley Fire Dept.
Recommendation: Delete section.
Substantiation: By deleting this section, this would remove the human factor in contributing to a fire in bathrooms smaller than 55 sq. ft. As it stands right now, if a linen closet is larger than 24 sq. ft., sprinkler coverage is required. In reviewing plans not only by myself but also by other inspectors, we see quite a few bathrooms less than 55 sq. ft. and more than 24 sq. ft. I was speaking to a fire protection engineer who is retro fitting a six-story condominium building where on the top floors, they are putting heads in closets but not bathrooms. He agrees with me that something should be changed. You have a better chance of having the human factor involved in bathrooms (i.e., curling irons, smoking, blow dryers, candles, etc.) than in a linen closet. In the majority of homes also, a riser is normally going thru the walls of a bathroom, so to add an additional head into a bathroom, cost would be minimal and life safety increased. Keep Section 8.6.3. Remove 8.6.2.
Committee Meeting Action: Reject
Committee Statement: The fire load is different between bathrooms and closets. In a bathroom, the fire load will be considerably lighter, so the larger room can be justified. The fire loss statistics do not justify sprinkler protection for small bathrooms. The use of a 6-story condo in the justification for the proposal is inappropriate for an NFPA 13D occupancy.

Table A.8.4.4(c) Pressure Losses in psi/ft for CPVC Pipe (C=150)

Nominal Pipe Size (inches)	Actual Pipe Size (inches)	Flow Rate (gpm)											
		10	12	14	16	18	20	25	30	35	40	45	50
3/4	0.874	0.05	0.07	0.10	0.13	0.16	0.19	0.29	0.40	0.53	0.68	0.85	1.03
1	1.101	0.02	0.02	0.03	0.04	0.05	0.06	0.09	0.13	0.17	0.22	0.28	0.34
1-1/4	1.394	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.05	0.07	0.09	0.11
1-1/2	1.598	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05
2	2.003	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02

Table A.8.4.4(d) Pressure Losses in psi/ft for PEX Pipe (C=150)

Nominal Pipe Size (inches)	Actual Pipe Size (inches)	Flow Rate (gpm)											
		10	12	14	16	18	20	25	30	35	40	45	50
3/4	0.68	0.18	0.25	0.33	0.43	0.53	0.64	0.97	1.36	1.81	2.32	2.88	3.50
1	0.875	0.05	0.07	0.10	0.12	0.16	0.19	0.28	0.40	0.53	0.68	0.84	1.03
1-1/4	1.07	0.02	0.03	0.04	0.05	0.06	0.07	0.11	0.15	0.20	0.26	0.32	0.39
1-1/2	1.263	0.01	0.01	0.02	0.02	0.03	0.03	0.05	0.07	0.09	0.11	0.14	0.17
2	1.653	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.05

13D-87 Log #26 AUT-RSS Final Action: Accept
(8.6.5)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Revise as follows:
Sprinklers shall not be required in attics with or without storage, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, floor/ceiling spaces, elevator shafts, crawl spaces, and other concealed spaces that are not used or intended for living purposes and do not contain fuel-fired equipment.
Substantiation: Some AHJ's require sprinklers in attics if the possibility of storage exists.
Committee Meeting Action: Accept

13D-88 Log #63 AUT-RSS Final Action: Accept in Principle
(8.6.5)

Submitter: Eric J. Skare, Uponor, Inc.

Recommendation: Delete Section 8.6.5.1 and revise Section 8.6.5 to read as follows:

8.6.5 Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, floor/ceiling spaces, elevator shafts, crawl spaces, and other concealed spaces that are not intended for living purposes ~~and do not contain fuel-fired equipment.~~

~~8.6.5.1 When fuel-fired equipment is present, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment.~~

Substantiation: Section 8.6.5.1 was added during the last revision cycle to correlate with NFPA 13R. I believe this is an area that 13D and 13R should be different. When 13D was originally created, a thorough review of NFPA statistics was conducted to determine where sprinklers were needed to achieve the stated purpose of this standard, and it was determined that they need to be placed primarily in living spaces. Supporting this determination is the U.S. Fire Administration Topical Fire Report, *Heating Fires in Residential Buildings*, which states "Ninety percent of residential heating fires are confined to the object of origin." Additionally, this report states, "Building fires consist of two major categories of incidents: fires that are confined to specific types of equipment or objects (confined fires) and those that are not (nonconfined fires). Confined building fires are small fire incidents that are limited in scope, confined to noncombustible containers, rarely result in serious injury or large content losses, and are expected to have no significant accompanying property losses due to flame damage."

This requirement results in a significant increase in cost when the fuel-fired equipment is located in an unheated area, especially given the concerns and limitations currently imposed on anti-freeze systems.

This is not original material; its reference/source is as follows:

Heating Fires in Residential Buildings, Topical Fire Report Series, Volume 10, Issue 2, U.S. Fire Administration, January 2010. http://www.usfa.dhs.gov/downloads/pdf/tfrs/v10i2.pdf

Committee Meeting Action: Accept in Principle

Revise sections 8.6.5 and 8.6.5.1 and add a new 8.6.5.2 as follows:

8.6.5 Sprinklers shall not be required in attics, penthouse equipment rooms, elevator machine rooms, concealed spaces dedicated exclusively to and containing only dwelling unit ventilation equipment, floor/ceiling spaces, elevator shafts, crawl spaces, and other concealed spaces that are not used or intended for living purposes ~~and do not contain fuel-fired equipment~~. Such spaces that contain fuel-fired equipment shall also comply with 8.6.5.1 or 8.6.5.2.

8.6.5.1 Where the fuel-fired equipment is above all of the occupied areas of the dwelling unit, no sprinkler protection shall be required in the concealed space.

~~8.6.5.1~~ 8.6.5.2 ~~When~~ Where fuel-fired equipment is ~~present~~ below or on the same level as occupied areas of the dwelling unit, at least one quick-response intermediate temperature sprinkler shall be installed above the equipment or at the wall separating the space with the fuel-fired equipment from the occupied space.

Committee Statement: Fuel-fired equipment represents a significant fuel source and ignition source for a fire. For situations where the fuel-fired equipment is in an attic or concealed space above the occupied portions of the dwelling unit, the fire is not expected to cause untenable conditions in the occupied space before occupants can escape. But for situations where the fuel-fired equipment is in a concealed space between occupied floors, under an occupied floor, or next to an occupied portion of the dwelling unit, some protection is necessary.

13D-89 Log #91 AUT-RSS Final Action: Reject
(8.6.5.2 (New))

Submitter: Mark Fessenden, Tyco Fire Suppression and Building Products
Recommendation: Add new text to read as follows:
8.6.5.2 Where ambient temperatures exist which preclude the use of a wet pipe system in an attic space containing fuel-fired equipment, a detection device shall be permitted to be installed above the equipment in lieu of the quick-response intermediate temperature sprinkler described in 8.6.5.1. The detection device shall initiate a local alarm.

Substantiation: In some cases it is not practical to install a wet pipe system in an attic space containing fuel-fired equipment. An alternative is needed which still provides any occupants with notification that a fire condition may exist.
Committee Meeting Action: Reject
Committee Statement: The coordination between the alarm contractor and the sprinkler contractor would be difficult. The presence of an alarm requirement in a sprinkler standard is problematic. This might need to go into NFPA 72, *National Fire Alarm and Signaling Code*, in the Single Family Dwelling chapter.

13D-90 Log #1 AUT-RSS Final Action: Accept in Principle
(8.6.7)

Note: This proposal appeared as Comment 13D-35 (Log #38) which was held from the Annual 2009 ROC on Proposal 13D-56.
Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc
Recommendation: Delete 8.6.7(3).
Substantiation: The original requirement for 10'-0" separation comes from NFPA 13 where the ceiling pocket size could be as large as 1000 cubic feet. In that case a 10'-0' separation is appropriate. IN NFPA 13D, the maximum size is 100 cu ft. In typical single family homes, ceiling pockets are often created by decorative beams where the average size of a pocket may be 10 cu ft. This may be found in a bedroom that is 200 sq ft max. To comply with the standard, it may require one head per small pocket in such a "small space. The standard needs to address pockets but it must be tweaked to sync with typical house construction.
Committee Meeting Action: Accept in Principle
Delete subpart (3) as proposed by the submitter and also revise subpart (1) to read, "The total volume of <u>all</u> unprotected ceiling <u>pockets in a compartment</u> does not exceed 100 ft^3 (2.83 m^3)."
Committee Statement: The concern is for multiple pockets in a single compartment as opposed to multiple pockets in a dwelling unit in different compartments.

13D-91 Log #28 AUT-RSS **Final Action: Accept in Principle**
(8.6.7)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Renumber 8.6.7 as 8.2.5.8 and modify as follows:

8.2.5.8 Ceiling Pockets

8.2.5.8.1 Sprinklers shall be required in all ceiling pockets~~. Sprinklers shall not be required for ceiling pockets that meet the following conditions.~~

8.2.5.8.2 The requirements of 8.2.5.8.1 shall not apply where all of the following requirements are met:

(1) The total volume of unprotected ceiling pocket does not exceed 100 cu ft (2.83 m cu).

(2) The entire floor under the unprotected ceiling pocket is protected by the sprinklers at the lower ceiling elevation.

~~(3) Each unprotected ceiling pocket is separated from any adjacent unprotected ceiling pocket by a minimum of 10 ft (3.05 m) horizontal distance.~~

~~(4)~~ (3) The interior finish of the unprotected ceiling pocket is noncombustible or limited-combustible material.

~~(5)~~ (4) Skylights not exceeding 32 sq ft (2.97 m sq) shall be permitted to have a plastic cover.

Substantiation: In NFPA 13R, the rules for ceiling pockets are found with the shadow and architectural feature rules. This change makes NFPA 13D consistent with NFPA 13R. The format was changed to match 13R.

For deleting item #3, the original rules for ceiling pockets from NFPA 13 were based on 1000 cubic foot pockets. The 10'-0" separation distance was kept which is too excessive for pockets that are 100 cubic foot max.

This is not original material; its reference/source is as follows:
13R

Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action on 13D-90 (Log #1).

13D-92 Log #27 AUT-RSS **Final Action: Accept in Principle**
(8.6.7 and 8.6.8)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Add new 8.6.7 & 8.6.8 and renumber accordingly:

8.6.7 Sprinklers shall not be required in exterior closets (regardless of size) located on exterior balconies, exterior breezeways/corridors or accessed from outdoors only as long as the closet does not have doors or unprotected penetrations directly into the dwelling unit.

8.6.8 Sprinklers shall be installed in any closet used for heating and/or air-conditioning equipment, washers and/or dryers, or water heaters except as allowed by 8.6.7.

Substantiation: NFPA13R allows omission of sprinklers in exterior closets on porches and breezeways. This is similar language but also adds any closet that is accessed from the exterior.

8.6.8 Clarifies that all closets with mechanical equipment except exterior ones require sprinklers.

This is not original material; its reference/source is as follows:
NFPA 13R

Committee Meeting Action: Accept in Principle
Add new 8.6.7 & 8.6.8 and renumber accordingly:

8.6.7 Sprinklers shall not be required in closets in garages and exterior closets (regardless of size) located on exterior balconies, exterior breezeways/corridors or accessed from outdoors where the closet does not have doors or unprotected penetrations directly into the dwelling unit.

8.6.8 Sprinklers shall be installed in any closet used for heating and/or air-conditioning equipment, washers and/or dryers, or water heaters except as allowed by 8.6.7.

Committee Statement: Closets located in garages are exterior to the habitable space.

13D-93 Log #58 AUT-RSS Final Action: Accept in Principle
(8.6.7(4) and A.8.6.7(4))

Submitter: Thomas G. Wellen, American Fire Sprinkler Association, Inc.
Recommendation: Revise text to read as follows:
8.6.7(4)* The interior ~~finish~~ sheathing of the unprotected ceiling pocket is noncombustible or limited-combustible material.
A.8.6.7(4) It is common to have combustible crown molding as decoration.
Substantiation: It is a common occurrence to have combustible molding in ceiling pockets. The fuel loading from the molding is considered small. Small pockets along with a ceiling fan or a light fixture would require 2 sprinklers in the pocket plus 2 on the lower ceiling area. The activation of more than two heads could cause water supply issues.
Committee Meeting Action: Accept in Principle
Revise the section as follows, include the proposed annex note and also note that the section will be renumbered as 8.6.7(3) after the action on Log 1: 8.6.7(3)* The interior finish of the unprotected ceiling pocket excluding decorative treatments is noncombustible or limited-combustible material.
Committee Statement: The term "interior finish" is a widely used term in fire protection, while "interior sheathing" is not. The committee wants the construction of the unprotected ceiling pocket to be of non-combustible or limited-combustible material. Decorative wood trim or molding on top of the material is acceptable.

13D-94 Log #CP14 AUT-RSS Final Action: Accept
(Chapter 9 (new))

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Create a new Chapter 9 as shown in the enclosed document by moving current section 8.3. (Note that none of the changes from any proposals have been taken into account in this draft)

Chapter 9 Protection from Freezing

9.1 ~~8.3~~ System Types. Systems shall be permitted to be wet pipe, dry pipe, or preaction.

9.1.1 ~~8.3.1*~~ Wet Pipe Systems. A wet pipe system shall be permitted to be used where all piping is installed in areas maintained above 40°F (4°C), including areas properly insulated to maintain 40°F (4°C).

9.1.2 ~~8.3.2~~ Where system piping is located in areas not maintained above 40°F (4°C), the pipe shall be protected against freezing by use of one of the following methods:

(1) Dry pipe system and preaction systems in accordance with 8.3.4

(2) Antifreeze system in accordance with 8.3.3

(3) Listed standard dry-pendent or dry-sidewall sprinklers extended from pipe in heated areas into unheated areas not intended for living purposes

9.2 ~~8.3.3~~ Antifreeze Systems.

9.3 ~~8.3.4~~ Dry Pipe and Preaction Systems.

9.3.1 ~~8.3.4.1~~ Sprinklers.

9.3.1.1 ~~8.3.4.1.1~~ Sprinklers shall be specifically listed for use on dry pipe and double interlock preaction systems.

9.3.1.2 ~~8.3.4.1.2~~ The following types of sprinklers and arrangements shall be permitted for dry pipe and preaction systems:

(1) Residential upright sprinklers

(2) Residential dry sprinklers

(3) Residential pendent and sidewall sprinklers installed on return bends, where the sprinklers, return bends, and branch line piping are in an area maintained at or above 40°F (4°C)

(4) Residential horizontal sidewall sprinklers, installed so that water is not trapped

9.3.1.3 ~~8.3.4.1.3~~ Return bends required per 8.3.4.1.2(3) shall be permitted to be omitted when using potable water supplies combined with corrosion-resistant pipe.

9.3.1.4 ~~8.3.4.1.4~~ Sprinklers with nominal K-factors greater than 4.0 and less than 5.6 shall be permitted to be installed on dry pipe systems where piping is corrosion resistant or internally galvanized.

9.3.1.5 ~~8.3.4.1.5~~ Sprinklers with nominal K-factors of 5.6 or greater shall be permitted to be installed on pipe complying with the requirements of Section 5.2.

9.3.2 ~~8.3.4.2~~ Preaction Systems. Preaction systems shall be one of the following types:

(1) A single interlock system, which admits water to sprinkler piping upon operation of detection devices

(2) A non-interlock system, which admits water to sprinkler piping upon operation of detection devices or automatic sprinklers

(3) A double interlock system, which admits water to sprinkler piping upon operation of both detection devices and automatic sprinklers

9.3.3 ~~8.3.4.3~~ Dry Pipe and Double Interlock Preaction System Water Delivery.

9.3.3.1 ~~8.3.4.3.1~~ Water delivery shall be based on the hazard shown in Table 8.3.4.3.1.

9.3.3.2 ~~8.3.4.3.2~~ Water delivery shall be based on one of the following:

(1) Calculation program and method that shall be listed by a nationally recognized laboratory

(2) An inspector's test connection providing a flow equivalent to the smallest orifice sprinkler utilized, wherein the test orifice is located on the end of the most distant sprinkler pipe

9.3.4 ~~8.3.4.4~~ Location and Protection of Dry Pipe and Preaction Valves. The dry pipe valve, preaction valve, and supply pipe shall be protected against freezing and mechanical injury.

9.3.5 ~~8.3.4.5*~~ Detection Devices.

9.3.5.1 ~~8.3.4.5.1~~ The detection system shall be designed to operate sooner than the first sprinkler.

9.3.5.2 ~~8.3.4.5.2~~ Detectors shall be installed in all areas/compartments where sprinklers are installed.

9.3.6 ~~8.3.4.6~~ System Configuration. Dry pipe systems and preaction systems of the type described in 8.3.4.2(3) shall not be gridded.

9.3.7 ~~8.3.4.7~~ Drainage. Piping shall be pitched a minimum of $^1/_4$ in. per 10 ft (6.4 mm per 3.05 m) to facilitate draining.

9.3.8 ~~8.3.4.8~~ Auxiliary Drains.

9.3.8.1 ~~8.3.4.8.1~~ Auxiliary drains shall be provided where a change in piping direction prevents drainage of system piping through the drain valve on the system side of the control valve.

9.3.8.2 ~~8.3.4.8.2~~ At a minimum, auxiliary drains shall be a nipple and cap or plug not less than $^{1}/_{2}$ in. (12.7 mm).

9.3.9 ~~8.3.4.9~~ Air Supply. The system air pressure shall be maintained by approved equipment.

Substantiation: The present chapter 8 is being proposed to be split up into three separate chapters to make the document more "user friendly". In conjunction with the two other proposals, this chapter will focus on the protection of piping from freezing, which is a completely separate subject from sprinkler spacing and location and deserves it own chapter.

Committee Meeting Action: Accept

13D-95 Log #CP15 AUT-RSS **Final Action: Accept**
(Chapter 10)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Create a new Chapter 10 as shown in the enclosed document by moving current sections 8.1.1, 8.1.2, 8.4 and 8.5. (Note that none of the changes from any proposals have been taken into account in this draft)

Chapter 10 Discharge and Hydraulic Calculations

10.1 ~~8.1.1~~ Design Discharge.

10.1.1 ~~8.1.1.1~~ Sprinklers That Are Not Listed with Specific Discharge Criteria.

10.1.1.1 ~~8.1.1.1.1~~ The system shall provide a discharge of not less than 13 gpm (49 L/min) per sprinkler simultaneously to all of the design sprinklers.

10.1.1.2 ~~8.1.1.1.2~~ The system shall provide a discharge of not less than 18 gpm (68 L/min) to any sprinkler in the system.

10.1.2 ~~8.1.1.2*~~ Sprinklers That Are Listed with Specific Discharge Criteria.

10.1.2.1 ~~8.1.1.2.1~~ The system shall provide at least the flow required for the multiple and single sprinkler operating criteria specified by the sprinkler listing.

10.1.2.2 ~~8.1.1.2.2*~~ The system shall provide at least the flow required to produce a minimum discharge density of 0.05 gpm/ft^2 (2.04 mm/min) to the design sprinklers.

10.2 ~~8.1.2*~~ Number of Design Sprinklers. The number of design sprinklers under flat, smooth, horizontal ceilings shall include all sprinklers within a compartment, up to a maximum of two sprinklers, that require the greatest hydraulic demand.

10.3 ~~8.5~~ Piping Configurations.

10.3.1 ~~8.5.1~~ The piping configuration shall be permitted to be looped.

10.3.2 ~~8.5.2~~ The piping configuration shall be permitted to be gridded except where gridded systems are prohibited by Chapter 9.

10.3.3 ~~8.5.3~~ The piping configuration shall be permitted to be straight run.

10.3.4 ~~8.5.4~~ The piping configuration shall be permitted to be a combination of the configurations permitted in 8.5.1 through 8.5.3.

10.4 ~~8.4~~ Pipe Sizing.

10.4.1 ~~8.4.1~~ The pipe sizes shall be verified for each of the single sprinkler and multiple sprinkler design discharge.

10.4.2 ~~8.4.2~~ For specially listed piping products, friction loss for pipe and fittings shall be permitted to be calculated based on the manufacturer's data.

10.4.3 ~~8.4.3~~ Minimum Pipe Size.

10.4.3.1 ~~8.4.3.1~~ The minimum size of steel pipe shall be 1 in. (25.4 mm).

10.4.3.2 ~~8.4.3.2~~ The minimum size of pipe other than steel pipe shall be $^3/_4$ in. (19 mm) unless smaller sizes are permitted by 10.4.3.3 ~~8.4.3.3~~.

10.4.3.3 ~~8.4.3.3*~~ Along with listed special fittings, $^1/_2$ in. (12.7 mm) nonmetallic pipe and 1/2 in. (12.7 mm) copper pipe shall be permitted to be used only in network systems under the following conditions:

(1)*Each sprinkler shall be supplied through a minimum of three separate paths from the supply manifold.

(2) Calculations shall clearly indicate the pipes that create the paths to each sprinkler.

(3) A water distribution pipe that supplies a sprinkler shall not terminate in a dead end.

(4) Hydraulic calculations shall be prepared for each sprinkler flowing individually within the system and for each pair of sprinklers within the same compartment.

(5) The location of the most demanding single sprinkler and pair of sprinklers, including their pressure and flow requirements, shall be indicated on the plan review documents.

(6) The system shall be hydraulically calculated in accordance with the provisions of NFPA 13, *Standard for the Installation of Sprinkler Systems*, except that the friction loss straight through a fitting shall be included.

(7) The method of joining the pipe to fittings or to other pipe shall be in accordance with the applicable plumbing code.

(8) A maximum of one insert tee shall be permitted in each pipe section between sprinklers to serve only domestic fixtures.

(9) When insert fittings are installed, each sprinkler shall have four separate paths from the water supply.

(10) The piping supplying only plumbing fixtures shall be in accordance with the applicable plumbing code.

10.4.4 ~~8.4.4*~~ Unless the pipe size is in accordance with the prescriptive pipe sizing method of 8.4.10, pipe shall be sized by hydraulic calculations in accordance with the methods described in NFPA 13, *Standard for the Installation of Sprinkler Systems*, in accordance with 10.4.5 ~~8.4.5~~, or in accordance with the following general method for straight-run

systems connected to a city water main of at least 4 in. (102 mm) in diameter:

(1) The system flow rate shall be established in accordance with Sections 10.1 and 10.2 ~~8.1~~, and it shall be determined that the flow allowed by the water meter meets or exceeds the system demand and that the total demand flow does not exceed the maximum flow allowed by the piping system components.

(2) The water pressure in the street shall be determined.

(3) Pipe sizes shall be selected.

(4) Pressure loss for a water meter, if any, shall be determined and deducted using one of the following:

(a) Table 10.4.4(g) ~~8.4.4(g)~~ shall be used.

(b) Higher pressure losses specified by the manufacturer shall be used in place of those specified in Table 10.4.4(g) ~~8.4.4(g)~~.

(c) Lower pressure losses shall be permitted to be used where supporting data are provided by the meter manufacturer.

(5) Pressure loss for elevation shall be deducted as follows:

(a) Building height above street (in ft) × 0.434 = pressure loss (in psi)

(b) Building height above street (in m) × 0.098 = pressure loss (in bar)

(6)*Pressure losses from the city main to the inside control valve shall be deducted by multiplying the factor from Table 10.4.4(a) ~~8.4.4(a)~~ or Table 10.4.4(b) ~~8.4.4(b)~~ by the total length(s) of pipe in feet (meters).

(7) Pressure loss for piping within the building shall be deducted by multiplying the factor from Table 10.4.4(a) ~~8.4.4(a)~~ or Table 10.4.4(b) ~~8.4.4(b)~~ by the total length in feet (meters) of each size of pipe between the control valve and the farthest sprinkler.

(8) Pressure loss for valves and fittings shall be deducted as follows:

(a) The valves and fittings from the control valve to the farthest sprinkler shall be counted.

(b) The equivalent length for each valve and fitting as shown in Table 10.4.4(c) ~~8.4.4(c)~~, Table 10.4.4(d) ~~8.4.4(d)~~, Table 10.4.4(e) ~~8.4.4(e)~~, or Table 10.4.4(f) ~~8.4.4(f)~~ shall be determined and the values added to obtain the total equivalent length for each pipe size.

(c) The equivalent length for each size shall be multiplied by the factor from Table 10.4.4(a) ~~8.4.4(a)~~ or Table 10.4.4(b) ~~8.4.4(b)~~ and the values totaled.

(9) In multilevel buildings, the steps in 10.4.4(1) through 10.4.4(8) ~~8.4.4(1) through 8.4.4(8)~~ shall be repeated to size piping for each floor.

(10) If the remaining pressure is less than the operating pressure established by the testing laboratory for the sprinkler being used, the sprinkler system shall be redesigned.

(11) If the remaining pressure is higher than required, smaller piping shall be permitted to be used where justified by calculations.

(12) The remaining piping shall be sized the same as the piping up to and including the farthest sprinkler unless smaller pipe sizes are justified by calculations.

Table 10.4.4(a) ~~8.4.4(a)~~ Pressure Losses in psi/ft for Schedule 40 Steel Pipe (C=120) (existing)

Table 10.4.4(b) ~~8.4.4(b)~~ Pressure Losses in psi/ft for Copper Tubing – Types K, L, and M (C=150) (existing)

Table 10.4.4(c) ~~8.4.4(c)~~ Equivalent Length in Feet of Fittings and Valves for Schedule 40 Steel Pipe (existing)

Table 10.4.4(d) ~~8.4.4(d)~~ Equivalent Length in Feet of Fittings and Valves for Type K Copper Tube (existing)

Table 10.4.4(e) ~~8.4.4(e)~~ Equivalent Length in Feet of Fittings and Valves for Type L Copper Tube (existing)

Table 10.4.4(f) ~~8.4.4(f)~~ Equivalent Length in Feet of Fittings and Valves for Type M Copper Tube (existing)

Table 10.4.4(g) ~~8.4.4(g)~~ Pressure Losses in Water Meters (existing)

10.4.5 ~~8.4.5~~ Smaller pipe sizes than those determined by 10.4.4 ~~8.4.4~~ shall be permitted where justified by calculations for systems connected to city water mains of at least 4 in. (102 mm) in diameter.

10.4.6 ~~8.4.6~~ To size piping for systems with an elevated tank, pump, or pump–tank combination, the pressure at the water supply outlet shall be determined and the steps in 10.4.4(3) ~~8.4.4(3)~~, (4), (7), (8), (9), (10), and (11) shall be followed.

10.4.7 ~~8.4.7~~ Hydraulic calculation procedures in accordance with NFPA13, *Standard for the Installation of Sprinkler Systems*, shall be used for grid-type systems.

10.4.8 ~~8.4.8~~ Hydraulic calculation procedures in accordance with NFPA13, *Standard for the Installation of Sprinkler Systems*, shall be used for looped-type systems.

10.4.9 ~~8.4.9~~ Hydraulic calculation procedures in accordance with NFPA13, *Standard for the Installation of Sprinkler Systems*, shall be used for systems connected to city water mains of less than 4 in. (100 mm) in diameter.

10.4.10 ~~8.4.10~~ Prescriptive Pipe Sizing Method. Pipe shall be sized by determining the available pressure to offset friction loss in piping and identifying a piping material, diameter, and length using the equation in 10.4.10.1 ~~8.4.10.1~~ and the procedure in 10.4.10.2 ~~8.4.10.2~~.

10.4.10.1 ~~8.4.10.1~~ Available Pressure Equation. The pressure available to offset friction loss in the interior piping system (*Pt*) shall be determined in accordance with the following formula:

$$Pt = Psup - PLsvc - PLm - PLd - PLe - Psp$$

where:
Pt = pressure used in applying Table 10.4.10.1(a) ~~8.4.10.1(a)~~ through Table 10.4.10.1(i) ~~8.4.10.1(i)~~
Psup = pressure available from the water supply source
PLsvc = pressure loss in the water service pipe
PLm = pressure loss in the water meter
PLd = pressure loss from devices other than the water meter
PLe = pressure loss associated with changes in elevation
Psp = maximum pressure required by a sprinkler

10.4.10.2 ~~8.4.10.2~~ Calculation Procedure. Determination of the required size for water distribution piping shall be in accordance with the following procedure:

(1) *Step 1 — Determine Psup* . Obtain the static supply pressure that will be available from 1. The water main from the water purveyor, or 2. For a private source, such as a tank system, a private well system, or a combination of these, the available water supply pressure shall be based on the minimum pressure control setting for the pump.

(2) *Step 2 — Determine PLsvc* . Use Table 10.4.10.2(a) ~~8.4.10.2(a)~~ to determine the pressure loss in the water service pipe based on the selected size of the water service.

(3) *Step 3 — Determine PLm*. Use Table 10.4.10.2(b) ~~8.4.10.2(b)~~ to determine the pressure loss from the water meter based on the selected water meter size.

(4) *Step 4 — Determine PLd* . Determine the pressure loss from devices, other than the water meter, installed in the piping system supplying sprinklers, such as pressure-reducing valves, backflow preventers, water softeners, or water filters.

(a) Device pressure losses shall be based on the device manufacturer's specifications.

(b) The flow rate used to determine pressure loss shall be the rate from 10.1 ~~8.1.1 and 8.1.2~~, except that 5 gpm shall be added where the device is installed in a water service pipe that supplies more than one dwelling.

(c) As alternative to deducting pressure loss for a device, an automatic bypass valve shall be installed to divert flow around the device when a sprinkler activates.

(5) *Step 5 — Determine PLe* . Use Table 10.4.10.2(c) ~~8.4.10.2(c)~~ to determine the pressure loss associated with changes in elevation. The elevation used in applying the table shall be the difference between the elevation where the water source pressure was measured and the elevation of the highest sprinkler.

(6) *Step 6—Determine PLsp* . Determine the maximum pressure required by any individual sprinkler based on the following:

(a) The area of coverage
(b) The ceiling configuration
(c) The temperature rating
(d) Any additional conditions specified by the sprinkler manufacturer

The required pressure is provided in the sprinkler manufacturer's published data for the specific sprinkler model based on the selected flow rate.

(7) *Step 7 — Calculate PLt* . Using the equation in 10.4.10.1 ~~8.4.10.1~~, calculate the pressure available to offset friction loss in water-distribution piping between the service valve and the sprinklers.

(8) *Step 8 — Determine the maximum allowable pipe length.* Use Table 10.4.10.2(d) ~~8.4.10.2(d)~~ through Table 10.4.10.2(i) ~~8.4.10.2(i)~~ to select a material and size for water distribution piping. The piping material and size shall be acceptable if the developed length of pipe between the service valve and the most remote sprinkler does not exceed the maximum allowable length specified by the applicable table. Interpolation of *Pt* between the tabular values shall be permitted.

Table 10.4.10.2(a) ~~8.4.10.2(a)~~ Water Service Pressure Loss (*PLsvc*) (existing)

Table 10.4.10.2(b) ~~8.4.10.2(b)~~ Minimum Water Meter Pressure Loss (*PLm*) (existing)

Table 10.4.10.2(c) ~~8.4.10.2(c)~~ Elevation Loss (*PLe*) (existing)

Table 10.4.10.2(d) ~~8.4.10.2(d)~~ Allowable Pipe Length for ¾ in. Type M Copper Water Tubing (existing)

Table 10.4.10.2(e) ~~8.4.10.2(e)~~ Allowable Pipe Length for 1 in. Type M Copper Water Tubing (existing)

Table 10.4.10.2(f) ~~8.4.10.2(f)~~ Allowable Pipe Length for ¾ in. CPVC Pipe (existing)

Table 10.4.10.2(g) ~~8.4.10.2(g)~~ Allowable Pipe Length for 1 in. CPVC Pipe (existing)

Table 10.4.10.2(h) ~~8.4.10.2(h)~~ Allowable Pipe Length for ¾ in. PEX Tubing (existing)

Table 10.4.10.2(i) ~~8.4.10.2(i)~~ Allowable Pipe Length for 1 in. PEX Tubing (existing)

10.4.10.3 ~~8.4.10.3~~ The maximum allowable length of piping in Table 10.4.10.2(d) ~~8.4.10.2(d)~~ through Table 10.4.10.2(i) ~~8.4.10.2(i)~~ incorporates an adjustment for pipe fittings, and no additional consideration of friction losses associated with pipe fittings shall be required.

Substantiation: The present chapter 8 is being proposed to be split up into three separate chapters to make the document more "user friendly". In conjunction with the two other proposals, this chapter will focus on the sizing of pipe through the use of hydraulic calculations or tables, which is very different from sprinkler spacing and location and deserves it own chapter.

Committee Meeting Action: Accept

13D-96 Log #CP4 AUT-RSS Final Action: Accept
(Chapter 11)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Note: Where it says "Old" section, move the language to this location.

Chapter 11 System Acceptance

11.1 (New) General
11.1.1* (New) The installer shall perform all required acceptance tests prior to asking for approval of the installation.
11.1.2 (New) When the authority having jurisdiction is required to be present during the acceptance tests, the installer shall coordinate the time and date of testing with the authority having jurisdiction and other interested parties.

11.2 (New) Acceptance Tests
11.2.1* (Old 4.2) Hydrostatic Tests
11.2.1.1 (Old 4.2.1) Where a fire department pumper connection is not provided, the system shall be hydrostatically tested ~~for leakage~~ at normal system operating pressure without evidence of leakage.
11.2.1.2 (Old 4.2.2) Where a fire department pumper connection is provided, the system shall pass a hydrostatic pressure test performed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

11.2.1.3 (New) Evidence of leakage shall be determined by a drop in pressure at a gauge over a period of 2 hours or by visually checking the piping system for leakage.

11.2.1.4 (New) When systems are being hydrostatically tested, the test shall be permitted to be conducted with sprinklers or plugs installed in the fittings.
11.2.1.4.1 (New) Any plugs used during the hydrostatic testing shall be replaced with sprinklers after the test is completed. No additional hydrostatic testing shall be required after the sprinklers are installed.

A.11.2.1(Old A.4.2) ~~Testing of a system can be accomplished by filling the system with water and checking visually for leakage at each joint or coupling.~~
Fire department connections are not required for systems covered by this standard but can be installed at the discretion of the owner. In these cases, hydrostatic tests in accordance with NFPA13, Standard for the Installation of Sprinkler Systems, are necessary.
Dry systems ~~also~~ should also be tested with air at the pressure value intended to be maintained within the system during service. ~~by placing the system under air pressure.~~ This testing should be conducted in accordance with the guidance provided in the manufacturers' instructions for the dry system components. Any leak that results in a drop in system pressure greater than ~~2~~ 1 1/2 psi (0.14 bar) in 24 hours should be corrected. Leaks should be identified using soapy water brushed on each joint or coupling. The presence of bubbles indicates a leak. This test should be made prior to concealing the piping. The soap should be compatible with all contacted sprinkler system components.

11.2.2* (New) Pump Tests
X.2.2.1 (Old 6.2.1) Prior to system acceptance, a system utilizing a pump shall be tested by opening the drain/test connection.
11.2.2.1.1 (Old 6.2.1.1) The pump shall sense the flow, turn on, and flow water for the required duration of 6.1.2 or 6.1.3 without interruption.
A.11.2.2 (Old A.6.2.1) The flow of water is necessary to make sure that the pump does not get damaged during testing. Use of a timer to keep the pump running is not recommended because the timer will allow the pump to run when no water is flowing. The pump needs to run for the entire duration without interruption, including not tripping the circuit breaker.

11.2.3 (New) System Operational Tests
11.2.3.1 (New) Waterflow Devices. Where water flow detection devices are installed, these devices, including the associated alarm circuits, shall be flow tested through the inspector's test connection and shall result in an audible alarm on the premises.
11.2.3.2 (New) Preaction Systems. The operation of the preaction system shall be tested in accordance with the

manufacturer's instructions.

11.2.3.3 (New) Dry Pipe and Double-Interlock Preaction Systems (New) A test shall be conducted in accordance with the valve manufacturer's instructions to measure the time to trip the valve and the time for water to be discharged from the inspector's test connection.

11.2.3.3.1 (New) All times shall be measured from the time the inspector's test connection is completely open.

Substantiation: This new chapter consolidated the acceptance testing throughout the standard. It also considers additional acceptance testing that is considered appropriate for 13D systems.

Committee Meeting Action: Accept

13D-97 Log #CP5 AUT-RSS Final Action: Accept
(Chapter 12)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Note: Where it says "Old", move this text to the new location.

Chapter 12 Inspection, Testing and Maintenance.

12.1 (New) General
12.1.1* (Old 4.1.1) The installer shall provide to the owner/occupant instructions on inspecting, testing, and maintaining the system.
A.12.1.1 These instructions should include:
(1) Information regarding the necessary system inspection, testing and maintenance as described in this standard.
(2)The manufacturers' installation, care and maintenance instructions for the installed sprinkler system components;
(3) Name, address, and phone number of the installing contractor of the fire sprinkler system;
(4) Name, address, and phone number of a fire sprinkler system service company if different than the installing contractor.
(Old A.4.1.1- partial) The occupants of a home with a sprinkler system should understand that maintaining a sprinkler system is mostly about common sense. Keeping the control valve open, not hanging items from the sprinklers, and making sure that the sprinklers do not get painted or obstructed are the most important items. It is also important to know the function of the main control valve and where the control valve is located. ~~so that the water can be shut down after sprinkler activation to minimize water damage.~~

12.2 (New) Inspections and Tests.
12.2.1* (New) The sprinkler system shall be inspected and tested periodically to make sure the system is in good working condition.
A.12.2.1 (Old A.4.1.1- partial) The building owner or manager should understand the sprinkler system operation and ~~should~~ conduct periodic inspections and tests to make sure that the system is in good working condition. A recommended inspection and testing program includes the following:
(1) Monthly inspection of all valves to ensure that they are open.
(2) Monthly inspection of tanks, if present, to confirm they are full.
(3) Monthly testing of pumps, if present, to make sure they operate properly and do not trip circuit breakers when starting.
(4) Testing of all waterflow devices, when provided, every 6 months including monitoring service (note that notification of the monitoring service is essential to make sure that the fire department is not called due to testing).
(5) Ongoing visual inspection of all sprinklers to make sure they are not obstructed and decorations are not attached or hung from them.
(6) Systems should be inspected by individuals knowledgeable and trained in such systems when there is a change in ownership.

12.3 (Old 4.1) Maintenance.
12.3.1 (New) The sprinkler system shall be properly maintained in accordance with this standard and the manufacturers' instructions.
12.3.2 (Old 4.1.2) Operated or damaged sprinklers shall be replaced with sprinklers having the same performance characteristics as the original equipment.
12.3.3 (Copied from 7.5.6) Painting Sprinklers ~~and Ornamental Finishes~~. Sprinklers shall not be painted ~~or enameled~~ unless applied by the manufacturer ~~and the sprinkler has been listed with such finishes~~.
12.3.3.1* (Old 4.1.3) Any sprinklers that have been painted outside of the factory shall be replaced with a new listed sprinkler.
A.12.3.3.1 (Old A.4.1.1- partial) ~~(6)~~ Whenever painting or home improvements are made in the dwelling unit, special attention should be paid to ensure that sprinklers are not painted or obstructed either at the time of installation or during subsequent redecoration. This is as important for the cover plates of concealed sprinklers as it is to the sprinklers themselves. Special paint is used for cover plates and can only be applied by the manufacturer. Applying paint to cover plates outside of the factory can cause the sprinkler to malfunction and possibly not operate during a fire.
When painting is occurring in the vicinity of sprinklers, the sprinklers should be protected by covering them with a bag,

which should be removed immediately after painting is finished. For concealed type sprinklers, remove the cover plates (most are designed to be unscrewed) and then protect the sprinklers underneath from paint and overspray with a bag. After the painting is finished remove the bags from the sprinklers and replace the cover plates.

12.3.4* (Copied from 8.3.1) Wet Pipe Systems. A wet pipe system shall be ~~permitted to be used where all piping is installed in areas~~ maintained above 40°F (4°C), including areas properly insulated to maintain 40°F (4°C).

A.12.3.4 (New) See figures A.8.3.1(a) through (d) for possible methods used by the installer to insulate sprinkler piping in unheated areas. It's important that this insulation not be disturbed or removed. Disturbing or removing this insulation could result in sprinkler pipes being frozen during winter months which would not only block waterflow to the sprinklers but could cause broken pipes and fittings.

12.3.5* (Old 4.1.4) Antifreeze Systems. –

A.12.3.5 Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the lower portion of the system than in the upper portions of the system. If the concentration is acceptable near the top, but too low near the water connection, it may mean that the system is becoming diluted near the water supply. If the concentration is either too high or too low in both the samples, it may mean that the wrong concentration was added to the system.

On an annual basis, test samples should be drawn from test valve B as shown in Figure 8.3.3.2.1(1), especially if the water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described.

Where systems are drained in order to be refilled, it is not typically necessary to drain drops that are less than 36 inches in length. Most systems with drops have insufficient volume to cause a problem, even if slightly higher concentration solutions collect in the drops. For long drops with significant volume, consideration should be given to draining drops if there is evidence that unacceptably high concentrations of antifreeze have collected in these long drops.

When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discarding it.

12.3.5.1 Annual Antifreeze Solution Test and Replacement Procedure.

12.3.5.1.1 Samples of antifreeze solution shall be collected by qualified individuals in accordance with X.3.5.1.1.1 or X.3.5.1.1.2 on an annual basis.

12.3.5.1.1.1 The system shall be drained to verify that (a) the solution is in compliance with 8.3.3, and (b) the solution provides the necessary freeze protection. Solution samples shall be taken near the beginning and near the end of the draining process.

12.3.5.1.1.2* Solution samples shall be taken at the highest practical elevation and the lowest practical elevation of the system.

A. 12.3.5.1.1.2 If not already present, test connections (valves) for collection of solution samples should be installed at the highest and lowest practical locations of the system or portion of the system containing antifreeze solution.

12.3.5.1.2 The two samples collected in accordance with the procedures specified in 12.3.5.1.1.1 or 12.3.5.1.1.2 shall be tested to verify that the specific gravity of both samples is similar and that the solution is in compliance with 8.3.3. The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution.

12.3.5.1.3* If concentrations of the two samples collected in accordance with the procedures above are similar and in compliance with 8.3.3, then (a) the solution drained in accordance with X.3.5.1.1.1 can be used to refill the system, or (b) the existing undrained solution tested in accordance with X.3.5.1.1.2 shall be permitted to continue to be used. If the two samples are not similar and not in compliance with 8.3.3, then a solution in compliance with 8.3.3 shall be used to refill the system.

A. X.3.5.1.3 In the past, for some existing systems subject to extremely low temperatures, antifreeze solutions with concentrations greater than what is now permitted by NFPA 13D were used. Such high concentrations of antifreeze are no longer permitted. In situations where extremely low temperatures are anticipated, refilling the fire sprinkler system with a concentration of antifreeze solution currently permitted by the standard might not provide sufficient freeze protection without additional measures. Such measures might include converting the antifreeze system to another type of sprinkler system.

X.3.5.1.4 A tag shall be attached to the riser indicating the date the antifreeze solution was tested. The tag shall also indicate the type and concentration of antifreeze solution (by volume) with which the system is filled, the date the antifreeze was replaced (if applicable), the name of the contractor that tested and/or replaced the antifreeze solution, the contractor's license number, a statement indicating if the entire system was drained and replaced with antifreeze, and a warning to test the concentration of the antifreeze solutions at yearly intervals per NFPA 13D.

Substantiation: This new chapter consolidated the Inspection, maintenance and testing throughout the standard. It also considers additional acceptance testing that is considered appropriate for 13D systems.
Committee Meeting Action: Accept

13D-98 Log #49 AUT-RSS Final Action: Reject
(A.1.1)

Submitter: Larry W. Owen, Dooley Tackaberry, Inc.
Recommendation: Revise text to read as follows:
NFPA 13D is appropriate for protection against fire hazards only in one- and two-family dwellings and manufactured homes. Residential portions of any other type of building or occupancy should be protected with residential sprinklers in accordance with NFPA 13, *Standard for the Installation of Sprinkler Systems*, NFPA 750 Standard on Water Mist Fire Protection Systems or in accordance with NFPA 13R, *Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height*. Other portions of such buildings should be protected in accordance with NFPA 13, NFPA 750 or NFPA 13R as appropriate for areas outside the dwelling unit.
(Balance of Section and Paragraph to remain unchanged.)
Substantiation: Water Mist Systems have been approved and installed in a wide range of sprinkler applications globally utilizing the NFPA 750 Standard on Water Mist Fire Protection Systems. In the interest of providing owners, contractors and AHJ's with as many options for fire protection as possible in all applications, NFPA 750 should be included as an optional standard.
This is not original material; its reference/source is as follows:
NFPA 13D, Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes 2010 Edition, Annex A - Explanatory Material, Page 13D-29 Section/Paragraph A.1.1.
Committee Meeting Action: Reject
Committee Statement: Water mist systems are not sprinkler systems and are outside the scope of the document. NFPA 13D Section 1.4 "Equivalency" would adequately cover water mist systems. NFPA 750, *Standard on Water Mist Fire Protection Systems,* does not have any specific design criteria on residential water mist design that the NFPA 13D Committee could review to see if it meets the intent of NFPA 13D. For example, how can a water mist system comply with the listing requirements of a residential sprinkler that is required to comply with UL1626? The Committee is not against the concept of future water mist systems to be used to save lives in residential occupancies covered under the scope of NFPA 13D, but because there are specific requirements in NFPA 750 that cover this issue in detail it cannot accept this code proposal.

13D-99 Log #CP19 AUT-RSS Final Action: Accept
(Table A.1.2(a), Table A.1.2(b))

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Update these table to the latest data.
Substantiation: This table is very old and needs to be updated.
Committee Meeting Action: Accept

13D-100 Log #56 AUT-RSS **Final Action: Accept**
(Figure A.3.3.9.3(a))

Submitter: Gary Johnson, Lubrizol Advanced Materials
Recommendation: Figure A.3.3.9.3(a) Multipurpose Piping System (Tree system) - Example 1
Figure A.6.3(a) Multipurpose Piping System (Tree system) - Example 1
Substantiation: The additional wording is more specific and allows the diagram to be better understood. The same diagram is included in two sections of the standard.
Committee Meeting Action: Accept

13D-101 Log #55 AUT-RSS **Final Action: Accept**
(Figure A.3.3.9.3(b))

Submitter: Gary Johnson, Lubrizol Advanced Materials
Recommendation: Figure A.3.3.9.3(b) Multipurpose Piping System (Looped system) - Example 2
Figure A.6.3(b) Multipurpose Piping System (Looped system) - Example 2
Substantiation: The additional wording is more specific and allows the diagram to be better understood. The same diagram is included in two sections of the standard. Network systems are already specifically identified in these diagrams and this is would better define the loop system.
Committee Meeting Action: Accept

13D-102 Log #54 AUT-RSS **Final Action: Accept**
(A.3.3.9.4 and Figure A.3.3.9.4)

Submitter: Gary Johnson, Lubrizol Advanced Materials
Recommendation: Delete Figure A.3.3.9.4.
A.3.3.9.4 Network System. A network system .. An example of a network system is shown in Figure ~~A.3.3.9.4~~ A.3.3.9.3(c).
Substantiation: There are two diagrams representing multipurpose network systems that are the same in Figure A.3.3.9.3(c) and Figure A.3.3.9.4.
This proposal would remove one of the duplicate diagrams and revise the annex section so that it refers to remaining diagram.
Committee Meeting Action: Accept

13D-103 Log #CP17 AUT-RSS **Final Action: Reject**
(Figure A.6.2(a), Figure A.6.2(b), Figure A.6.2(c))

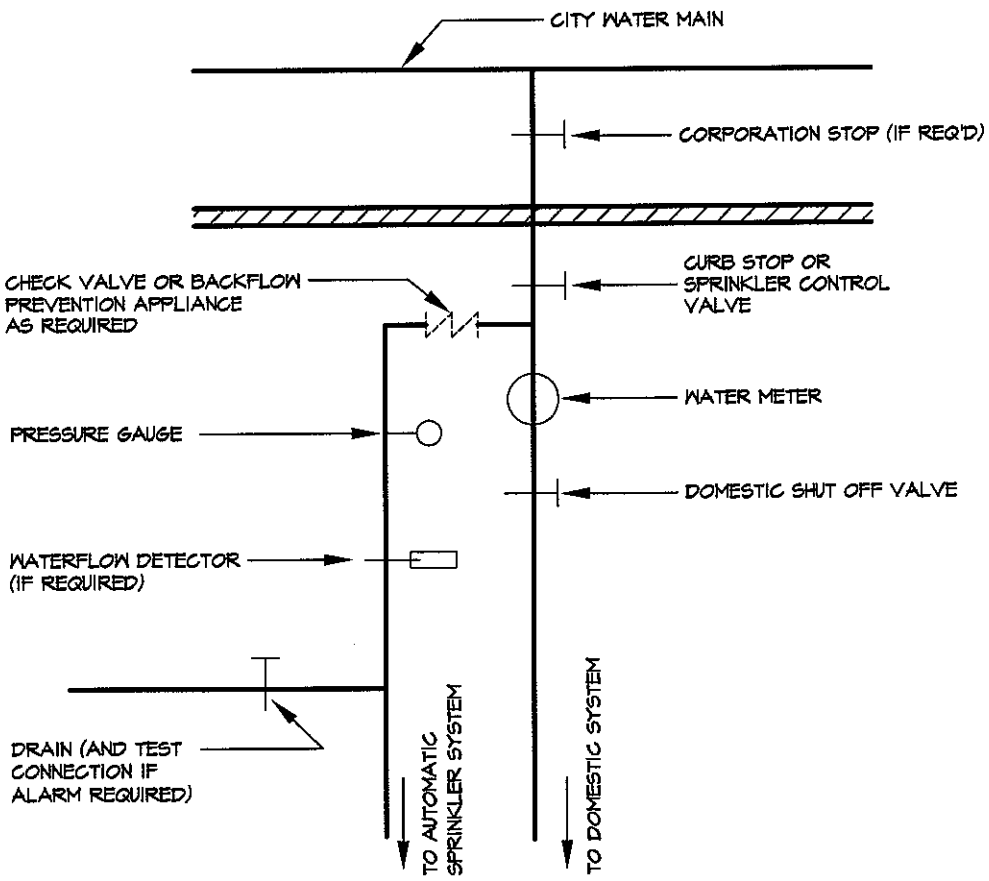
Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Revise Figures A.6.2(a)(b)(c) as follows:

****Insert Figure A.6.2(a) Here****

****Insert Figure A.6.2(b) Here****

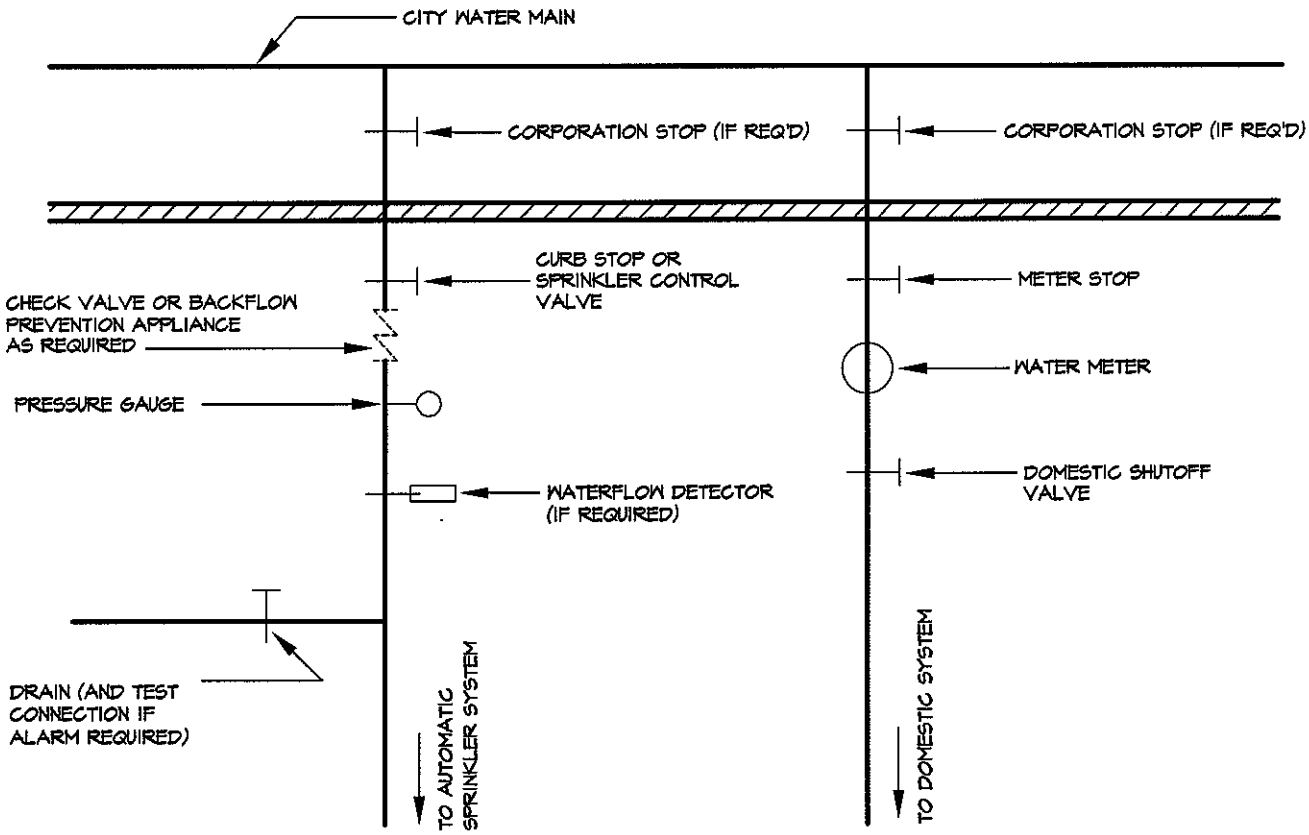
****Insert Figure A.6.2(c) Here****
Substantiation: Figures need to be updated.
Committee Meeting Action: Reject
Committee Statement: The committee wishes to solicit public comments on the three figures.

13D_Log_CP17_Figure_A.6.2.(a)



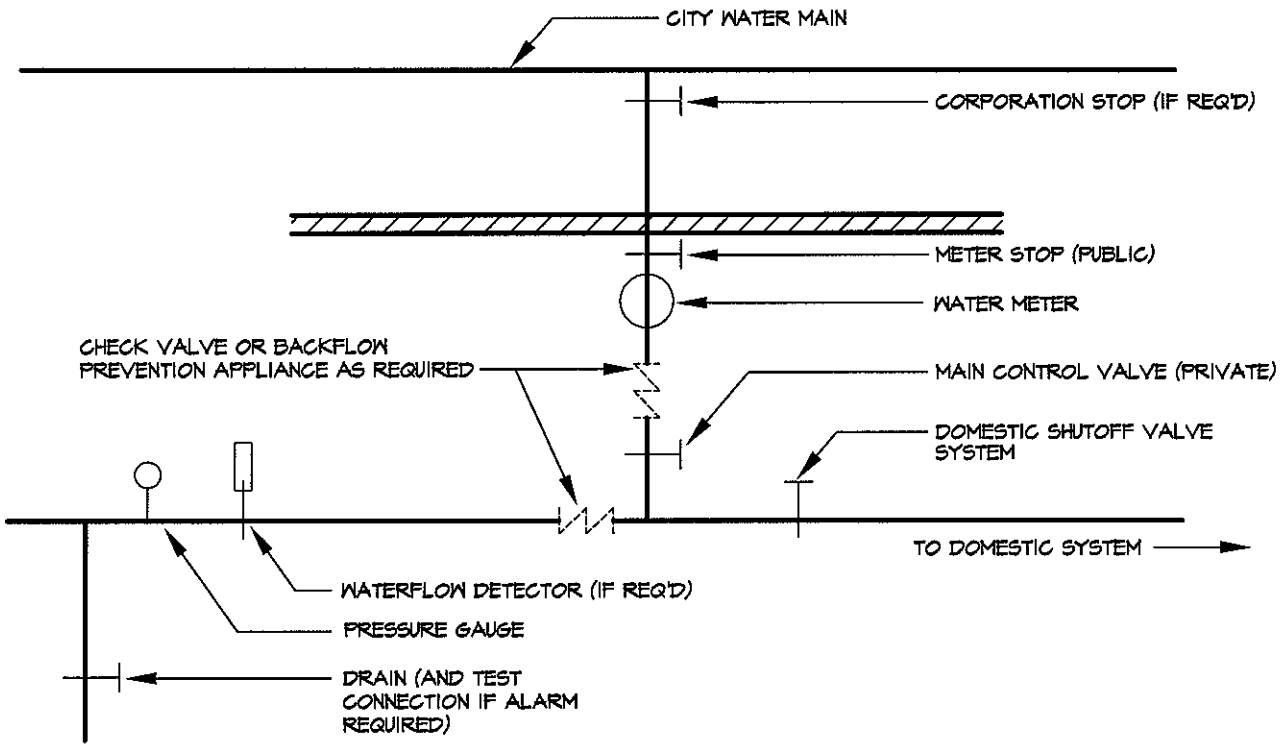
PREFERABLE ARRANGEMENT FOR STAND-ALONE PIPING SYSTEMS

13D_Log_CP17_Figure_A.6.2.(b)



ACCEPTABLE ARRANGEMENT FOR STAND-ALONE PIPING SYSTEMS WITH VALVE SUPERVISION - OPTION I

13D_Log_CP17_Figure_A.6.2.(c)



COMBINED DOMESTIC/FIRE SERVICE WITH COMMON METER

13D-104 Log #CP20 AUT-RSS Final Action: Accept
(A.6.2.1.1)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Add new A.6.2.1.1 as follows:
There should be no delay in the activation of the pump upon flow of water.
Substantiation: Trying to avoid using flow switches with 90 second delays.
Committee Meeting Action: Accept

13D-105 Log #29 AUT-RSS Final Action: Accept
(A.8.2.5)

Submitter: Peter T. Schwab, Wayne Automatic Fire Sprinklers, Inc.
Recommendation: Delete text as follows:
~~Small areas created by architectural features such as planter box windows, bay windows, and similar features can be evaluated as follows:~~
~~(1) Where no additional floor area is created by the architectural feature, no additional sprinkler protection is required.~~
~~(2) Where additional floor area is created by an architectural feature, no additional sprinkler protection is required, provided all of the following conditions are met:~~
~~(a) The floor area does not exceed 18 ft2 (1.7 m2).~~
~~(b) The floor area is not greater than 2 ft (0.65 m) in depth at the deepest point of the architectural feature to the plane of the primary wall where measured along the finished floor.~~
~~(c) The floor is not greater than 9 ft (2.9 m) in length where measured along the plane of the primary wall.~~
~~Measurement from the deepest point of the architectural feature to the sprinkler should not exceed the maximum listed spacing of the sprinkler. The hydraulic design is not required to consider the area created by the architectural feature.~~
Substantiation: New language similar to this has been submitted under another proposal. This is not annex language because it references specific dimensions.
Committee Meeting Action: Accept

13D-106 Log #CP12 AUT-RSS Final Action: Accept
(A.8.3.1)

Submitter: Technical Committee on Residential Sprinkler Systems,
Recommendation: Revise the last sentence of A.8.3.1 to read, "Figure A.8.3.1(a) through Figure A.8.3.1(e) show several methods that can be considered. These are for illustrative purposes only. Consultation with the general contractor/owner is recommended to insure proper methods and materials are used to make sure 40° F will be maintained."
Substantiation: The figures showing tenting of insulation over the pipe are frequently misunderstood. The intent of NFPA 13D is not to have these be the only methods of using insulation to protect pipe from freezing. Other methods also work. The intent of these pictures are just to show possible alternatives.
Committee Meeting Action: Accept

13D-107 Log #31 AUT-RSS Final Action: Reject
(A.8.3.3.2)

Submitter: Brian Larkin, Tyco Thermal Controls
Recommendation: Revise text to read as follows:
A.8.3.3.2 Listed CPVC sprinkler pipe and fittings should be protected from freezing with listed heat tracing or glycerine only. The use of diethylene glycol, ethylene glycol, or propylene glycol is specifically prohibited. Laboratory testing shows that glycol-based antifreeze solutions present a chemical environment detrimental to CPVC. Listed PB sprinkler pipe and fittings can be protected with glycerine, diethylene glycol, ethylene glycol, or propylene glycol.
A.8.3.3 .2.1 Where listed heat tracing is used on CPVC piping, it must be certified as compatible with the CPVC piping.

Substantiation: Electrical heat tracing can be~ viable means to protect CPVC pipes from freezing. However, the heat tracing should be chemical tested for CPVC compatibility, some heating cables contain PVC or plasticizers which can damage the piping.
Committee Meeting Action: Reject
Committee Statement: The section only applies to antifreeze, so it would be inappropriate to add something dealing with heat tracing. Depending on the disposition of 13D-76 (Log 32), some discussion of the limitations of heat tracing on plastic pipe may be in order in that section.

13D-108 Log #53 AUT-RSS Final Action: Accept
(A.8.3.3.2)

Submitter: David W. Ash, Lubrizol Advanced Materials
Recommendation: Revise text to read as follows:
A.8.3.3.2 Listed CPVC sprinkler pipe and fittings should be protected from freezing with glycerine only. The use of diethylene glycol, ethylene glycol, or propylene glycols is specifically prohibited. Laboratory testing shows that glycol-based antifreeze solutions present a chemical environment detrimental to CPVC. ~~Listed PB sprinkler pipe and fittings can be protected with glycerine, diethlene glycol, ethylene glycol, or propylene glycol.~~
Substantiation: Polybutylene is no longer used for fire sprinkler pipe and fittings.
Committee Meeting Action: Accept

13D-109 Log #69 AUT-RSS Final Action: Accept
(Figure A.8.4.4(a))

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: In line (4), change 0.434 to 0.433.
Substantiation: The pressure loss/gain due to elevation is 0.433 psi per ft. This is calculated using the specific weight of water (lb/ft^3) and dividing by the number of square inches in a square foot (144). The specific weight of water varies by the temperature of the water. At 32°F, the specific weight of water is 62.42, which, when divided by 144, yields 0.43347 psi/ft, which rounds to 0.433 when using the rules of rounding.
The specific weight of water goes down for most temperatures above 32. At 70° for example, the specific weight is 62.3, which, when divided by 144, yields 0.4326 psi/ft, which also rounds to 0.433.
The only temperature for which water has a higher specific weight is 40°F, which has a specific weight of 62.43. When divided by 144, this yields 0.43354, which also rounds to 0.433 using the rules of rounding. (When the next digit to the right is 1-4, round down; when the next digit to the right is 6-9, round up. When the digit in question is 5, odd numbers get rounded down and even numbers get rounded up. Since 3 is an odd number, the number is rounded down.)
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Accept

13D-110 Log #70 AUT-RSS **Final Action: Accept**
(A.8.4.4(b))

Submitter: Kenneth E. Isman, National Fire Sprinkler Association, Inc.
Recommendation: In line (1), change 0.434 to 0.433.
Substantiation: The pressure loss/gain due to elevation is 0.433 psi per ft. This is calculated using the specific weight of water (lb/ft^3) and dividing by the number of square inches in a square foot (144). The specific weight of water varies by the temperature of the water. At 32°F, the specific weight of water is 62.42, which, when divided by 144, yields 0.43347 psi/ft, which rounds to 0.433 when using the rules of rounding.

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The only temperature for which water has a higher specific weight is 40°F, which has a specific weight of 62.43. When divided by 144, this yields 0.43354, which also rounds to 0.433 using the rules of rounding. (When the next digit to the right is 1-4, round down; when the next digit to the right is 6-9, round up. When the digit in question is 5, odd numbers get rounded down and even numbers get rounded up. Since 3 is an odd number, the number is rounded down.)
This proposal was prepared on behalf of the NFSA Engineering and Standards Committee.
Committee Meeting Action: Accept

13D-111 Log #50 AUT-RSS **Final Action: Reject**
(B.1.1)

Submitter: Larry W. Owen, Dooley Tackaberry, Inc.
Recommendation: Add text to read as follows:
NFPA 750 Standard on Water Mist Fire Protection Systems 2010 Edition
Substantiation: Water Mist has been approved and installed in a wide range of sprinkler applications globally. For clarity the NFPA 750 Standard on Water Mist Fire Protection Systems should be included in Annex B of NFPA 13D as an Informational Reference.
Committee Meeting Action: Reject
Committee Statement: Water mist is not used in the annex and can not be added to the reference section.

13D-112 Log #35 AUT-RSS **Final Action: Accept**
(B.1.2.3)

Submitter: John F. Bender, Underwriters Laboratories Inc.
Recommendation: New text to read as follows:
B.1.2.3 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.
ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, 2008, Revised 2010.
ANSI/UL 1626, *Residential Sprinklers for Fire-Protection Service*, 2008.
Substantiation: Reason: Update referenced standards to most recent revision.
Committee Meeting Action: Accept