Report on Proposals F2007 — Copyright, NFPA

Report of the Committee on Water Tanks

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Committee Scope: This Committee shall have primary responsibility for documents on the design, construction, installation, and maintenance of tanks and accessory equipment supplying water for fire extinguishment, including gravity and pressure tanks, towers and foundations, pipe connections and fittings, valve enclosures and frost protection, and tank heating equipment.

This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the front of this book.

The Report of the Technical Committee on Water Tanks is presented for adoption.

This Report was prepared by the Technical Committee on Water Tanks and proposes for adoption, amendments to NFPA 22, Standard for Water Tanks for Private Protection, 2003 edition. NFPA 22-2003 is published in Volume 2 of the 2006 National Fire Codes and in separate pamphlet form.

This Report has been submitted to letter ballot of the Technical Committee on Water Tanks, which consists of 18 voting members. The results of the balloting, after circulation of any negative votes, can be found in the report.
Submitted: Technical Committee on Water Tanks, Committee Meeting Action: Accept
Recommendation: Revise the entire document to include inch/lb units first with metric in parenthesis.
Substantiation: Consistent with other water based documents.
Number Eligible to Vote: 18
Ballot Results: Affirmative: 14
Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

NOTE: This proposal appeared as Comment 22-1 (Log # 2) which was held from F2002 ROC on Proposal 22-3
Submitted: Sullivan D. Curran, Fiberglass Tank & Pipe Institute
Recommendation: Revise Section 1-7.1 to read as follows:
“Fiberglass-reinforced plastic tanks shall be permitted only for underground storage of water at atmospheric pressure. Fiberglass tanks shall meet the requirements of AWWA D120, Standard for Thermosetting Fiberglass-Reinforced Plastic Tanks, and...”
Substantiation: There was a delay in publishing the AWWA D120 standard until year 2002, thus the new is AWWA D120-02.
Committee Meeting Action: Accept in Principle
Committee Statement: See Committee Action and Statement on Proposal 22-4 (Log #7).
Number Eligible to Vote: 18
Ballot Results: Affirmative: 14
Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

Submitted: Kenneth E. Isman, National Fire Sprinkler Association
Recommendation: Revise 4.3.1 to read as follows:
4.3.1 Materials shall be limited to steel, wood, concrete, and coated fabric and fiberglass-reinforced plastic tanks.
Substantiation: Fiberglass-reinforced tanks are allowed by the standard, so they should be included in the list of permitted materials. See also our proposal regarding a new chapter of the standard to handle the rules for using such tanks.
Committee Meeting Action: Accept
Number Eligible to Vote: 18
Ballot Results: Affirmative: 14
Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

Submitted: Kenneth E. Isman, National Fire Sprinkler Association
Recommendation: Move all of 4.3.2 to a new Chapter 11 as follows and renumber the existing Chapter 11 through 16 as Chapter 12 through 17.
Chapter 11 Fiberglass-Reinforced Plastic Tanks
11.1 Fiberglass-reinforced plastic tanks shall be permitted to be used for fire protection systems when installed in accordance with the rules of this standard, including this chapter.
11.2* Fiberglass-reinforced plastic tanks shall only be permitted for underground storage of water at atmospheric pressure.
11.3 Fiberglass-reinforced plastic tanks shall meet the requirements of AWWA D120, Standard for Thermosetting Fiberglass-Reinforced Plastic Tanks.
11.4 Protection of Tanks.
11.4.1 Tanks shall be located completely below the frost line to protect against freezing.
11.4.2 Where protection from frost is not a factor, the tank shall be buried in accordance with 11.4.2.1 through 11.4.2.3.
11.4.2.1 The tank shall be buried with a minimum depth of cover of at least 0.8 m (2.5 ft) to prevent mechanical damage. 11.4.2.2 The tank shall be buried with a minimum depth of cover of 0.9 m (3 ft) below driveways and parking lots.
11.4.2.3 The tank shall be buried with a minimum depth of cover of 1.2 m (4 ft) below railroad tracks.
11.4.3 The depth of cover shall be measured from the top of the tank to the finished grade and due consideration shall be given to future or final grade and the nature of the soil.
11.5 At least 305 mm (12 in.) of pea gravel, crushed stone or sand shall be backfilled around the tank.
11.6 If the tank is not installed above the maximum ground water level, suitable methods of anchoring the tank shall be permitted so that the buoyancy of the tank when empty do not force it upward.

Figure A.11.2 Fiberglass tank as an underground cistern.
A.11.8.1 See Figure A.11.8.1 for an example of a combination vent and sight assembly, which allows the tank to stay at atmospheric pressure while allowing the user to know the water level in the tank. While these two devices are not required to be combined, it is convenient since they are both required to be above ground.

Figure A.11.8.1 Typical combination vent and sight assembly.
A.11.8.2 See Figure A.11.8.1 for an example of a combination vent and sight assembly, which allows the tank to stay at atmospheric pressure while allowing the user to know the water level in the tank. While these two devices are not required to be combined, it is convenient since they are both required to be above ground.
Substantiation: The rules of fiberglass tanks are currently in 4.3.2, which is inappropriate. Chapter 4 is general information that is supposed to apply to all tanks. Since all other tank materials have a chapter telling the user what to worry about when using that material to make the tank, fiberglass tanks should be the same.

In writing the new chapter, new material was added to provide better guidance to the user for issues to consider when using a fiberglass tank for private fire protection. The new information fits better into a new chapter than it would have in the existing Chapter 4.

In writing the new chapter, the term “fiberglass” has been changed to “fiberglass-reinforced plastic tank” in the body of the standard. This appears to be more consistent with the product that is being permitted by the standard. We recognize that this will be a very short chapter. But it will still be longer than existing Chapter 16 (one section) making it the second shortest chapter in the book.

The following is separate substantiation for each new section in the new chapter:

11.1 Establishes that fiberglass tanks are permitted to be used, which is a frequently asked question and needs to be addressed by the standard.

11.2 A rewrite of existing 4.3.2.

11.3 A rewrite of existing 4.3.2.1.

11.4 A new heading to consolidate some protection issues.

11.4.1 A rewrite of existing 4.3.2.1.1.

11.4.2 (and its subsections) These rules were taken from NFPA 24 (10.4.2 through 10.4.5). There needs to be some consideration to how deep to bury the pipe in climates where freezing is not a problem. There still needs to be some protection from mechanical damage, especially where heavy objects may roll over the surface above the tank.

11.4.3 is necessary to standardize the measurement of how far below the surface the tank will be. There needs to be some requirement to consider how the grade will be finished and how the soil might settle over time. This rule is also adapted from NFPA 24 regarding underground pipe.

11.5 is rewritten from 4.3.2.1.2 in the current standard.

11.6 is rewritten from 4.3.2.1.3 in the current standard.

11.7 is rewritten from 4.3.2.1.4 in the current standard.

11.8 (and its subsections) are common sense items that need to be added to the standard. While other tanks need similar connections, these rules need to be in this location to make it clear that these connections need to be above ground.

11.9 is added to the standard to make clear to users that there is a maximum capability for fire department pumpers to draw water up into a centrifugal pump. A large tank buried too deep will prevent the fire department from using water towards the bottom of the tank.

Annex material has been added to clarify the intent of the text in the body. The figures were taken from Figures A.9.4(f) and A.9.4(g) of NFPA 1142.

Committee Meeting Action: Accept in Principle

Revise text to read as follows:

Chapter 11 Fiberglass-Reinforced Plastic Tanks

11.1 Fiberglass-reinforced plastic tanks shall be permitted to be used for fire protection systems when installed in accordance with this chapter.

11.2 Fiberglass-reinforced plastic tanks shall only be permitted for underground storage of water at atmospheric pressure.

See Figure A.11.2 for an example of a fiberglass tank being used underground as a cistern to supply fire flow for fire department apparatus in a rural area.
11.6.2 Tanks shall be installed in accordance with the manufacturer’s instructions and Section 11.6.3 thru 11.6.17.

11.6.3 Fiberglass reinforced plastic (FRP) tanks located inside a building shall be protected by automatic sprinklers in accordance with ordinary hazard group 2 occupancies.

11.6.3.1 Where the hazard is greater than OH2, protection shall be in accordance with NFPA 13.

11.6.4 Horizontal fiberglass reinforced plastic tanks that are greater than 1.2 m (4 ft) in diameter and are positioned 457 mm (18 in.) or greater above finished floor shall be protected in accordance with the obstruction rules of NFPA 13.

11.6.5 Fiberglass tanks installed outdoors shall be protected from freezing, mechanical and UV damage.

11.7 Tank Connections.

11.7.1* Tanks shall have a vent that extends above the ground to prevent against pressurization of the tank during filling and creation of a vacuum during use. Tank venting systems shall be provided with a minimum 50 mm (2.0 in.) nominal inside diameter.

11.7.2* For underground tanks, water level monitoring required by Section 13.1.11 shall be capable of being read above ground.

11.7.3* Tanks shall have an accessible method of filling the tank above ground.

11.7.4* Tanks that are used as cisterns for providing fire flow to fire department apparatus shall have a dry hydrant assembly with threads acceptable to the authority having jurisdiction.

11.7.5 Tanks used as cisterns for providing fire flow to fire department apparatus shall be located such that the lowest water in the tank used for fire protection is not more than 4.6 m (15 ft) below the grade where the fire department apparatus will site to extract water out of the tank.

A.11.3 The standard capacities shall be from 7.6 m3 to 190 m3 (2,000 to 50,000 gallons). Tanks of other capacities shall be permitted.

A.11.7.2 See Figure A.11.7.2 for an example of a combination vent and sight assembly, which allows the tank to stay at atmospheric pressure while allowing the user to know the water level in the tank. While these two devices are not required to be combined, it is convenient since they are both required to be above ground.

Figure A.11.7.2 Typical combination vent and sight assembly.

A.11.7.3 See Figure A.11.7.3.

A.11.7.4 See Figure A.11.7.4.

Committee Statement: Better addresses the committee intent on the application of FRP tanks. The committee intends to permit the aboveground application of FRP tanks. There appears to be no technical substantiation for limiting the aboveground use of these tanks. Steps have been taken to address the issue of mechanical damage, combustibility and UV protection.

Number Eligible to Vote: 18
Ballot Results: Affirmative: 14
Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

Comment on Affirmative:
STEIN, G.: Section 11.3 should read “AWWA D120 02”.

22-5 Log #CP3 Final Action: Accept
(4.5)

Submitter: Technical Committee on Water Tanks,
Recommendation: Relocate Section 13.1.5 to Chapter 4, Section 4.5 as follows:
4.5 Plans.
4.5.1 The contractor shall furnish stress sheets and plans required by the purchaser and the authority having jurisdiction for approval or for obtaining building permits and licenses for the erection of the structure.
4.5.2 Approval of Layouts. [13.1.5]
4.5.2.1 Complete information regarding the tank piping on the tank side of the connection to the yard or sprinkler system shall be submitted to the authority having jurisdiction for approval. [13.1.5.1]
4.5.2.2 The information submitted shall include the following:
(1) Size and arrangement of all pipes
(2) Size, location, and type of all valves, tank heater, and other accessories
(3) Steam pressures available at the heater
(4) Arrangement of, and full information regarding, the steam supply and return system together with pipe sizes
(5) Details of construction of the frostproof casing [13.1.5.2]
(6) Where heating is required, provide heat loss calculations
(7) Structural drawings and calculations
(8) Seismic bracing details and calculations
(9) Operational settings and sequence of operation
(10) Monitoring equipment and connections
(11) Underground details including foundations, compaction and backfill details and calculations
(12) Buoyancy calculations for buried tanks

Substantiation: Consolidates all submittal requirements and improves user friendliness.

Committee Meeting Action: Accept
Number Eligible to Vote: 18
Ballot Results: Affirmative: 14
Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.
Provisions shall be made to drain each tank independently of all other tanks placed as annex material to 8.2.2. The text is redundant to 8.2.2.

To drain each tank independently of all other tanks placed as annex material to 8.2.2, use a pipe that is not less than 38 mm (1.5 in.) in diameter. Revise text to read as follows:

8.3.4 Earthquake Load. Tank structures shall meet local building code for seismic requirements.

For 4.12.4 Earthquake Load, the text should be revised to read:

4.12.4 Earthquake Load.

- 4.12.4.1 Tank structures shall meet local building code for seismic requirements. Earthquake design criteria shall be considered.
- 4.12.4.2 Specific design criteria are contained in the appropriate chapter for the particular tank, or in local code, whichever is more stringent.
- 4.12.4.3 Flat-bottom tanks shall be designed by a method that accounts for the sloshing of the contents (effective mass method).

Revise text to read as follows:

Delete Sections 5.3.

Committee Statement: General requirements for earthquake loads is more appropriate in Chapter 4 to apply to all tanks.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 5.7.6 Inside Ladder, delete the following section entirely:

A ladder shall extend from the top to the bottom of the inside of the large steel riser pipes and shall be secured to the shell plates by brackets that are spaced a maximum of 3.7 m (12 ft) apart.

5.7.6.2 The upper bracket shall be located at the top of the riser.

5.7.6.3 All ladders over 6.1 m (20 ft) high shall be equipped with a cage, a rigid notched rail, or other listed ladder safety device.

5.7.6.4 Interior ladders are not used and have no purpose.

Committee Meeting Action: Reject

Committee Statement: Ladders are needed for interior inspection. There is no technical substantiation for lack of use of ladders.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 22-6 Log #12 Final Action: Reject

(5.7.3.5)

Submitter: John R. Conrady, Conrady Consultant Services

Recommendation: Revise text as follows:

5.7.3.5 A second roof hatch shall be placed 180 degrees from the existing roof hatch with a ladder to reach the tank floor.

Substantiation: Interior ladders are not used and have no purpose.

Committee Meeting Action: Reject

Committee Statement: Ladders are needed for interior inspection. There is no technical substantiation for lack of use of ladders.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 22-7 Log #11 Final Action: Reject

(5.7.6)

Submitter: John R. Conrady, Conrady Consultant Services

Recommendation: Delete the following section entirely:

5.7.6 Inside Ladder.

5.7.6.1 The inside fixed ladder provided for passage between the roof hatch and tank bottom shall not be rigidly connected to the bottom plates.

5.7.6.2 A ladder shall extend from the top to the bottom of the inside of the large steel riser pipes and shall be secured to the shell plates by brackets that are spaced a maximum of 3.7 m (12 ft) apart.

5.7.6.2.1 The upper bracket shall be located at the top of the riser.

5.7.6.3 All ladders over 6.1 m (20 ft) high shall be equipped with a cage, a rigid notched rail, or other listed ladder safety device.

5.7.6.4 Interior ladders are not used and have no purpose.

Committee Meeting Action: Reject

Committee Statement: Ladders are needed for interior inspection. There is no technical substantiation for lack of use of ladders.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 22-8 Log #5 Final Action: Accept in Principle

(7.2.8.1)

Submitter: Bruce A. Edwards, Liberty Mutual Property

Recommendation: Revise text to read as follows:

Provisions shall be made to drain each tank independently of all other tanks and the sprinklers system by means of a pipe that is not less than 38.1 mm (1.5 in.) in diameter.

Substantiation: Existing wording incorrect and provides wrong direction missing the intent of the committee. Revision clarifies paragraph to meet the intent of the committee.

Committee Meeting Action: Accept in Principle

Committee Statement: Ladders are needed for interior inspection. There is no technical substantiation for lack of use of ladders.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 22-9 Log #3 Final Action: Accept

(8.2.2.2)

Submitter: Jon Nisja, Northcentral Regional Fire Code Development Committee

Recommendation: Move 8.2.2.2 to an annex note to 8.2.2.1.

Substantiation: The existing language is not code language and is better placed as annex material to 8.2.2.1. The text is redundant to 8.2.2.1.

Committee Meeting Action: Accept

Committee Statement: Move the related annex material also.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

For 22-10 Log #4 Final Action: Accept in Principle

(8.3.4)

Submitter: Jon Nisja, Northcentral Regional Fire Code Development Committee

Recommendation: Revise to read:

8.3.4 Earthquake Load. Tank structures shall meet local building code for seismic requirements.

Substantiation: Provides better guidance to the user on the proper requirements for seismic protection.

Committee Meeting Action: Accept in Principle

Revise text to read as follows:

4.12.4 Earthquake Load.

4.12.4.1 Tank structures shall meet local building code for seismic requirements. Earthquake design criteria shall be considered.

4.12.4.2 Specific design criteria are contained in the appropriate chapter for the particular tank, or in local code, whichever is more stringent.

4.12.4.3 Flat-bottom tanks shall be designed by a method that accounts for the sloshing of the contents (effective mass method).

Delete Sections 5.3.

Committee Statement: General requirements for earthquake loads is more appropriate in Chapter 4 to apply to all tanks.

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.
Table 11.5.1 Nominal Vent Line Diameters in Inches

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</tbody>
</table>

Note: For SI units, 1 m = 25 mm; 1 ft = 0.3 m; 1 gal = 3.8 L.
Vent line stated length pipe plus 72 ft.

11.6 Tank Openings Other than Vents. Connections for all tank openings shall be liquid tight.
11.6.1 Openings for manual gauging, if independent of the fill pipe, shall be provided with a liquid tight cap or cover. Covers shall be kept closed when not gauging.
11.6.2 Fill lines shall be sloped towards the tank.
11.7 Tank Anchoring. Tanks should be safeguarded against movement when exposed to high groundwater or floodwater by anchoring with non-metallic straps to bottom hold-down or dead-man anchors or by securing by other equivalent means using recognized engineering standards.

Committee Meeting Action: Accept in Principle
Submitter: Phillip C. Lick, Fiberglass Tank & Pipe Institute
Recommendation: Revise text to read as follows:
12.2.3 Pipe Material. The discharge pipe shall be of flanged cast iron or steel pipe, welded pipe, fiberglass pipe, or listed corrosion-resistant materials with flanged, bonded, or welded connections.

22-13 Log #2 Final Action: Accept in Principle
(13.1.10)
Submitter: Elikan Nicks, Southern Regional Fire Code Development Committee
Recommendation: Revise to read:
12.1.10 Filling. The tank shall be kept filled, and the water level shall never be more than 76 mm (3 in.) below the designated fire service level.
12.1.10.2 The filling bypass shall be kept closed when not in use.
13.4 Filling.
13.4.5 A permanent pipe connected to a water supply shall be provided to fill the tank.
13.4.6 The means to fill the tank shall be sized to fill the tank in a maximum time of 8 hours.
13.1.10.1 The tank shall be kept filled, and the water level shall never be more than 76 mm (3 in.) below the designated fire service level.
13.1.10.2 The filling bypass shall be kept closed when not in use.
13.4.1 Bypass around Check Valve.
13.4.1.1 Where the tank is to be filled from the fire protection system under city or fire-pump pressure, the filling pipe shall be a bypass around the check.
13.4.1.2 The bypass shall be connected into tapped bosses on the check valve or into the discharge pipe between the check valve and all other valves.
13.4.1.3 The bypass shall be sized to fill the tank per 13.4.x but shall not be smaller than 50 mm (2 in.).
13.4.1.4 A listed indicating control valve shall be placed in the bypass and shall be kept closed except when the tank is being filled.
13.4.2 Filling Pumps.
13.4.2.1 When the tank is to be filled by a special filling pump, the pump and connections shall be of such size that the tank can be filled in accordance with 13.4.x.
13.4.2.2 The filling pipe shall be of at least 50 mm (2 in.) and, except as noted in 13.4.3, shall be connected directly into the tank discharge pipe, in which case a listed indicating control valve and a check valve shall be placed in the filling pipe near the tank discharge pipe, with the check valve located on the pump side of the listed indicating valve.
13.4.3 The filling pump suction pipe shall not be connected to a fire service main that is supplied from the tank. The filling valve shall be open only when the tank is being filled.
13.4.3.4. Where a separate fill pipe is used, automatic filling shall be permitted.
13.4.4 Filling from Drinking Water Supply. Where the water in the fire protection system is not suitable for drinking purposes and the tank is filled from a portable water supply, the filling pipe shall be installed in accordance with the regulations of the local health authority.
13.4.5 Filling Pipe at Roofs and Floors. The intersection of a separate filling pipe with a roof or a waterproof or concrete floor shall be watertight.

22-12 Log #8 Final Action: Accept in Principle
(12.2.3 and 13.1.15)
Submitter: Sullivan D. Curran, Fiberglass Tank & Pipe Institute
Recommendation: Revise text to read as follows:
12.2.3 Pipe Material. The discharge pipe shall be of flanged cast iron or steel pipe, welded pipe, fiberglass pipe, or listed corrosion-resistant materials with flanged, bonded, or welded connections.

22-13 Log #2 Final Action: Accept in Principle
(13.1.10)
13.4.6.2 When the tank is to be filled by a special filling pump, the pump and connections shall be of such size that the tank can be filled in accordance with 13.4.2.

13.4.6.3 The filling pump suction pipe shall not be connected to a fire service main that is supplied from the tank. The filling valve shall be open only when the tank is being filled.

13.4.7 Where a separate fill pipe is used, automatic filling shall be permitted.

13.4.8 Filling from Drinking Water Supply. Where the water in the fire tank shell at locations to be designated by the purchaser.

17.3 Welded Steel Tanks

17.3.1 Acceptance. [5.6.8]

17.3.1.1 Prior to placing the tank in service, a representative of the tank contractor and a representative of the owner shall conduct a joint inspection of the completed equipment, tanks and tank-piping [4.7.1 & 13.1.6.1]

17.3.1.2 Written reports of tank and piping completed equipment inspections shall be made in triplicate, and a copy that has been signed by the contractors and the owners shall be sent to the authority having jurisdiction. [4.7.2 & 13.1.6.2]

17.3.1.3 This joint inspection reasonably ensures that there are no defects in the work of sufficient importance to prevent the system from being put into service immediately. The inspection also permits the owner’s representatives also to become more familiar with the system and equipment. [A.13.1.6.1]

17.3.2 Testing. [5.6.8]

17.3.2.1 After completion of the tank, all coated steel tanks shall be tested for holidays and coating thickness. [4.17.1]

17.3.2.2 Corrective action shall be completed prior to acceptance. Repairs or replacements shall be made as necessary. [4.17.2]

17.3.3 Final Action: Accept

17.3.3.1 The completed tank shall be tested by the pressure necessary to fill the tank to the maximum working water level. [5.6.8.2]

17.3.3.2 Any leaks in the shell, bottom, or roof (if the roof contains water) that are detected by the test shall be repaired by chipping or melting out any defects in the work of sufficient importance to prevent the system from being put into service immediately. The inspection also permits the owner’s representatives also to become more familiar with the system and equipment. [A.13.1.6.1]

17.3.3.3 Any leaks in the shell, bottom, or roof (if the roof contains water) that are detected by the test shall be repaired by chipping or melting out any detected leaks in the shell, bottom, or roof (if the roof contains water) that are disclosed by the test shall be repaired by chipping or melting out any detected leaks shall be repaired in accordance with AWWA D103, Factory-Coated Bolted Steel Tanks for Water Storage, for bolted steel tanks.

Committee Meeting Action: Accept

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

17.3.4 Repair work shall be done on joints only when the water in the tank is a minimum of 0.6 m (2 ft) below the point under repair. [5.6.8.2.2]

17.3.5 The tank shall be tested as watertight to the satisfaction of the AHJ and/or the owner’s representative’s inspector. [5.6.8.2.3]

17.3.6 Bolted Steel Tanks

17.3.6.1 The completed tank shall be tested by filling it with water, and any detected leaks shall be repaired in accordance with AWWA D103, Factory-Coated Bolted Steel Tanks for Water Storage.

17.4 Care should be taken when removing bolts in leaking areas.
Overtorqued bolts can cause linings to crack, to splinter, or to be otherwise damaged. Manufacturers’ recommendations for the repair or replacement of panels should be followed. [A.6.6.4]

17.5 Pressure Tanks.

17.5.1 Tests shall be performed as follows. [7.1.7.2.1]

17.5.1.1 Each pressure tank shall be tested in accordance with the ASME Boiler and Pressure Vessel Code, “Rules for the Construction of Unfired Pressure Vessels,” before painting. [7.1.7.2.1]

17.5.2.2 In addition to the ASME tests, each pressure tank shall be filled to two-thirds of its capacity and tested at the normal working pressure with all valves closed and shall not lose more than 0.03 bar (½ psi) pressure in 24 hours. [7.1.7.2.2]

17.5.2.3 A certificate signed by the manufacturer that certifies that the foregoing tests have been made shall be filed with the authority having jurisdiction. [7.1.7.2.3]

17.5.2.4 A repetition of the tests specified in 17.5.1.1 through 17.5.2.3 shall be required after the tank has been set in place and connected. Where conditions do not allow shipping the tank after it is assembled, these tests shall be conducted following its assembly in the presence of a representative of the authority having jurisdiction. [7.1.7.2.4]

17.6 Embankment Supported Coated Fabric Tanks.

17.6.1 The tank shall be tested for leakage prior to shipment. [9.3.2.4]

17.6.2 The tank also shall be tested for leakage after installation. [9.4.2.3.4]

17.7 Concrete Tanks

17.7.1 Leakage Testing. On completion of the tank and prior to any specified backfill placement at the footing or wall, the following test shall be applied to ensure water tightness. [10.6]

17.7.2 Preparation. The tank shall be filled with water to the maximum level and left to stand for at least 24 hours. [10.6.3]

17.7.3 Measurement. The drop in liquid level shall be measured over the next 72-hour period to determine the liquid volume loss. Evaporative losses shall be measured or calculated and shall be deducted from the measured loss to determine if there is net leakage. [10.6.2]

17.7.4 There shall be no measurable leakage after the tank is placed in service. [10.6.3]

17.8 Wood Tanks.

17.8.1 Wood tanks shall be filled and tested for liquid tightness for 48 hours. [10.6.2]

17.8.2 This shall be done under the supervision of a qualified wood tank specialist.

17.8.3 Tests shall be in accordance with the National Wood Tank Institute Bulletin 582.

17.9 Fiberglass Reinforced Plastic Tanks.

17.9.1 Hydrostatic Test.

17.9.1.1 Attach a 4 in. standpipe to the tank that extends 4 ft above the top of the tank. Fill the tank and standpipe with water and let stand for 24 hr. Examine for leakage or drop in water elevation in the standpipe. The tank shall show no visible signs of leakage, and the water level shall not fall more than 0.5 in. within the 24 hr test period.

17.10 Disposal of Test Water. The purchaser’s owner’s representative shall provide a means for disposing of test water up to the tank inlet or drain pipe. [5.6.8.3]

Substantiation: Places all of the existing requirements for acceptance inspection and testing for each type of tank in one section. Improves user friendliness.

Test requirements for wood and fiberglass reinforced plastic tanks have been added.

Committee Meeting Action: Accept

Number Eligible to Vote: 18

Ballot Results: Affirmative: 13 Negative: 1

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

Explanation of Negative: LEGATOS, N.: Recommendation: Revise the proposed Section 17.7 as follows:

17.7 Concrete Tanks

17.7.1 Leakage Testing. On completion of the tank and prior to any specified backfill placement at the footing or wall, the following test shall be applied: the tank shall be tested as follows to ensure water tightness. [10.6]

17.7.2 Preparation. The tank shall be filled with water to the maximum level and left to stand for at least 24 hours. [10.6.1]

17.7.3 Measurement. The drop in liquid level shall be measured over the next 72-hour period to determine the liquid volume loss. Evaporation losses shall be measured or calculated and shall be deducted from the measured loss to determine if there is net leakage. Water tightness testing, including duration, measurements, acceptance criteria and repairs shall be in accordance with AWWA D110. [10.6.2]

Substantiation: AWWA Standard D110, Standard for Wire- and Strand-Wound, Circular, Prestressed Concrete Water Tanks, contains comprehensive, detailed and long-standing provisions for water tightness testing, which are equally applicable to concrete as well as prestressed concrete tanks.

Comment on Affirmative:

STEIN, G.: Section 17.2.1 should clarify only the interior surfaces shall be tested for holidays.

22-20 Log #10 Final Action: Accept in Principle

(Figure B.1(x), Figure B.1(y))

Submitter: Sullivan D. Curran, Fiberglass Tank & Pipe Institute

Recommendation: Add the following two typical installation drawings to Annex B:

Typical Fiberglass Underground Water Tank with Bottom Sump

Typical Fiberglass Underground Water Tank with Fiberglass Pump Vault

Substantiation: Section 4.3 provides limited information for the use of underground fiberglass tanks (i.e., 4.3.2.1 through 4.3.2.4). The Institute is proposing that a new chapter be included to address underground water storage tanks. The proposed Annex drawings show two typical underground fiberglass tank installations.

I plan to participate in the upcoming NFPA 22 ROP meeting to answer committee questions.

Committee Meeting Action: Accept in Principle

Committee Statement: See Committee Action and Statement on Proposal 22-4 [Log #7].

Number Eligible to Vote: 18

Ballot Results: Affirmative: 14

Ballot Not Returned: 4 Hochhauser, D., Mitchard, J., Mow, B., Rosenwach, A.

Comment on Affirmative:

JENSEN, J.: Remove dimensions on tanks because they are specific to a given pump. The numbers shown apply to a 500 gpm pump only. Reference should be made to NFPA 20 for pump information.
Please indicate in which format you wish to receive your ROP/ROC electronic paper download
(Note: In choosing the download option you intend to view the ROP/ROC from our Website; no copy will be sent to you.)

Date __________________ Name ___________________ Tel. No. ___________________

Company ___________________________________________ City __________________ State ______ Zip ______

Please Indicate Organization Represented (if any)________________________________________________________

1. a) NFPA Document Title __________________________________ NFPA No. & Year __________
   b) Section/Paragraph __________________________________

2. Comment on Proposal No. (from ROP): __________________

3. Comment recommends: (check one) new text revised text deleted text

4. Comment (include proposed new or revised wording, or identification of wording to be deleted): (Note: Proposed text should be in legislative format: i.e., use underscore to denote wording to be inserted (inserted wording) and strike-through to denote wording to be deleted (deleted wording))

   _______________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________

5. Statement of Problem and Substantiation for Comment: (Note: State the problem that will be resolved by your recommendation; give the specific reason for your comment including copies of tests, research papers, fire experience, etc. If more than 200 words, it may be abstracted for publication.) _________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________

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Mail to: Secretary, Standards Council, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269 11/1/2005
Sequence of Events Leading to Issuance of an NFPA Committee Document

**Step 1  Call for Proposals**

▼ Proposed new Document or new edition of an existing Document is entered into one of two yearly revision cycles, and a Call for Proposals is published.

**Step 2  Report on Proposals (ROP)**

▼ Committee meets to act on Proposals, to develop its own Proposals, and to prepare its Report.

▼ Committee votes by written ballot on Proposals. If two-thirds approve, Report goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Proposals (ROP) is published for public review and comment.

**Step 3  Report on Comments (ROC)**

▼ Committee meets to act on Public Comments to develop its own Comments, and to prepare its report.

▼ Committee votes by written ballot on Comments. If two-thirds approve, Reports goes forward. Lacking two-thirds approval, Report returns to Committee.

▼ Report on Comments (ROC) is published for public review.

**Step 4  Technical Committee Report Session**

▼ “Notices of intent to make a motion” are filed, are reviewed, and valid motions are certified for presentation at the Technical Committee Report Session. (“Consent Documents” that have no certified motions bypass the Technical Committee Report Session and proceed to the Standards Council for issuance.)

▼ NFPA membership meets each June at the Annual Meeting Technical Committee Report Session and acts on Technical Committee Reports (ROP and ROC) for Documents with “certified amending motions.”

▼ Committee(s) vote on any amendments to Report approved at NFPA Annual Membership Meeting.

**Step 5  Standards Council Issuance**

▼ Notification of intent to file an appeal to the Standards Council on Association action must be filed within 20 days of the NFPA Annual Membership Meeting.

▼ Standards Council decides, based on all evidence, whether or not to issue Document or to take other action, including hearing any appeals.
The Technical Committee Report Session of the NFPA Annual Meeting

The process of public input and review does not end with the publication of the ROP and ROC. Following the completion of the Proposal and Comment periods, there is yet a further opportunity for debate and discussion through the Technical Committee Report Sessions that take place at the NFPA Annual Meeting.

The Technical Committee Report Session provides an opportunity for the final Technical Committee Report (i.e., the ROP and ROC) on each proposed new or revised code or standard to be presented to the NFPA membership for the debate and consideration of motions to amend the Report. The specific rules for the types of motions that can be made and who can make them are set forth in NFPA’s rules, which should always be consulted by those wishing to bring an issue before the membership at a Technical Committee Report Session. The following presents some of the main features of how a Report is handled.

**What Amending Motions Are Allowed.** The Technical Committee Reports contain many Proposals and Comments that the Technical Committee has rejected or revised in whole or in part. Actions of the Technical Committee published in the ROP may also eventually be rejected or revised by the Technical Committee during the development of its ROC. The motions allowed by NFPA rules provide the opportunity to propose amendments to the text of a proposed code or standard based on these published Proposals, Comments, and Committee actions. Thus, the list of allowable motions include motions to accept Proposals and Comments in whole or in part as submitted or as modified by a Technical Committee action. Motions are also available to reject an accepted Comment in whole or part. In addition, motions can be made to return an entire Technical Committee Report or a portion of the Report to the Technical Committee for further study.

*The NFPA Annual Meeting, also known as the World Safety Conference and Exposition®, takes place in June of each year. A second Fall membership meeting was discontinued in 2004, so the NFPA Technical Committee Report Session now runs once each year at the Annual Meeting in June.*

**Who Can Make Amending Motions.** Those authorized to make these motions are also regulated by NFPA rules. In many cases, the maker of the motion is limited by NFPA rules to the original submitter of the Proposal or Comment or his or her duly authorized representative. In other cases, such as a Motion to Reject an accepted Comment, or to Return a Technical Committee Report or a portion of a Technical Committee Report for Further Study, anyone can make these motions. For a complete explanation, NFPA rules should be consulted.

**The Filing of a Notice of Intent to Make a Motion.** Before making an allowable motion at a Technical Committee Report Session, the intended maker of the motion must file, in advance of the session, and within the published deadline, a Notice of Intent to Make a Motion. A Motions Committee appointed by the Standards Council then reviews all notices and certifies all amending motions that are proper. The Motions Committee can also, in consultation with the makers of the motions, clarify the intent of the motions and, in certain circumstances, combine motions that are dependent on each other together so that they can be made in one single motion. A Motions Committee report is then made available in advance of the meeting listing all certified motions. Only these Certified Amending Motions, together with certain allowable Follow-Up Motions (that is, motions that have become necessary as a result of previous successful amending motions) will be allowed at the Technical Committee Report Session.

**Consent Documents.** Often there are codes and standards up for consideration by the membership that will be noncontroversial, and no proper Notices of Intent to Make a Motion will be filed. These “Consent Documents” will bypass the Technical Committee Report Session and head straight to the Standards Council for issuance. The remaining Documents are then forwarded to the Technical Committee Report Session for consideration of the NFPA membership.
**Action on Motions at the Technical Committee Report Session.** In order to actually make a Certified Amending Motion at the Technical Committee Report Session, the maker of the motion must sign in at least an hour before the session begins. In this way, a final list of motions can be set in advance of the session. At the session, each proposed Document up for consideration is presented by a motion to adopt the Technical Committee Report on the Document. Following each such motion, the presiding officer in charge of the session opens the floor to motions on the Document from the final list of Certified Amending Motions followed by any permissible Follow-Up Motions. Debate and voting on each motion proceeds in accordance with NFPA rules. NFPA membership is not required in order to make or speak to a motion, but voting is limited to NFPA members who have joined at least 180 days prior to the session and have registered for the meeting. At the close of debate on each motion, voting takes place, and the motion requires a majority vote to carry. In order to amend a Technical Committee Report, successful amending motions must be confirmed by the responsible Technical Committee, which conducts a written ballot on all successful amending motions following the meeting and prior to the Document being forwarded to the Standards Council for issuance.

**Standards Council Issuance**

One of the primary responsibilities of the NFPA Standards Council, as the overseer of the NFPA codes and standards development process, is to act as the official issuer of all NFPA codes and standards. When it convenes to issue NFPA documents it also hears any appeals related to the Document. Appeals are an important part of assuring that all NFPA rules have been followed and that due process and fairness have been upheld throughout the codes and standards development process. The Council considers appeals both in writing and through the conduct of hearings at which all interested parties can participate. It decides appeals based on the entire record of the process as well as all submissions on the appeal. After deciding all appeals related to a Document before it, the Council, if appropriate, proceeds to issue the Document as an official NFPA code or standard, recommended practice or guide. Subject only to limited review by the NFPA Board of Directors, the decision of the Standards Council is final, and the new NFPA document becomes effective twenty days after Standards Council issuance. The illustration on page 9 provides an overview of the entire process, which takes approximately two full years to complete.