duration of the test shall not be required to exceed 24 hours. [NFPA 54:8.1.4.3]

1213.4 Detection of Leaks and Defects.

1213.4.1 The piping system shall withstand the test pressure specified without showing any evidence of leakage or other defects. Any reduction of test pressures as indicated by pressure gauges shall be deemed to indicate the presence of a leak, unless such reduction can be readily attributed to some other cause. [NFPA 54:8.1.5.1]

1213.4.2 The leakage shall be located by means of an approved gas detector, a noncorrosive leak detection fluid, or other approved leak detection methods. Matches, candles, open flames, or other methods that provide a source of ignition shall not be used. [NFPA 54:8.1.5.2]

1213.4.3 Where leakage or other defects are located, the affected portion of the piping system shall be repaired or replaced and retested (see Section 1213.1.3). [NFPA 54:8.1.5.3]

1213.5 Piping System Leak Check.

1214.5.1 Test Gases. Leak checks using fuel gas shall be permitted in piping systems that have been pressure-tested in accordance with Section 1213.0. [NFPA 54:8.2.1]

1213.5.2 Before Turning Gas On. During the process of turning gas on into a system of new gas piping, the entire system shall be inspected to determine that there are no open fittings or ends and that valves at unused outlets are closed and plugged or capped. [NFPA 54:8.2.2]

1213.5.3 Leak Check. Immediately after the gas is turned on into a new system or into a system that has been initially restored after an interruption of service, the piping system shall be checked for leakage. Where leakage is indicated, the gas supply shall be shut off until the necessary repairs have been made. [NFPA 54:8.2.3]

1213.5.4 Placing Appliances in Operation. Gas utilization appliances shall not be placed in operation until after the piping system has been tested in accordance with Section 1213.5.3 and purged in accordance with Section 1213.6.2. [NFPA 54:8.2.4]

1213.6 Purging.

1213.6.1 Removal From Service. When gas piping is to be opened for servicing, addition, or modification, the section to be worked on shall be turned off from the gas supply at the nearest convenient point, and the line pressure vented to the outdoors or to ventilated areas of sufficient size to prevent accumulation of flammable mixtures. The remaining gas in this section of pipe shall be displaced with an inert gas as required by Table 12-4. [NFPA 54:8.3.1]

TABLE 12-4
Length of Piping Requiring Purging with Inert Gas for Servicing or Modification
[NFPA 54: Table 8.3.1]

Nominal Pipe Size mm	Length of Piping Requiring Purging m
65	>15.25
80	>9.15
100	>4.57
150	>3.05
200 or larger	Any length

SI: 1mm = 0.04 in.; 1m = 3.3 ft.

1213.6.2 Placing in Operation. When piping full of air is placed in operation, the air in the piping shall be displaced with fuel gas; except where such piping is required by Table 12-5 to be purged with an inert gas prior to introduction of fuel gas. The air can be safely displaced with fuel gas, provided that a moderately rapid and continuous flow of fuel gas is introduced at one end of the line and air is vented out at the other end. The fuel gas flow shall be continued without interruption until the vented gas is free of air. The point of discharge shall not be left unattended during purging. After purging, the vent shall then be closed. Where required by Table 12-5, the air in the piping shall first be displaced with an inert gas, and the inert gas shall then be displaced with fuel gas. [NFPA 54:8.3.2]

TABLE 12-5
Length of Piping Requiring Purging with Inert Gas Before Placing in Operation
[NFPA 54: Table 8.3.2]

Nominal Pipe Size mm	Length of Piping Requiring Purging m
80	>9.15
100	>4.57
150	>3.05
200 or larger	Any length

SI: 1mm = 0.04 in.; 1m = 3.3 ft.

1213.6.3 Discharge of Purged Gases. The open end of piping systems being purged shall not discharge into confined spaces or areas where there are sources of ignition unless precautions are taken to perform this operation in a safe manner by ventilation of the space,