

be available to inspect for safe conditions, reset a tripped device, and restore the gas service. It is expected that aftershocks may cause additional actuations of the device, which would also require restoration of gas service.

- E) Other mitigation measures are still necessary to provide protection from potentially hazardous conditions resulting from a seismic event. These measures may include properly bracing water heaters and other gas appliances, structurally reinforcing foundations or structural elements, limiting the source of fire ignitions (for example, by providing earthquake-actuated automatic electrical service isolation), and installing fire-suppression devices such as automatic sprinklers.

**C1.2.2 Mounting.** When installing a device tested to this standard near a gas meter that is owned and operated by the serving gas supplier (i.e., local gas utility), the device should be installed in the consumer's piping system at a point somewhere downstream of the utility's gas meter, associated piping, and equipment, unless otherwise permitted by the gas utility. The serving gas supplier's meter-bypass fittings or outlets should never be used, altered, or obstructed to prevent the utility's access.

Installing a manual shutoff valve immediately upstream of the earthquake-actuated automatic gas shutoff device is advisable to assist and ensure that the serving gas supplier and qualified installer comply with all jurisdictional requirements. Only utility-qualified persons may operate, maintain, or service the utility's gas meter, service-line valves, or other equipment. The customer-owned manual shutoff valve that is recommended must have sufficient flow characteristics based on the nominal pipe size of the customer's piping at the "point of delivery" to provide sufficient gas volume and delivery pressure.

Compliance with this advice would provide the following benefits:

- A) Serving gas suppliers, building owners, and plumbing contractors could more easily comply with jurisdictional requirements that allow only utility-qualified persons to operate the gas utility's service valve. Operation of the serving gas supplier's service valve would not be required to replace, maintain, or repair the building owner's device or gas-piping system.
- B) Building owners would be responsible for maintenance and care of the manual shutoff valve and the earthquake-actuated automatic gas shutoff device because both would be installed in the building owner's gas-piping system.
- C) Future maintenance on the building's gas-piping system could be performed without the gas utility's assistance because the manual shutoff valve could be utilized to shut off the gas supply and would not interrupt the serving gas supplier's metered gas supply.
- D) Installation of the manual shutoff valve and earthquake-actuated automatic gas shutoff device downstream of the

gas utility's postmeter bypass tee would allow the utility to maintain its facility without interference from closure of the manual valve or the device.

**C1.3.1 Mode of Operation.** Iron oxides or iron sulfides may form within steel natural gas pipelines owing to the chemical reaction of constituents within the gas stream or microbiologically influenced (e.g., bacteria) corrosion. Where gas velocities are high, this powder material may be carried a significant distance from where it was formed. Magnets used to position or reset the sealing component of a device may attract these iron compounds to seating surfaces, causing incomplete seating and resultant gas leakage around the seat. This provision is not intended to exclude devices that incorporate magnets but do not contribute to this problem.

**C1.4.2 Installation Warning.** Installation of devices should be performed by a "qualified installer" for the following reasons:

- A) The orientation and support requirements can vary depending on the brand and model of the selected device and the piping configuration where the device is installed. It is recommended that contractors or others installing a device be trained and qualified by the device's manufacturer or one of its authorized representatives.
- B) Devices cause a drop in pressure, which reduces the gas-flow capacity of the gas piping entering a structure. The magnitude of this pressure drop is required by this standard to be reported for each device. Most persons are unfamiliar with the sizing of gas systems and are often not aware of this feature of their gas system. As a result, potential exists to install a device that could adversely affect the function of appliances or produce a hazardous condition. Therefore, care should be taken in ensuring that the additional pressure drop does not cause the total pressure drop for the system to exceed the maximum allowed by the authority having jurisdiction.

**C1.4.3 Resetting Warning.** It is recommended that the resetting warning also be displayed on the device's packaging.

## C1.5 WARRANTY

The issue of specifying a minimum warranty is considered necessary to alert regulators and potential consumers as to the expected reliability of performance. Without periodic examination, a warranty period of more than 10 years is not recommended. Periodic examination and servicing or a replacement date may be specified by the manufacturer or required by regulators. A random sampling examination program may be considered for extending the performance warranty period.