



Billing Code: 4910-60-W

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

[Docket No. PHMSA-2020-0115]

Pipeline Safety: Inside Meters and Regulators

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA); DOT

ACTION: Notice; issuance of advisory bulletin.

SUMMARY: PHMSA is issuing this advisory bulletin to alert owners and operators of natural gas distribution pipelines to the consequences of failures of inside meters and regulators.

PHMSA is also reminding operators of existing Federal regulations covering the installation and maintenance of inside meter and regulators, including the integrity management regulations for distribution systems to reduce the risks associated with failures of inside meter and regulator installations.

ADDRESSES: PHMSA guidance, including this advisory bulletin, can be found on PHMSA's website at <https://www.phmsa.dot.gov/guidance>. You may also view this advisory bulletin and related documents at <http://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT:

Technical Questions: Michael Thompson, Transportation Specialist, by phone at 503-883-3495.

General Questions: Ashlin Bollacker, Technical Writer, by phone at 202-366-4203.

SUPPLEMENTARY INFORMATION:

Background

On August 10, 2016, a natural gas-fueled explosion and fire caused the partial collapse of a 14-unit apartment building located at 8701 Arliss Street (Building 8701) in the Flower Branch

Apartment Complex of Silver Spring, Maryland. The explosion and fire also heavily damaged an adjacent apartment building, which shared a common wall with Building 8701. As a result of this accident, 7 residents died, 65 residents were transported to the hospital, and 3 firefighters were treated and released from the hospital. The property damage from the accident exceeded \$1 million.

National Transportation Safety Board (NTSB) determined that the probable cause of the explosion was the failure of an indoor mercury service regulator with an unconnected vent line. The unconnected vent line allowed natural gas to flow into the meter room, where the gas accumulated and ignited from an unknown ignition source. A contributing factor to the accident was the mercury service regulator being located in a space where leak detection by odor was not readily available.

A “service regulator” is defined in § 192.3 as a “device on a service line that controls the pressure of gas delivered from a higher pressure to the pressure provided to the customer. A service regulator may serve one customer or multiple customers through a meter header or manifold.” Service regulators are installed to a meter inlet to control the gas pressure into a building. They reduce the high pressure used to transport natural gas through the delivery systems to the lower pressures used in homes and businesses. Service regulators include a relief valve that opens if the pressure of the regulated gas exceeds a specified pressure to allow the excess gas to vent to the outside atmosphere. Mercury service regulators present an increased risk of failure due to their age.¹

¹ The design of mercury service regulators includes materials such as leather diaphragms and rubber valve seats that are subject to age-related deterioration.

Building 8701 received natural gas from a distribution system owned and operated by Washington Gas Light Company (WGL). WGL delivers natural gas to more than one million residential, commercial, and industrial customers throughout Washington, D.C., and the surrounding regions in Maryland and Virginia. According to WGL, the mercury service regulators installed in Building 8701 were also installed in all 26 buildings of the Flower Branch apartment complex between 1955 and 1956. Since the accident, all of the mercury service regulators in the Flower Branch apartment complex have been removed and replaced.

NTSB Accident Investigation Findings and Recommendations to PHMSA

On April 24, 2019, NTSB adopted its report, “Building Explosion and Fire, Silver Spring, Maryland, August 10, 2016,”² determined the probable cause of the explosion, and issued safety recommendations. In its report, NTSB stated that several residents of Buildings 8701 and 8703 reported to investigators that they smelled gas in the weeks and months leading up to the explosion. On July 25, 2016, before the accident, several residents called the building manager, 9-1-1, and local fire personnel about gas odor. However, there was no evidence that residents, building management, or any emergency personnel notified the operator, WGL, of the gas odor. The investigation revealed that, had anyone notified WGL of a gas odor call made two weeks earlier, the accident may have been prevented. Notifying WGL would have allowed a service technician to enter the meter room of the building, identify the unconnected vent line, and remedy the situation. NTSB noted, however, that the use of gas odorants alone does not sufficiently mitigate the risk of death and injuries caused by gas system leaks, such as the leak that occurred in this accident.

² NTSB/PAR-19/01. The details of this accident investigation and the resulting safety recommendations may be accessed at <https://www.nts.gov/investigations/AccidentReports/Reports/PAR1901.pdf>.

As discussed above, NTSB determined that the probable cause of the explosion was the failure of an indoor mercury service regulator with an unconnected vent line. The unconnected vent line allowed natural gas to flow into the meter room, where the gas accumulated and ignited from an unknown ignition source. NTSB issued Safety Recommendations P-19-001 and P-19-002 to PHMSA based on the finding in the Silver Spring investigation that, had service regulators been located outside Building 8701, the explosion would have been avoided because gas would have vented to the atmosphere and dissipated. In light of these recommendations, PHMSA believes that operators should ensure compliance with the applicable pipeline safety regulations and should evaluate each service installation to determine the appropriate location of the service regulators. If access is an issue to check and maintain inside regulators properly, operators should do what is necessary to have the customer provide access for the operator to check the regulator and conduct the leakage and atmospheric corrosion surveys.

Minimum Federal Safety Standards for Customer Meters, Service Regulators and Service Lines

The Federal Pipeline Safety Regulations prescribe minimum safety standards for customer meters, service regulators, and service lines. They require operators to take into consideration the possibility of corrosion, overpressure events, and physical damage in the design, installation, and maintenance of these facilities. The Federal Pipeline Safety Regulations at 49 CFR 192.353 require that each meter and service regulator, whether inside or outside a building, must be installed in a readily accessible location and be protected from corrosion and other damage, including vehicular damage. For regulators located inside a building, each service regulator must be located as near as practical to the point of service line entrance. Each meter must be located in a ventilated place and not less than 3 feet from any source of ignition or any

source of heat that might damage the meter. Section 192.355(b) states: “[s]ervice regulator vents and relief vents must terminate outdoors, and the outdoor terminus must . . . [b]e located at a place where gas from the vent can escape freely into the atmosphere and away from any opening into the building.” Section 192.357(d) requires regulators that might release gas to be vented to the outside atmosphere.

Federal Pipeline Safety Regulations include requirements that operators conduct leakage surveys of their systems, including meter and service regulators located inside buildings (§ 192.723). In scheduling such surveys, operators must consider the nature of their operations and the local conditions. At a minimum, operators must conduct surveys: (1) in business districts at intervals not exceeding 15 months, but at least once each calendar year; and (2) outside business districts as frequently as necessary, but at least once every five calendar years at intervals not exceeding 63 months. The regulations also require that operators inspect each pipeline or portion of pipeline that is exposed to the atmosphere for evidence of atmospheric corrosion in accordance with § 192.481. Further, if atmospheric corrosion is found during an inspection, the operator must provide protection against the corrosion as required by § 192.479.

PHMSA is reminding operators of these existing requirements for inside meters and regulators. This advisory bulletin notes that, if access is an issue to check and maintain inside regulators properly, operators should endeavor to have the customer provide access for the operator to check the regulator and conduct the leakage and atmospheric corrosion surveys.

Distribution Integrity Management Program (DIMP) Regulations

In addition to these requirements for inside meters and regulators, PHMSA is also reminding operators of their obligation to continually assess risks to their systems and address those risks in accordance with DIMP regulations at § 192.1007. A DIMP program requires that

operators demonstrate knowledge of their system (§ 192.1007(a)). Additionally, a DIMP program requires that operators identify existing and potential threats (§ 192.1007(b)). Identification of the threats that affect, or could potentially affect, a distribution pipeline is key to assuring its integrity. Knowledge of applicable threats allows operators to evaluate the risks they pose and to rank those risks, allowing safety resources to be applied where they will be most effective. Section 192.1007(c) requires that an operator evaluate the identified threats to determine their relative importance and rank the risks associated with its pipeline. Operators must consider the likelihood of threats as well as the consequences of a failure that might result from each threat. The integrity management programs must include measures designed and implemented to reduce the risk of failure from identified threats (§ 192.1007(d)). Measuring performance periodically and conducting a complete program re-evaluation at least every five years allows operators to determine whether actions being taken to address threats are effective, or whether different or additional actions are needed (§ 192.1007(e)-(f)). An operator should conduct a program evaluation any time there are changes in factors that would affect the risk of failure.

While the DIMP Regulations have been in place since 2009, some operators may not be sufficiently aware of their pipeline attributes, or may not be adequately or consistently assessing threats as part of their DIMP programs. For example, NTSB found that WGL's inadequate procedures led to the exclusion of the requirement that technicians verify the connection of vent lines for indoor service regulators during service and maintenance activities, and as such, vent lines could be inadvertently left disconnected following service work. NTSB concluded that WGL relied on unvalidated information to determine the location and condition of mercury service regulators. Therefore, the NTSB recommended that throughout the WGL network, WG implement

an audit program to verify the data on the service forms used to determine the location and condition of mercury service regulators to ensure the accuracy of this safety-critical data.

Because it is so essential that operators identify the conditions that can cause failures and address them before a failure can occur, PHMSA is reminding operators of their obligations to comply with DIMP regulations. This advisory bulletin serves as a reminder to operators to identify and evaluate the physical and operational characteristics of each pipeline system. Operators following these requirements should help to ensure the safety of customer meters and regulators.

II. Advisory Bulletin (ADB-2020-01)

To: Owners and Operators of Gas Distribution Systems.

Subject: Requirements for Inside Meters and Regulators.

Advisory: To further enhance PHMSA's safety efforts and implement NTSB's April 24, 2019, Recommendations P-19-001 and P-19-002, PHMSA is issuing this advisory bulletin to remind operators of the requirements for inside meters and regulators. PHMSA is also reminding operators of existing Federal DIMP regulations to reduce the possibility of the failure of inside meter and regulator installations. Further, PHMSA advises operators to review NTSB's report concerning the August 10, 2016, accident as it may serve as prudent guidance regarding potential safety problems that operators may need to act on if it addresses a relevant factor on their system. This advisory bulletin is intended to clarify and describe the existing pipeline safety standards for operators and the public. The contents of this advisory bulletin do not have the force and effect of law and are not meant to bind the public in any way. However, pipeline operators must comply with the underlying pipeline safety standards at 49 CFR part 192.

PHMSA is reminding operators of §§ 192.353, 192.355, and 192.357, which provide requirements regarding the location and safety of customer meters and regulators. While the

regulations allow service regulators to be located inside or outside structures, the requirements for indoor regulators are more stringent than those located outdoors. Section 192.353(a) requires that each meter and service regulator, whether inside or outside of a building, be installed in a readily accessible location and be protected from corrosion and other damage, including vehicular damage. Section 192.353(b) requires each service regulator installed within a building to be located as near as practical to the point of service line entrance, and § 192.353(c) requires that each meter installed within a building must be located in a ventilated place and not less than 3 feet from any source of ignition or any source of heat that might damage the meter. In addition, § 192.355(b) requires that the service regulator vents and relief vents must terminate outdoors, and the outdoor terminus must be located at a place where gas from the vent can escape freely into the atmosphere and away from any opening into the building. Section 192.357(d) requires regulators that might release gas to be vented to the outside atmosphere.

The Federal Pipeline Safety Regulations include requirements that operators conduct leakage and atmospheric corrosion surveys of their systems, including service regulators located inside or outside a building (§§ 192.723 and 192.481). If access is an issue to check and maintain inside meter and regulators properly, operators should endeavor to have the customer provide access for the operator to check these facilities and conduct the leakage and atmospheric corrosion surveys.

PHMSA is also reminding operators of their obligation to continually assess risks to their systems and address those risks as required by the DIMP regulations (§ 192.1007). PHMSA reminds pipeline operators of their responsibilities to continuously improve their knowledge of their pipeline systems, identify integrity threats, evaluate and rank risks, and identify, evaluate, and implement preventative and mitigative measures as required by the Federal Pipeline Safety

Regulations. PHMSA recommends that operators thoroughly review their current DIMP for the threat of the failure of inside meter and regulator installations and make any changes necessary to become compliant with the Federal Pipeline Safety Regulations. For example, based on the requirements in § 192.1007(a) for operators to know their systems, PHMSA would expect operators to know the location (inside or outside) of all meters and regulators installed on their distribution system. Operators must evaluate the risks associated with these facilities, determine the relative importance of each threat, and rank the risks posed to their pipeline (§ 192.1007(c)). PHMSA urges operators to consider the points-of-failure identified in NTSB's accident investigation report as they relate to operators' inside meter and regulator installations and to adjust their DIMP accordingly. These measures must include an effective leak management program unless all leaks are repaired when found (§ 192.1007(d)). As part of their leak management program, operators must consider all risks, including the risk of failure or damage to inside meter and regulator installations. If risks are identified, risk reduction measures must be put in place to address them, or if additional actions have not been taken to reduce risks, justification must be documented.

Issued in Washington, DC, on September 24, 2020, under authority delegated in 49 CFR 1.97.

Alan K. Mayberry,

Associate Administrator for Pipeline Safety.