

National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials Investigations

Washington, DC 20594



West Reading, Pennsylvania
March 24, 2023

PLD23LR002

INTEGRITY MANAGEMENT

Group Chair's Factual Report - Supplemental

Report Date: July 18, 2024

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A. ACCIDENT

Location: West Reading, Pennsylvania
Date: March 24, 2023
Time: 1655 EDT
2055 UTC
Operator: UGI Corporation (UGI)
System Type: Gas Distribution
Commodity: Natural Gas

B. INTEGRITY MANAGEMENT GROUP

Group Chair Dane Spillers
National Transportation Safety Board
Washington, DC

Group Member Gerhard Bauman
Pipeline and Hazardous Material Safety Administration
Oklahoma City, OK

Group Member John Toumeh
UGI Utilities, Inc
Denver, PA

C. SUMMARY

For a summary of the accident, refer to the *Accident Summary* report within the docket.

This report documents information gathered in addition to what is contained in the *Integrity Management Group Chair's Factual Report*, dated October 13, 2023.

D. FACTUAL INFORMATION - SUPPLEMENTAL

1.0 Gas Distribution Pipeline Integrity Management Regulations

Minimum federal safety standards for the transportation of natural gas by pipeline are codified by the Pipeline and Hazardous Materials Safety Administration (PHMSA) in 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*. 49 CFR Part 192 Subpart P, *Gas Distribution*

Pipeline Integrity Management (IM), identifies requirements for integrity management programs for gas distribution systems.¹ These requirements apply to operators of gas distribution systems regulated by Part 192. The purpose of the integrity management program is to enhance safety by identifying and reducing pipeline risks. The elements of a distribution integrity management program are:

- Knowledge- The operator must develop an understanding of its distribution pipeline from reasonably available information.
- Identify threats-The operator must identify threats that affect or could potentially affect their distribution pipelines.
- Evaluate and rank risk-The operator must evaluate the identified threats to determine their relative importance and rank the risks associated with its pipeline.
- Identify and implement measures to address risk- The operator must identify specific measures designed to reduce the risk of failure from identified threats.
- Measure performance, monitor results, and evaluate effectiveness-The operator must develop performance measures and evaluate program effectiveness, including four performance measures that all operators must report.
- Periodic Evaluation and Improvement-The operator must periodically re-evaluate risks on their entire pipeline and consider the relevance of threats at all locations, consider the results of performance monitoring, and identify program improvements.
- Report results-The operator must include four performance required measurements in their annual reports.

PHMSA has also developed a list of Frequently Asked Questions (FAQs) to help operators and regulators understand the DIMP regulations and address questions that were anticipated or asked on proper implementation of the DIMP regulations.² Several of the FAQs provide insight into how threats are identified, and one, FAQ C.4.b.6, addresses Aldyl A pipe.

FAQ C.4.b.6 discusses susceptibility to premature brittle-like cracking of certain Aldyl A pipe, along with other manufacturer's products which is described in the FAQ as "well-documented" and references a PHMSA Advisory Bulletin ADB-07-02

¹ 49 CFR Part 1092, Subpart P was originally published on December 4, 2009, effective February 2, 2010 (74 FR 63906)

² PHMSA DIMP FAQs effective October 26, 2015, are available at the following link:
<https://www.phmsa.dot.gov/pipeline/gas-distribution-integrity-management/gas-distribution-integrity-management-faqs>.

(72 FR 51301) *Updated Notification of Susceptibility to Premature Brittle-Like Cracking of Older Plastic Pipe.*

The PHMSA Advisory Bulletin ADB-07-02, published September 6, 2007, describe two additional pipe materials with poor performance histories relative to brittle-like cracking, Delrin insert tap tees; and Plexco service tee with Celcon (polyacetal) caps. ADB-07-02 also references earlier PHMSA Advisory Bulletins (ADB-99-6013, ADB 99-6051 and ADB07-4309) which describe environmental conditions which can lead to premature brittle-like cracking and includes higher ground temperature as a condition which will cause polyethylene piping to have a shorter service life.

1.1 PHMSA Pipeline Risk Modeling Report

In its report, *Pipeline Risk Modeling Overview of Methods and Tools for Improved Implementation*, February 1, 2020, PHMSA acknowledged that both PHMSA and the NTSB have identified general weaknesses in the risk models used by pipeline operators in performing risk assessments for their IM programs. Generally, the models used have not enabled operators to systematically identify and effectively analyze risk reduction actions.

Some conclusions reported by PHMSA's Risk Modeling Work Group include: The overriding principle in employing any type of risk model/assessment is that it supports risk management decisions to reduce risks; It is important for pipeline risk models to include the potential effects of threats to interact in ways that can increase risk; It is important to consider an applicable range of scenarios (even if they do not have a high probability of occurrence) to capture the appropriate spectrum of possible consequences; A quantitative system or probabilistic model is more versatile for evaluations, with greater capabilities to provide risk insights and support decision making.

1.2 Pennsylvania Public Utilities Commission (PA PUC)

In June 2023, the NTSB investigation team requested the PA PUC to provide all inspection reports of pipeline operator UGI Utilities (UGI) Distribution Integrity Management Program for the 5 year period preceding the March 24, 2023, explosion at the RM Palmer chocolate factory in West Reading, Pa. These records were requested to provide information on UGI's knowledge of, and compliance with, pipeline safety regulations and safety bulletins/notifications by PHMSA or other agencies.

During inspections, the state regulators collect and analyze data on the operator's compliance with pipeline safety regulations. Citing Pennsylvania state law on Confidential Security Information (CSI), the PA PUC declined to provide any information obtained in inspections of UGI with NTSB investigators. After NTSB

served the PA PUC with a subpoena, the requested records were provided to NTSB on April 19, 2024.

The inspection records obtained by the NTSB from the PA PUC are for DIMP inspections conducted from 2018 to 2023 and provide a brief narrative of the inspection findings and an itemized listing of specific regulatory requirements reviewed. The records chronicle the PA PUC inspectors' evaluations of the UGI DIMP plan and plan changes from year to year and document the UGI plan compliance as satisfactory or unsatisfactory with the specific regulatory requirements.

In July 2023, the NTSB also requested from UGI a summary of the PA PUC inspections and official correspondence between UGI and the PA PUC³. UGI provided the following documents which includes PA PUC letters to UGI documenting non-compliances found during inspections and UGI responses describing actions that are planned or have been implemented to address the issues that were identified by the PA PUC:

- DR114B, listing of 1,588 interactions between UGI and the PA PUC from January 3, 2019, and July 19, 2023.
- DR114C, Non-Compliance letter from February 25, 2020, from the PA PUC to UGI on issues identified during an inspection in November and December 2019.
- DR114D, correspondence from March 27, 2020, from UGI to the PA PUC responding to issues identified in the February 25, 2020, Non-Compliance letter from the PA PUC.
- DR114E, a copy of the PA PUC Inspection Report for December 13, 2019.
- DR114F, supplementary correspondence from March 27, 2020, from UGI to the PA PUC responding to issues identified in the February 25, 2020, Non-Compliance letter.
- DR114G, an updated supplementary correspondence from September 20, 2021, from UGI to the PA PUC responding to issues identified in the February 25, 2020, Non-Compliance letter.
- DR114I, correspondence from March 27, 2020, from UGI to the PA PUC responding to issues identified in the April 5, 2021, Non-Compliance letter from the PA PUC.

³ NTSB data request to UGI, DR 114, February 25, 2020, for UGI to provide a summary of PA PUC inspections and all official correspondence from PA PUC to UGI regarding DIMP program violations discovered from 2018-2023.

The PA PUC found UGI was not in compliance with certain Distribution Integrity Management regulatory requirements in 2019 and found no compliance concerns in 2018, 2020, 2021 and 2022.

In correspondence provided by UGI, on February 25, 2020, the PA PUC cited UGI for the following issues identified in 2019:

- 49 CFR §192.1007(b) Threat associated with medium pressure systems with inside meter and service regulators were not considered.
- 49 CFR §192.1007(c) Based upon current leaks and incident data, the consequence of failure for the highest rank leak risk appears to be minor.
- 49 CFR §192.1007(d)
 - 1-Accelerated Actions and Key Performance Indicators have been added to the DIMP program but have not been processed through the DIMP protocols.
 - 2-The leak management program in the DIMP manual was not adequately evaluated for specific high risk leak events.

On March 27, 2020, UGI provide a response to the PA PUC with their plans to address the issues identified in the February 25, 2020, compliance letter. In supplemental letters on January 12, 2021, and September 20, 2021, UGI provided updates to the PA PUC on the completed actions and ongoing activities to address these issues.

Submitted by:

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