National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials Investigations

Washington, DC 20594

South Jordan, Utah

PIPELINE OPERATIONS GROUP

Group Chair's Factual Report

September 24, 2025

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A. ACCIDENT

Location:	South Jordan, UT
Date:	November 6, 2024
Time:	1509 MST 2209 UTC
Operator:	Enbridge Gas Utah
System Type:	Gas Distribution
Commodity:	Natural Gas

B. PIPELINE OPERATIONS GROUP

Group Chair	Dane Spillers National Transportation Safety Board Washington, D.C.
Group Members:	Jimmy Betham Utah Department of Commerce, Division of Public Utilities Pipeline Safety Section Salt Lake City, UT
Group Member	Reed Thompson Utah Department of Public Safety, Office of the State Fire Marshal Sandy, UT
Group Member	Matt Bartol Enbridge Gas Utah Salt Lake City, UT

C. SUMMARY

On November 6, 2024, at 3:09 p.m. MST, a home explosion and fire in South Jordan, Utah killed a juvenile and destroyed his home. A neighboring home was also structurally damaged, and other homes in the area experienced minor damage. The South Jordan Fire Department responded within 5-minutes of the initial 911 call. Enbridge Utah Gas (Enbridge) arrived on-scene at 3:45 p.m. and worked continuously to find and isolate the leak. A leak was found and isolated at about noon the following day.

After the accident, a leak was found about 150-feet northeast of the accident home on a 4-inch diameter Aldyl A natural gas main that was manufactured and installed in 1976. The cracked main was owned and operated by Enbridge. The gas main was operated at a pressure of about 45 psig with an MAOP of 60 psig. Subsurface gas was detected between the leaking gas main and two nearby residences, extending from the main to the backyard and front yard of each home. Enbridge Gas Utah observed subsurface gas indications as far as about 250-feet from the leak location. Natural gas below the lower explosive limit (LEL) was also detected in the atmosphere of the neighboring home to the north.

Utah Deputy State Fire Marshal interviewed the parents of the victim. One parent reported one of her children experiencing flu-like symptoms. The same parent reported feeling dizzy and having headaches over the weekend prior to the explosion. Both parents reported having no hot water since Sunday evening (November 3rd). After attempting to troubleshoot the issue on Tuesday (November 5th), one parent reported turning the control module on the water heater off, after unsuccessfully being able to relight the pilot light. One parent also reported lighting a candle on Tuesday evening (November 5th) and observing an unusually high flame which she quickly put out. All five residents were aware of what natural gas smells like, but none reported smelling gas prior to the explosion. They were not aware that natural gas alarms existed and did not have one in their home.

D. FACTUAL INFORMATION

This report documents the facts, conditions, and circumstances relating to the accident which pertains to operations of the affected pipeline system.

1.0 Operational Overview

Pipeline operations are dependent on the pipeline operator, existing infrastructure, and environment in which the pipeline operates. Some operational considerations are required by regulation (See Section 6.0).

1.0 Description of the Operator

Enbridge Inc., headquartered in Calgary, Alberta, Canada is a Canadian-based publicly held energy transportation and distribution company incorporated on April 13th, 1970. Enbridge Inc. is comprised of 4 core businesses: liquids pipelines, natural gas pipelines, gas utilities and storage and renewable energy. Enbridge reports to have a workforce of about 16,000 people[1] . Enbridge's gas utility business, Enbridge Gas Inc. was formed on Jan. 1, 2019. As of Oct 1, 2024, Enbridge Gas reports to have a network of 110,606 miles of gas transmission, transportation and distribution mainlines and 64,453 miles of service lines[2] serving 7 million customers in Canada and the US. On May 31, 2024, Enbridge Inc acquired Questar Gas Company, a public natural gas utility providing distribution, storage and transmission services to residential, commercial and industrial customers in Utah, southwestern Wyoming and southeastern Idaho. Questar conducts business as Enbridge Gas Utah, Enbridge Gas Wyoming and Enbridge Gas Idaho in those respective states.[3] The Questar Gas Company had been doing business as Dominion Energy Utah, Dominion Energy Wyoming and Dominion Energy Idaho in these areas prior to acquisition by Enbridge Inc.[4]

[1] Refer to About Us - Enbridge Inc
[2] Refer to Gas utilities and storage - Enbridge Inc
[3] Refer to Enbridge Inc 2024 Q3 10- Q SEC filing ending 9/30/24
[4] Refer to Dominion Energy Inc 10-K SEC filing ending 12/31/23

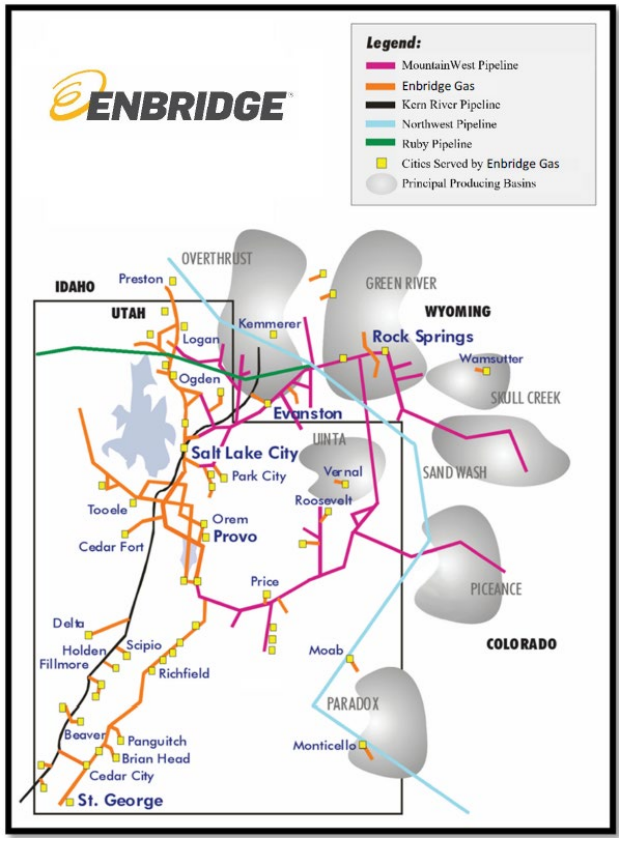

Figure 1-Enbridge Utah, Utah, Wyoming, Idaho (formerly Dominions Energy)[5]

The following list provides the responsibilities of Enbridge Utah departments, relevant to incident response.

1) Operations:

a) First response; b) Make the area safe; c) Shut down gas flow; d) Identification of location of leaks/gas in the ground; e) Check and clear homes of gas concentrations; f) Excavation and repair of damaged pipe; g) Operation of gas extraction trailer.

2) Gas Lab—Testing and identification of type of combustible substance found by Sensit CGI (combustible gas indicator) equipment following the incident to verify the existence of natural gas (methane).

[5] Provided by Enbridge Gas Utah

3) Measurement and Control—Collection and completion of gas odorant measurements in the area of the incident to verify adequate levels of odorant are present.

4) Leak Surveys—Completion of multiple leak surveys of the surrounding area of the incident using Heath Detecto Pak-Infrared equipment to locate and identify any existing leaks on the system, or to verify that no leaks exist.

5) Dispatch: a) Receipt of emergency calls from the public or first responders; b) Dispatching of company personnel to the incident site; c) Completion of other necessary notifications to additional staff, management, legal, etc. d) Issue orders associated with the incident; e) Assist crews with any additional resources needed.

6) Pipeline Safety Management Systems (PSMS) (includes Pipeline Compliance) Responsibilities—Make required notifications to the National Response Center (NRC) and pipeline safety regulators, and interface with pipeline regulators and investigators. Also is responsible for ensuring the collection of information necessary for the required regulatory reports.

Figure 2-Gas distribution system near 10593 S 3200 W (street)[6]

[6] KMZ 1000-foot buffer provided by Enbridge mapped in Google Earth

1.1 Description of the Pipeline System

Enbridge provided pressure data that reflected the pressure at the nearby regulator station was about 44 pounds per square inch, gauge (psig) at the time of the incident. Enbridge also reported that they reviewed their historical pressure records for this area and confirmed that they have not had an overpressure event in known history[7] .

Per the original construction records, the failed natural gas main was 4-inch diameter Aldyl A, manufactured and installed in 1976[8]. Enbridge estimated the volume released per day from a 3-inch crack to be about 35MCF/day[9] The time of failure is currently unknown. The Materials Factual report includes the leak rate measured in the lab using the estimated pressure at the time of the incident.

1.2 Description of the Accident Site

This accident occurred in a residential neighborhood in South Jordan, UT. The home involved in the explosion was at 10593 S. 3210 W(Street), South Jordan, UT. It was constructed in 2013 and had an unfinished basement that was about 1610 square feet. The layout of the basement is shown below. The location of the natural gas water heater and gas furnace are indicated by a red rectangle. These were the only two gas appliances in the home. The location of the meter set is indicated by a blue star; it was about 50 inches east of the northwest corner and 8 inches above the foundation. The schematic below is inverted north to south. The customer's natural gas piping entered the home from the service line on the north side (left in the figure below. This home was the last home built on this street. Enbridge records show that the service lines to the homes on the north and south of the incident home were installed in 2001.

[7] IHP System Pressure in Review provided by Enbridge Gas Utah
[8] As Constructed Field Notes provided by Enbridge Gas Utah
[9] Gas Loss Calculation provided by Enbridge Gas Utah

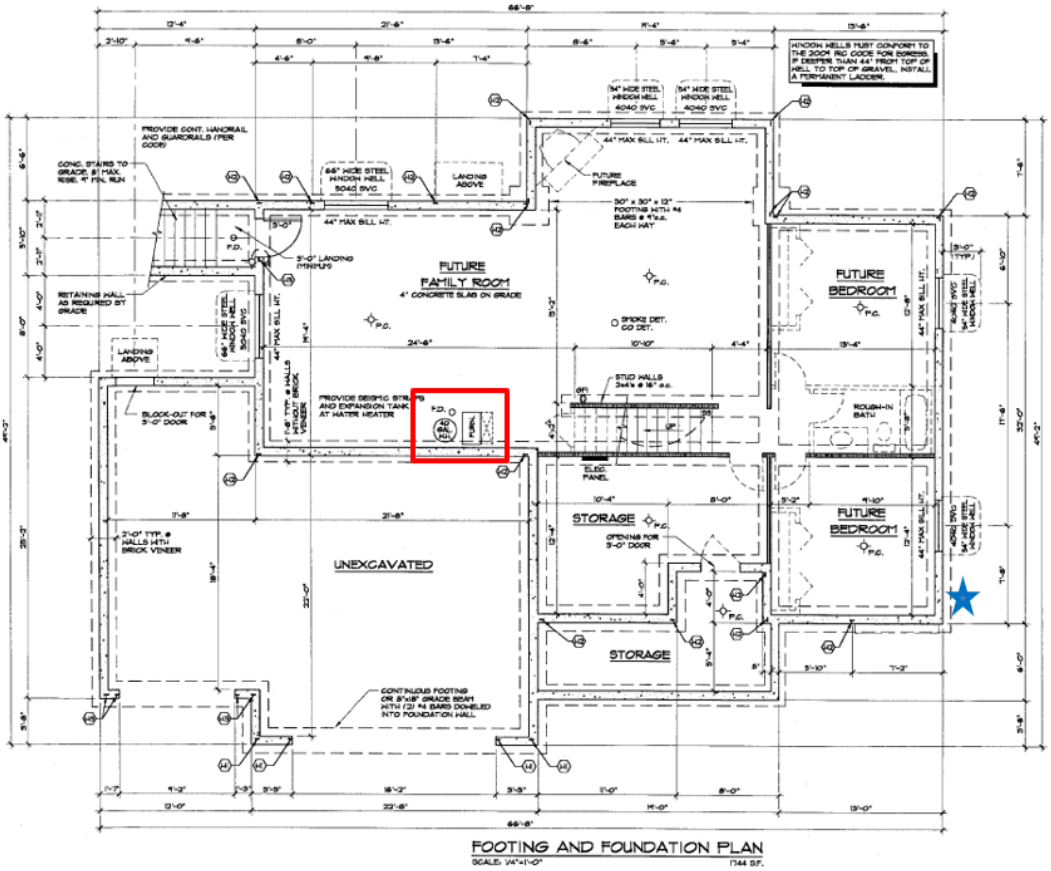

Figure 3-10593 S 3210 W, South Jordan, Utah provided by Salt Lake County Assessor

2.0 Accident Sequence

2.1 Events Leading up to the Accident

Prior to the accident, there were no operational or system changes or nearby work was being performed by Enbridge or any outside party. Additionally, there were no known leaks, leak surveys or odor calls in the immediate area of the accident in the week prior to the accident.

2.2 System Isolation

Both parents reported having no hot water in the residence since Sunday evening (November 3rd). After attempting to troubleshoot the issue on Tuesday (November 5th), one parent reported turning the control module on the water heater off, after unsuccessfully being able to relight the pilot light.

Isolation of the natural gas distribution system leak after the accident is discussed in the Emergency Response Group Chair's Factual Report.

2.3 Notifications

On November 6, 2024, notification was made to the National Response Center (NRC) regarding this accident. The initial notification did not report any injuries, missing individuals or fatalities. On November 8, 2024, a 48-hour update was made to NRC which included the reported fatality (see Figure 4 below).

REPORTING PARTY	DATE	TIME (Local Time)	ORGANIZATION	LOCATION	INCIDENT TYPE	INCIDENT DESCRIPTION	REMEDIAL ACTIONS
NATIONAL RESPONSE CENTER	11/6/2024	6:44:00 PM	ENBRIDGE GAS	SOUTH JORDAN, UT	PIPELINE	The caller responded to an explosion, and subsequent fire at the incident location. There are no injuries reported. Natural Gas has not been ruled out as a cause. Injuries: 0 Fatalities: 0 Evacuation: Yes	Line has been shut off, meter has not been inspected. Release Secured: YES
PHMSA	11/8/2024	5:31:00 AM	ENBRIDGE GAS	SOUTH JORDAN, UT	PIPELINE	/// Report made to NTSB/// Incident involves a residential explosion and subsequent fire. One previously unaccounted for individual, a 15-year-old male, was discovered deceased in the rubble.	Operator personnel leak screened the service lines to the damaged home as well as the nearby homes to the north and south. The pressure test on all three service lines held pressure. The operator did find residual gas near the main tap west of the damaged home. The gas meter set was located on the northwest corner of the building, but it could not be inspected due to debris. The meter set has been taken into evidence. A leak was found on the main to the east of the damaged building. UT-PSC observed repairs of the four-inch main plastic Aldyl-A Tan Pipe.
NATIONAL RESPONSE CENTER	11/8/2024	2:32:00 PM	ENBRIDGE GAS	SOUTH JORDAN, UT	PIPELINE	///48HR PHMSA UPDATE TO INCIDENT REPORT # 1415759 /// Update is as follows: The caller states that the report will change from a potential release to an actual release. 1 Resident was fatality occurred due to the incident. The incident cause will be changed from unknown to explosion. The cause of the explosion was due to release of natural gas. One Neighboring house was evacuated. The number of people that were evacuated is unknown. Fatalities: 1 Injuries: 0 Evacuation: Yes	Line has been shut off, meter has not been inspected. Investigation and clean up is underway.

Figure 4-Accident Reporting

3.0 On-Scene Examination

3.1 Prior to NTSB Launching an Investigation

Emergency response activities began shortly after the explosion occurred on November 6, 2024, at about 3:09 p.m. MST. The NTSB was notified that the explosion resulted in a fatality on November 8, 2024, at 5:31 a.m. MST from PHMSA based on information provided by the Utah Pipeline Safety Section. NTSB investigators traveled to the scene on November 8, 2024, and began their investigation on the morning of November 9, 2024.

3.1.1 Utah Department of Commerce – Pipeline Safety Section

On November 6, 2024, Utah Pipeline Safety Section Senior Engineer was first notified of the accident at about 3:45 p.m. local time (Mountain Time). He called the

Enbridge on-call Pipeline Safety contact to gather information about the event and was told Enbridge just got the call and they were about to notify him. The Utah Pipeline Safety Section Senior Engineer traveled to the accident site, arriving at about 4:45 p.m., and continued to monitor the Enbridge response activities until about 8:00 p.m. At 10:00 p.m., the Senior Engineer was notified of a fatality when the victim was recovered from the rubble.

On November 7, 2024, the Utah Pipeline Senior Engineer and Program Manager were on-site beginning at about 10:00 a.m., they observed collection of the gas meter set to the accident home into evidence by the Utah State Fire Marshal and South Jordan City Fire and Police. Between 11:00 a.m. and 3:30 p.m., they observed a leak that was found on the gas main east of the accident house under the roadway of 3200W (street). They noted a high percentage of gas in the ground and what appeared to be a rock impingement at the 6 o'clock position on the gas main. They observed the failed section of the 4-inch Aldyl A (tan) pipe being cut out and replaced.

On November 8, 2024, the Utah Pipeline Senior Engineer observed the Enbridge crew venting gas from the ground along 3200 West (street). The crew stopped venting operations and continued taking bar hole readings at the request of the NTSB; Enbridge was already taking bar hole measurements to monitor for changing conditions. The Senior Engineer observed these bar hole measurements being obtained and flagged; the measurements were documented by Enbridge.

Figure 5. Photograph of crack in Aldyl A main, after removal.[10]

[10] Image provided by Utah Pipeline Safety Section

3.1.2 Enbridge Gas Utah

As part of the response to the accident, Enbridge conducted a leak investigation detailed in the following timeline.[11] Note: All gas readings are in % gas in air.

On November 6, 2024, from 5:00 p.m. to 7:30 p.m., to determine if there was subsurface gas near the accident site, Enbridge Operations Representative III began bar hole testing after receiving clearance from the fire department to enter the yard. The first bar hole was placed near the service tap for the accident home and indicated 49% gas. They continued taking measurements along the service line to the accident home, completing 8 bar holes in about 25 minutes. These initial 8 bar holes indicated gas between 14% and 98%. The employee then took readings along the approximate location of the gas main in front(west) of the accident home and the neighboring home to the north. The readings indicated from these bar holes ranged from 0% to 80% gas. Enbridge's subsurface leak investigation focused on the front(west) of the accident homes and the neighboring home to the north, house number 10583, until 7:30 p.m. on November 6th when bar holing was paused.

At 05:17 p.m. odorant testing confirmed acceptable odorant levels in the gas.[12]

At 05:20 p.m. gas to the accident home (10593 S 3210 W) was shut off at the service tee by running the tap perforator down into the tee. The service line to the accident house (10593 S 3210 W) included an excess flow valve that appeared to have tripped when the meter set was damaged below the regulator during the fire and explosion.

From 05:45 p.m. to 6:00 p.m. the service line to the accident home (10593) was pressure tested at 45 psig for 15 minutes. The service passed the pressure test with no indication of leakage.

From 7:30 p.m. to 8:30 p.m., excess gas was found in the ground and the service to 10583 S 3210 W was excavated to test the service line. The service was shut down at the service tee by running the tap perforator down into the service tee.

At 09:00 p.m. the service line for 10583 was pressure tested with no leakage found. Faulty test equipment required the test to be completed three times to verify the test results.

From 11:00 p.m. to 12:34 a.m. on November 7, holes were excavated on the north and south boundaries of the accident home (10593 S 3210 W) to prepare to

[11] Timeline provided by Enbridge Gas Utah
[12] Odorization Report provided by Enbridge Gas Utah

test the gas main for leakage. The gas main was pressure tested at 45 psig for 30 minutes with no leakage found.

On November 7th, at about 12:17 a.m., bar hole testing resumed, and four measurements were taken between 12:17 a.m. and 12:33 a.m. before bar hole testing was again paused. These measurements were in front of 10583, including one measurement on the west of S. 3210 W (street) which indicated 0% gas.

From 01:03 a.m. to 4:05 a.m. the 1 ¼-inch gas main in the cul-de-sac west of the accident home (10593) was pressure tested with no leakage found.

At about 3:49 a.m. to 3:55 a.m. on November 7th, bar hole testing resumed, with three additional measurements taken in the front yard of the accident home (10583), these gas readings ranged from 3.9%-5%

On November 7th, about 4:30 a.m., bar hole testing resumed, with one reading taken in an accessible location in the north side yard of the accident home (10593) and then moving into the adjacent side yard and backyard of the home. Gas readings ranged from 0% - 99%, with gas indications at the southeast corner for house 10583 and near the back fence line as well as the front (west) and south side of 10583. Gas was also indicated at the north property line of house 10613 which is directly south of the accident home (10593).

At about 4:55 a.m. on November 7th, bar hole testing continued behind (to the east of) the back fence of the accident home with readings ranging from 0% to 99.9% gas.

Between 5:00 a.m. and 6:10 a.m. gas main under the roadway of 3200 W is marked and drilled for bar hole testing.

Between 6:20 a.m. and 6:33 a.m. on November 7th, bar hole readings started over the gas main running north to south under the approximate middle of 3200 W (street). Eight measurements were taken, ranging from 7.2 – 99% gas.

Between 7:05 a.m. and 7:12 a.m., four additional measurements were taken along the back fence line of the accident home (10593). The readings ranged from 0% to 31% gas.

At 8:00 a.m. traffic control in place and the excavation begins on 3200 W(street).

On November 7th between 10:09 a.m. and 10:25 a.m., bar hole measurements were taken in the back of house 10613 (home south of accident home); all measurements were 0% gas

At 12:16 p.m. a leak on the 4-inch gas main under 3200 W is secured.

From 3:45 p.m. to 5:16 p.m. the leaking section of 4-inch gas main under 3200 W (street) is replaced.

Figure 6-Bar hole locations

3.1.3 Utah State Fire Marshal

The Utah State Fire Marshal led the fire investigation (origin and cause) for the accident home. The Fire Marshal's investigation included assessment of the internal natural gas piping and appliances. His work began prior to the NTSB investigation.

He determined the area of origin for the explosion to be located at the furnace in the basement of the home.

3.2 In-Situ Examination and Testing

Upon arrival, the NTSB met with the Utah Deputy State Fire Marshal and Enbridge at the accident site. Significant work had already been completed prior to the arrival of the NTSB investigators. The completed work included replacement of the failed component. Because of this, the NTSB evaluation of the site was limited to visual examination, review of work done, evaluation of potential natural gas migration paths, and documentation of specific gas measurement locations collected by the operator.

Some nearby subsurface facilities were evident behind(east) the accident home, including a water main, storm drain, and irrigation system. A subsequent evaluation by Enbridge included excavation of a north to south trench behind(east) the accident home in the public right-of-way found no subsurface utilities that could have contributed to the gas migration.

The following evidence was retained:

- PLD25FR001 – OPS – 001, Failed Aldyl A main, about 6-feet long (shipped to Materials Laboratory)
- PLD25FR001 – OPS – 002, Meter set to accident home (retained by the Utah State Fire Marshal and Police Department)
- PLD25FR00 – OPS – 003, Gas control valve from the furnace (shipped to Materials Laboratory)

3.3 Evidence Removal

The failed pipe segment of Aldyl A had been removed from service by Enbridge and was witnessed by the Utah Pipeline Safety Section staff prior to the NTSB's arrival. The pipe section was transferred to the NTSB from Enbridge on November 9, 2024.

The meter set was retained by the Utah State Fire Marshal and Police Department prior to the NTSB's arrival. NTSB retained this evidence on November 11, 2024, and was stored at the South Jordan Police Department evidence locker. The house regulator was tested at the GTI laboratory in Des Plains, IL on April 22, 2025. The regulator was found to be operating reliably in all test categories for set point, lock-up and relief functionality.

The gas control valve was retained by the Fire Marshal on November 11, 2024, following the closeout meeting and shipped to the NTSB Materials Laboratory.

4.0 Procedures

Enbridge provided several procedures, including their procedure for leak investigations. *Enbridge Underground Gas Leak Procedure 3-75-01* described the standard practice for leak investigations. The leak investigation procedure does not call for bar holing the perimeter of the structures; it calls for bar holing near their natural gas assets.

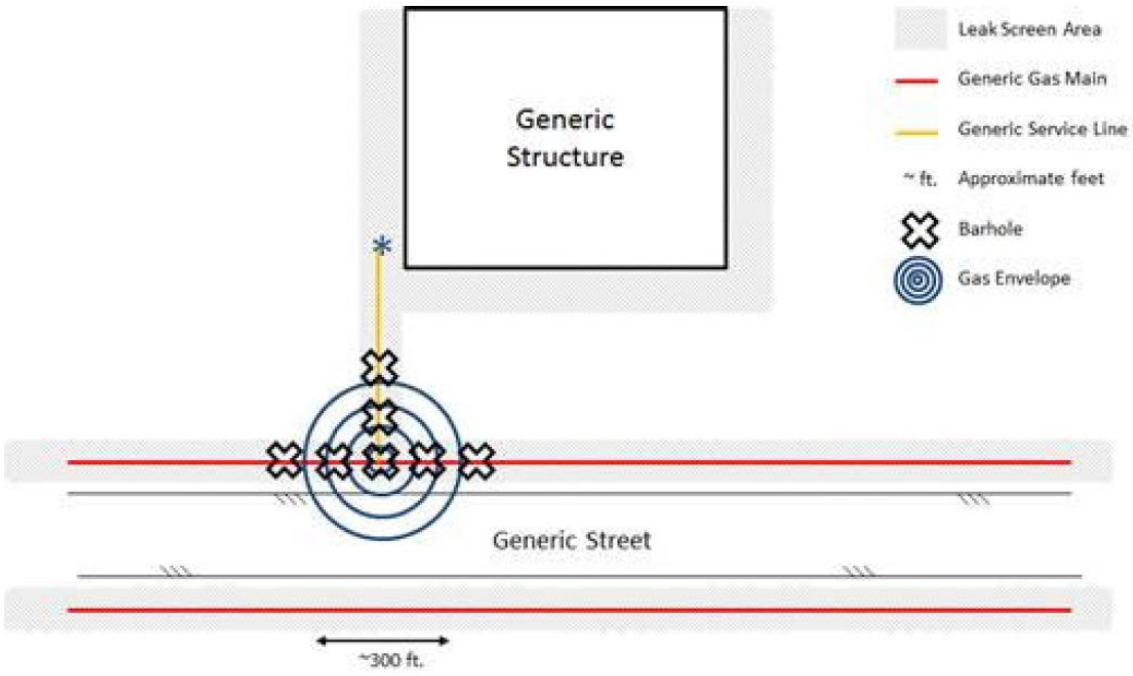

Figure 7-Enbridge Leak Investigation Procedure bar hole locations[13]

5.0 Industry Guidance and Consensus Standards

There are several industry guidance documents and consensus standards available to help pipeline operators operate their systems consistently. Some examples include:

- American Society of Mechanical Engineers (ASME):

[13] Enbridge Gas Utah Standard Practice 3-75-01 Underground Gas Leak Procedure

- *ASME B31.8, Gas Transmission and Distribution Piping Systems*

- (ANSI/GPTC):
  - *ANSI/GPTC Z380.1 Guide for Gas Transmission, Distribution, and Gathering Pipeline Systems*.

6.0 Regulatory Requirements and Guidance

PHMSA is responsible for ensuring adequate protection against risks to life and property posed by pipeline transportation of natural gas. Through certification by PHMSA Office of Pipeline Safety (OPS), the Utah Department of Commerce, Division of Public Utilities is responsible for safety compliance inspections and enforcing state and federal pipeline safety regulations for distribution natural gas pipeline facilities in the state of Utah.

6.1 PHMSA Rules and Advisory Bulletins

Federal pipeline safety regulations are found in 49 *CFR* Parts 190-199. PHMSA regulations in 49 CFR Part 191, *Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports, and Safety-Related Condition Reports*, require operators to provide immediate notice to the National Response Center (NRC) following an incident if it meets specific criteria. If such an event occurs, the operator is also required to submit a PHMSA Incident Report as soon as practicable but not more than 30 days after detecting the incident. Supplemental reports are required if additional information is obtained after the report is submitted.

Utah has state specific reporting requirements, which can be found in R746-409, *Pipeline Safety Ruling for Incident Reporting to State of Utah*. The Utah State Pipeline Safety rules are available at the following link: Utah Office of Administrative Rules

7.0 Post-Accident Actions

Enbridge has initiated several post-accident safety actions to address potential threats and evaluate the system. All of the safety actions are documented in the Integrity Management Group Chair's Factual Report.

Submitted by:

Dane Spillers
Pipeline Operations Group Chair