



MISSOURI PUBLIC SERVICE COMMISSION

STAFF'S GAS INCIDENT REPORT

**Glen Elm Drive
Glendale, MO
January 3, 2025**

APPENDIX B

Failure Investigation Report (FIR)

Spire Missouri, Inc.

Case No. GS-2025-0209

*Industry Analysis Division
Safety Engineering Department
June 12, 2026 - Jefferson City, Missouri*

**Appendix B
Failure Investigation Report (FIR)**

Principal Investigators – Missouri Public Service Commission (MO PSC) Staff - ** [REDACTED]

[REDACTED] **

Senior Accident Investigator: ** [REDACTED] **

Date of Report 04/13/2026

Subject – Glendale, Missouri House Explosion -Spire Missouri Inc. East

Operator, Location, and Consequences

Date of Failure - 01/03/2025

Commodity Released – Natural Gas

City, County, State – Glendale, St. Louis, Missouri

OpID and Operator Name – 11032, Spire Missouri Inc. East

Milepost / Location – 895 Glen Elm Drive, St. Louis, MO

Type of Failure - Mechanical Puncture/ Excavation Damage

Fatalities - 0

Injuries – 1 (not requiring hospitalization)

Description of the Impacted Area

Residential – Class 3 location, residential area

Total Costs: \$404,602 per Spire’s PHMSA F7100.1 (Exhibit 1 to Appendix A)

Executive Summary:

At 7:21 am on January 3, 2025, PLS Plumbing (“the Excavator”) submitted an “Emergency” locate request to Missouri 811 to mark the locations of buried utilities in the vicinity of 895 Glen Elm Dr. The location of work on the Missouri 811 ticket requests utility locations on “front and right facing front side and including Glen Elm Dr. curb to curb and N. Sappington Rd. curb to curb”, with a start date and time of January 3, 2025, at 9:30 am.

Natural gas in this area is distributed to customers by Spire Missouri, Inc. (“Spire”). Spire’s Contract Locator (“USIC”) responded to the Emergency locate that Spire facilities had been marked by updating the ticket status at 8:09 am. Although Spire’s Locate Contractor did place marks indicating the presence of a natural gas service line, Staff later found that the marks were not in the correct locations.

At approximately 8:40 am on January 3, 2025, the Excavator was performing excavation in the vicinity of a sewer clean out when the bucket of the mini excavator equipment damaged the natural gas service line to 895 Glen Elm Drive at a location that had not been marked prior to the excavation. At 8:51 am, the Excavator notified Missouri 811 of the damage by calling in a “Dig Up” ticket. Spire was notified of the damage

at approximately 8:56 am by Missouri 811. Staff found no evidence that the Excavator notified 911 of the damage.

Spire crews began arriving on site at approximately 9:17 am and attempted to find a valve located on the service line near the main. At approximately 9:24 am, the residence exploded. Spire personnel did not check inside the residence at 895 Glen Elm Dr., for the presence of gas and did not perform any evacuation of occupants prior to the explosion.

There were four people inside the residence at 895 Glen Elm Dr. when it exploded. All occupants were transported to Mercy Medical Center. One of the occupants sustained minor injuries and was treated and released shortly afterwards. Initial estimates of property damages are \$404,555.

Spire noted in its comments on this Appendix that: “The SAID crew was outside the residence obtaining the first gas reading, when the home exploded. The crew was unable to check the residence for gas, and therefore did not perform any evacuations prior to the explosion” and “Spire did not perform these SOP tasks because Spire did not have a chance to obtain gas readings before the home exploded. In accordance with SOP 220.D.7, Spire was in the process of obtaining the first gas reading outside the home when the explosion occurred. The SOP calls for initiation of evacuation when gas readings inside a structure meet or exceed 1% in free air, and Spire had no information to indicate that there was gas migration into the residence, so as to trigger an evacuation.”

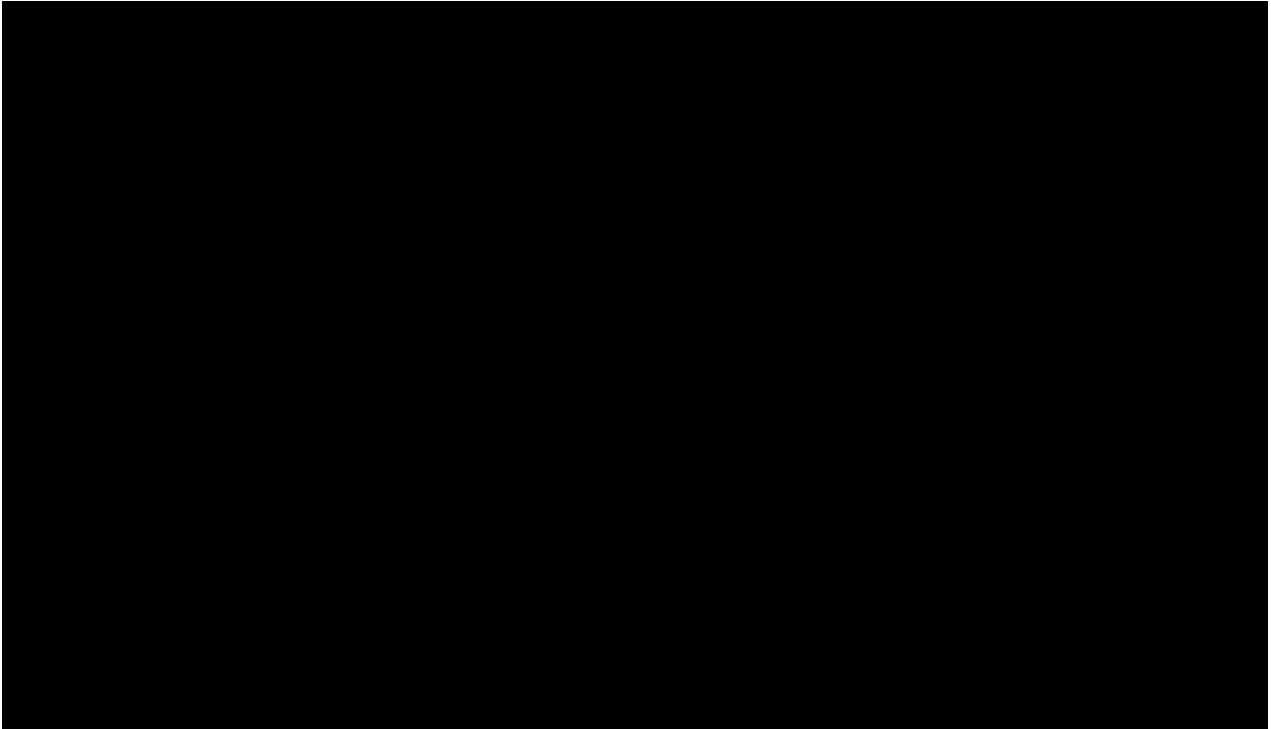
System Details:

In total, Spire Missouri Inc. operates approximately 8,843.14 miles of natural gas distribution main, 229.631 miles of transmission pipelines and approximately 627,971 service lines in its Missouri East service area. The distribution system in Glendale Missouri includes steel and plastic lines with installation starting in the 1940's. The Maximum Allowable Operating Pressure (MAOP) of the distribution system at the incident location is 60 PSIG, the operating pressure was approximately 45 PSIG at the time of the incident. The service line was installed at 895 Glen Elm Drive prior to 1960.

The first responding Spire personnel following the incident attempted to locate a curb valve on the service line to 895 Glen Elm Dr. but were unable to find this valve prior to the explosion. In response to a Staff data request asking how many main line valves would have needed to be closed to isolate the gas leak to the residence at 895 Glen Elm Dr., Spire stated that it would have had to close 106 valves, and was not able to estimate the approximate time it would have taken to close all 106 valves.¹ Confidential Figure 1 shows the map Spire provided to depict the extent of the isolation zone.

¹ Spire's public response to Staff Data Request 0059.

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Figure 1: Spire’s Confidential “Attachment 59 – Valve Isolation for 895 Glen Elm” (Source: Spire’s response to Staff Data Request 0059).

Events Leading Up to the Failure:

At 7:21 am on January 3, 2025, PLS Plumbing (“the Excavator”) requested an Emergency locate of buried utilities in the vicinity of 895 Glen Elm Dr. for work associated with a repair of the sewer service. The location of work on the Missouri 811 ticket requests utility locations on “front and right facing front side and including Glen Elm Dr. curb to curb and N. Sappington Rd. curb to curb”, with a start date and time of January 3, 2025, at 9:30 am. Spire responded “Marked” by updating the ticket status at 8:09 am. Although Spire’s Locate Contractor did place marks indicating the presence of a natural gas service line, the marks were not in the correct location. The marks showed that the service line ran to the residence from Glen Elm Dr. to the south of the property, whereas the actual location of the service line that ran from N. Sappington Rd. to the residence from the east. Figure 2 shows the approximate actual location of the service line as well as the approximate location that was marked by Spire on January 3, 2025.



Figure 2: Approximate Locations of Actual Gas Service Line to 895 Glen Elm Dr., Excavation Location and Marked Location of Service Line on January 3, 2025 (Source: Google Maps, Staff added approximate locations of service line and text boxes).

At approximately 8:40 am on January 3, 2025, the Excavator was performing excavation in the vicinity of a sewer clean out located to the east of the residence at 895 Glen Elm Dr. with a mini excavator equipment. The bucket of the mini excavator equipment damaged the natural gas service line to 895 Glen Elm Drive at a location that had not been marked by Spire’s Locate Contractor. At 8:51 am, the Excavator notified Missouri 811 of the damage by calling in a “Dig Up” ticket. Spire did not have personnel on-site at the time of the excavation. Staff found no evidence that the excavator notified 911 of the damage.

Emergency Response:

Spire was notified of the damage at approximately 8:56 am by Missouri 811. A responding police officer’s report states that ** [REDACTED]

[REDACTED]. ** At approximately 9:17 am, a Spire Construction and Maintenance (“C&M”) crew arrived on site and attempted to locate a curb box

with a service line valve on the east side of N. Sappington Rd, from which they would have been able to shut off the flow of gas to the damaged service line by turning a valve.

Unable to locate the curb box, the C&M crew called Missouri 811 at about 9:19 am to request a utility locate so that they could dig down to the service line and perform a squeeze off. An additional Spire Service and Installation Department (“SAID”) crew arrived on site at approximately 9:22 am. At approximately 9:24 am, the residence exploded. Spire personnel did not check inside the residence at 895 Glen Elm Dr., for the presence of gas and did not perform any evacuation of occupants prior to the explosion.

There were four people inside the residence at 895 Glen Elm Dr. when it exploded. All occupants were transported to Mercy Medical Center. One of the occupants sustained minor injuries and was treated and released that day. Initial estimates of property damages are \$404,555, including an estimated cost of \$401,755 cost of public and non-operator private property damage, \$2,300 damage and repair to Spire property and \$500 emergency response costs. Following the explosion, the residence was demolished. Figure 3 shows the home following the explosion.



Figure 3: Residence at 895 Glen Elm Dr. on January 3, 2025, following explosion. Photograph was taken from Glen Elm Dr. looking North. (Source: Staff Photograph)

A summary of events is provided in Table 1:

TABLE 1: SUMMARY OF EVENTS	
January 3, 2025, Approximate Time	Activity
7:21 am	Excavator contacted Missouri 811 for an emergency utility locate. Missouri 811 Ticket No. 250030078
8:09 am	Ticket status was updated to show "Marked" by Spire.
8:40 am	Excavator damaged Spire service line.
8:54 am	Excavator notification of Dig Up to Missouri 811. Missouri 811 Ticket No. 250030307
8:56 am	Spire notified of Dig Up by Missouri 811.
9:17 am	First Spire crew arrives and begins looking for curb valve. Missouri 811 Ticket No. 250030413
9:22 am	Second Spire crew arrived on site.
9:24 am	Second Spire crew attempted to obtain gas reading outside of the residence, and the residence at 895 Glen Elm Drive explodes.
9:29 am	Spire notifies 911.
9:30 am	Evacuations begin in nearby homes.
9:40 am	Spire begins leak surveys in area.
10:24 am	Flow of gas is stopped by abandoning service line at main.

Summary of Return-to-service:

Spire performed an abandonment of the service line on the main at N. Sappington Rd. Service was never restored to 895 Glen Elm Drive. Gas was restored to 1230 N. Sappington at 4:40 pm, it was off due to odorant level testing.

Investigation Details:

Staff's initial on-site investigation on January 3, 2025, at 3:15 pm was to observe the accuracy of Spire's location of its service line. Staff observed that Spire had marked the location of its service line as entering the property from the South side of Glen Elm Drive crossing Glen Elm Drive going North to the South side of the residence at 895 Glen Elm Drive. However, the actual location of the Spire Natural gas service line is on the East side of North Sappington Road. There is a curb valve in the sidewalk directly across from 895 Glen Elm Drive that runs under North Sappington Road to the East side of 895 Glen Elm Drive to the inside meter. The third-party damage to the service line was caused by the locator not correctly marking the Spire natural gas service line. Staff interviewed Spire compliance personnel, the owner of PLS Plumbing and responding members of the St. Louis Police Bomb and Arson investigator on site.

On Staff's second onsite visit on April 7, 2025, Staff could see the sewer cleanout and the Spire natural gas service line was correctly located and marked. The natural gas service line was within close proximity to the sewer cleanout. The natural gas service line was hit by the homeowner's sewer contractor roughly 10 feet from the entrance to the basement. During this visit Staff witnessed the physical service line and was able to enter the basement to witness the service line entering the basement wall and the rest of the Spire natural gas service line inside the basement wall. Spire removed the natural gas service line, meter set and the basement wall section of pipe and sent it to the storage facility. The control room and SCADA did not pick up on the gas leak on the service line. The sections of pipe removed on the second visit were pressure tested with air and did not hold pressure. The same sections of service line were X-rayed on July 7, 2025, to see if there were ruptures inside the casing but only shown an anomaly on one section.

Spire has made the following notifications regarding this incident:

1. Spire made the initial telephone notification of a natural gas incident to designated commission personnel at approximately 11:19 am, CDT on January 3, 2025.
2. Spire notified the NRC of a natural gas incident at approximately 12:14 pm on January 3, 2025 (NRC Report Number 1420340).
3. Spire provided 48-hour confirmation of the incident to the NRC at approximately 8:58 p.m. on January 3, 2025 (NRC Report Number 1420426).
4. Spire completed and submitted USDOT-PHMSA form PHMSA F 7100.1, titled "Incident Report – Gas Distribution System," to Staff and PHMSA on February 3, 2025.

Spire identified that the root cause of this incident was that ** [REDACTED]

[REDACTED] **² Additionally, Spire’s Confidential Post Incident Review (PIR) submitted in response to Staff Data Request 0001 states:** [REDACTED]

[REDACTED] ** Staff requested a copy or screenshot of what Spire’s mapping system showed for the location of the service line to 895 Glen Elm Drive in Glendale, Missouri on January 3, 2025, prior to the incident³. Spire’s response referred to its Confidential PIR, provided in response to Staff Data Request 0001. Staff reviewed the maps shown in the Confidential PIR (a copy is included as Confidential Exhibit 2 to Appendix B). Of the three maps shown, two appear to have been created following the incident. Staff surmised that two of the maps were created following the incident for the following reasons:

- One of the maps shows the service line as ** [REDACTED]
[REDACTED]
** However, prior to the incident the service line was active. Staff assumes that this map was created to document the current status of the service line.

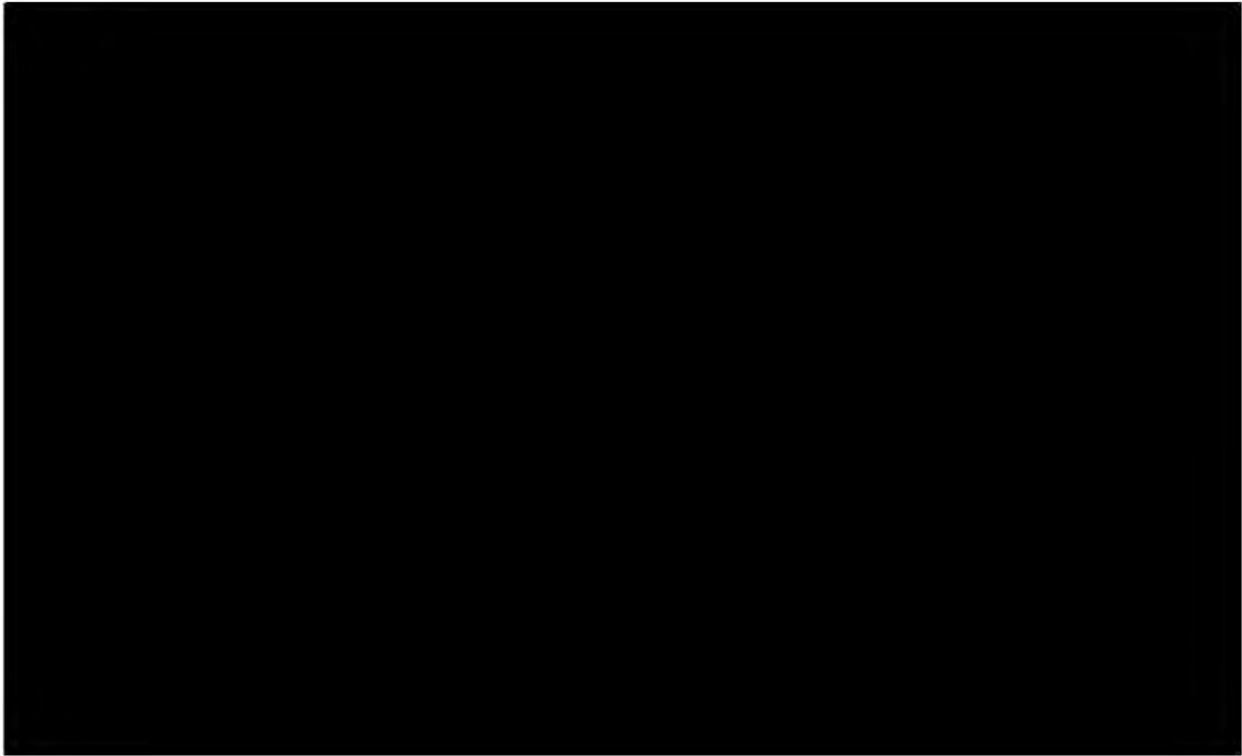
- Another of the maps shows the ** [REDACTED]
[REDACTED]
[REDACTED] **

The third map is provided below as Confidential Figure 4. This map shows the location of the service line to 895 Glen Elm Drive ** [REDACTED]
[REDACTED] **

² From Spire’s PIR Provided in Response to Staff’s Data Request 0001, page 6.

³ Staff Data Request 0001.2.

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Figure 4: Copy of Map Provided by Spire in its PIR – showing the service line from 895 Glen Elm connecting to the two inch east-west main located south of Glen Elm Dr. (Source: Spire’s Response to Staff Data Request 0001).

In its comments to Staff on a draft of this Appendix, Spire clarified that: “... The line that visually indicated that a service line was present did not reflect the correct location of the service line. However, all measurement information provided to USIC was correct. USIC performed the locate using only the visual indication line overlaid on the map image without looking at any measurement information or using any measuring tools, effectively guessing where the line was located, and the marking was not close to the visual representation either. This is in contravention of well-established locating practices and the explicit requirements of USIC’s contact with Spire.”

Investigation Findings and Contributing Factors:

Examination of the service line following the incident by Staff revealed that the copper service line appeared to have been pulled and bent by the excavator bucket and was damaged at the outside of and near the foundation wall where the service line entered the residence. Missouri Public Service Commission Staff (“Staff”) believe this is the most likely pathway of migration of the natural gas into the residence.

Another potential migration pathway could have been from the blowing as service through an open basement window. The distance from the point of the damaged service line to the wall of the house was estimated following the incident to be approximately 11 feet.⁴ The source of ignition is unknown. The home was demolished following the explosion.

The apparent cause of the incident was ignition of gas that was released due to excavation damage to a natural gas service line. The apparent cause of the excavation damage was Spire's Contract Locator's failure to correctly mark the location of the natural gas service line.

Exhibits:

Exhibit 1 – National Response Center (NRC) Reports

Exhibit 2 – Operator Procedures and Records

Exhibit 3 – Operator Failure Investigation Report

Exhibit 4 – Persons Interviewed

⁴ Based on Staff observations and measurement of pipe length.

Case No. GS-2025-0209

APPENDIX B

Exhibits 1, 2 and 3

HAVE BEEN DEEMED

CONFIDENTIAL

IN ENTIRETY

<i>Investigation Contact Log</i>			
Time	Date	Name	Description
3:20pm	1/3/2025	** [REDACTED] **	Spire leak supervisor
3:35pm	1/3/2025	** [REDACTED] **	Spire compliance
3:35pm	1/3/2025	** [REDACTED] **	Spire Construction Supervisor
3:45pm	1/3/2025	** [REDACTED] **	St. Louis County Police Department