

# MISSOURI PUBLIC SERVICE COMMISSION

## STAFF'S GAS INCIDENT REPORT

Glen Elm Drive  
Glendale, Missouri  
January 3, 2025



**Spire Missouri, Inc.**

**Case No. GS-2025-0209**

*Industry Analysis Division  
Safety Engineering Department  
June 11, 2026 - Jefferson City, Missouri*

**\*\* Denotes Confidential Information \*\***

**EXHIBIT A**

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SPIRE MISSOURI, INC.  
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**STAFF'S GAS INCIDENT REPORT**  
**SPIRE MISSOURI, INC.**  
**CASE NO. GS-2025-0209**

**I. EXECUTIVE SUMMARY**

At 7:21 a.m. on January 3, 2025, PLS Plumbing (“the Excavator”) submitted an “Emergency”<sup>1</sup> 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 a.m.

Natural gas in this area is distributed to customers by Spire Missouri, Inc. (“Spire”). Spire’s Contract Locator responded on behalf of Spire to the Emergency locate request that Spire’s facilities had been marked by updating the ticket status at 8:09 a.m. Although Spire’s Contract Locator did place marks indicating the presence of a natural gas line prior to the beginning of the excavation work, the marks were not in the correct locations. The marks placed by Spire’s Contract Locator incorrectly 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 ran from N. Sappington Rd. to the residence from the east. Section III.A – *Incident Description an Emergency Response of this Report* provides additional detail regarding errors in facility marking (See Figure 1) and Section III.D – *Damage Prevention Program* of this Report addresses potential causes and contributing factors regarding marking errors.

At approximately 8:40 a.m. on January 3, 2025, the Excavator was performing excavation in the vicinity of a sewer clean out when the bucket of the mini excavator

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<sup>1</sup> Missouri 811’s website states that an “Emergency Ticket” is only to be requested when the situation meets the legal definition of an emergency. Utilities must respond in 2 hours. Missouri Revised Statute (RSMo) 319.015 defines “**Emergency**” as a sudden, unexpected occurrence, presenting a clear and imminent danger demanding immediate action to prevent or mitigate loss or damage to life, health, property, or essential public services, and “**Unexpected occurrence**” includes, but is not limited to, thunderstorms, high winds, ice or snow storms, fires, floods, earthquakes, or other soil or geologic movements, riots, accidents, water or wastewater pipe breaks, vandalism, or sabotage.

equipment damaged the natural gas service line to 895 Glen Elm Drive. At 8:51 a.m., the Excavator notified Missouri 811 of the damage by calling in a "Dig Up"<sup>2</sup> ticket. Spire was notified of the damage at approximately 8:56 a.m. by Missouri 811.

Spire crews began arriving on site at approximately 9:17 a.m. and attempted to find a valve located on the service line near the main (a "curb valve"). 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.

At approximately 9:24 a.m., the residence at 895 Glen Elm Dr. exploded with four people inside. All occupants were transported to Mercy Medical Center. One of the occupants sustained injuries and was treated and released the same day. Initial estimates of property damages are \$404,555.

Missouri Public Service Commission Staff ("Staff")'s analysis of the incident and emergency response actions with respect to compliance with applicable Commission Rules and Orders is provided in Section III – *Staff Analysis of Incident* of this Report. Staff's findings and recommendations are presented respectively in Section IV – *Staff's Findings*; and Section V – *Staff Recommendations* of this Report.

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

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<sup>2</sup> Missouri 811's website explains "Dig Up Ticket" as: Excavator legally required to notify Missouri 811 when damage to facilities has occurred. If damage involves pipeline or natural gas facilities, both 911 and the affected utility must be notified. RSMo 319.026.9 states: In the event of any damage, dislocation, or disturbance of any underground facility in connection with any excavation, the person responsible for the excavation operations shall notify the notification center. This subsection shall be deemed to require reporting of any damage, dislocation, or disturbance to trace wires, encasements, cathode protection, permanent above-ground stakes, or other such items utilized for protection of the underground facility. The excavator shall immediately contact 911 when any damage or contact with a pipeline results in a release from the pipeline of hazardous liquid or gas to occur.

As a result of this investigation, Staff found sufficient facts and information<sup>3</sup> exist to assert the following violations of Commission Rules:

1. Spire's failure to take action to protect people first and then property was a violation of Commission Rule 20 CSR 4240-40.030(12)(J)1.E. Specifically, although Spire had personnel on site prior to the explosion, Spire's first actions were not directed toward either determining if gas had migrated inside the residence or evacuation of the people within the residence prior to the gas explosion. (See Section III.A – *Incident Description and Emergency Response* of this Report).
2. Spire's failure to immediately take steps directed to protect all Company employees' lives and physical safety and the lives and physical safety of the public by among other things establishment of a restricted zone was a violation of the Commission Order approving the Stipulation and Agreement in Case No. GC-2014-0216. (See Section III.A – *Incident Description and Emergency Response* of this Report).
3. Spire's failure to correctly mark the location of the service line to 895 Glen Elm Drive was a violation of Commission Rule 20 CSR 4240-40.030(12)(I)3.G. (See Section III.D – *Damage Prevention Program* of this Report).
4. Spire's failure to follow its written program to prevent damage to its pipeline by excavation was a violation of 20 CSR 4240-40.030(12)(I)1. Specifically, Commission Rule 20 CSR 4240-40.030(12)(I)1. requires each operator of a buried pipeline to carry out a written program to prevent damage to that pipeline by excavation activities. Spire's damage prevention program includes compliance with Chapter 319, RSMo.
  - A. The locate markings on the ground surface above the natural gas main at the damage location were outside of the "approximate location" as required by Section 319.030, RSMo; therefore Spire's failure to locate its underground facilities within the "approximate location" as required by Section 319.030,

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<sup>3</sup> Prior to finalizing this report, Staff provided a copy of the factual basis for its analysis to Spire to provide an opportunity to correct any factual inaccuracies and to identify confidential content. A copy of the information edited to address Spire's comments is provided in Appendix A – Pipeline Failure Investigation Report checklist and Appendix B – Failure Investigation Report (FIR) of this Report.

RSMo, is a violation of Commission Rule 20 CSR 4240-40.030(12)(I)1., and

- B. Spire's Contract Locator did not follow Spire's contract locator procedure which resulted in incorrect locate markings at the incident location is a violation of Commission Rule 20 CSR 4240-40.030(12)(I)1.

(See Section III.D – *Damage Prevention Program* of this Report).

5. Spire's failure to timely perform post-incident alcohol testing of the Contractor Locator who incorrectly located the service line prior to the incident and the four Spire employees who initially responded to the excavation damage notification was a violation of 49 CFR 199.225(a)(1) as adopted by the Commission by promulgation of 20 CSR 4240-40.080. (See Section III.E – *Drug and Alcohol Testing* of this Report).
6. Spire's failure to maintain a sufficient number of distribution line valves necessary to isolate the portion of the distribution system feeding the service line to 895 Glen Elm Dr. was a violation of Commission Rule 20 CSR 4240-40.030(13)(V)3.A. (See Section III.F – *Distribution Valves* of this Report).

In addition to the Staff recommendations to Spire in Section V- *Staff's Recommendations* of this Report, Staff is requesting Commission authorization to submit a redacted (public) copy of this investigation report to the Missouri Attorney General's Office ("AGO").

## **II. PURPOSE AND SCOPE OF STAFF'S INVESTIGATION**

The purpose and scope of Staff's investigation was to:

- Identify the probable cause(s) of the incident,
- Investigate, analyze and determine if there have been violations of Commission Rules related to:
  - Incident Reporting Requirements in 20 CSR 4240-40.020;

- Missouri Pipeline Safety Standards in 20 CSR 4240-40.030, including but not limited to the operator's<sup>4</sup> damage prevention program and actions required by its damage prevention program, emergency response, and failure investigation; and
- Drug and Alcohol Testing requirements in 20 CSR 4240-40.080.
- Make recommendations, as applicable to Spire, with the objective of minimizing the possibility of recurrence.

### **III. STAFF ANALYSIS OF INCIDENT**

#### **A. Incident Description and Emergency Response**

At 7:21 a.m. on January 3, 2025, 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 a.m. Spire’s Contract Locator responded “Marked” on Spire’s behalf by updating the ticket status at 8:09 a.m. Although Spire’s Contract Locator 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 ran from N. Sappington Rd. to the residence from the east. Figure 1 shows the approximate actual location of the service line as well as the approximate location that was marked by Spire on January 3, 2025.

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<sup>4</sup> “Operator” is defined in 20 CSR 4240-40.030(1)(B)26 as “a person who engages in the transportation of gas.” “Person” is defined in 20 CSR 4240-40.030(1)(B)27 as “any individual, firm, joint venture, partnership, corporation, association, county, state, municipality, political subdivision, cooperative association, or joint stock association, and including any trustee, receiver, assignee, or personal representative of them.” Transportation of gas is defined in 20 CSR 4240-40.030(1)(B)41 as “the gathering, transmission, or distribution of gas by pipeline or the storage of gas in Missouri.”



**Figure 1: 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 a.m. on January 3, 2025, the Excavator was removing soil in the vicinity of a sewer clean out located to the east of the residence at 895 Glen Elm Dr. with a mini excavator at the approximate location shown in Figure 1. While excavating at this location, the bucket of the mini excavator pulled and damaged the natural gas service line to 895 Glen Elm Dr. At 8:51 a.m., the Excavator notified Missouri 811 of the damage by calling in a Dig Up ticket. Staff found no evidence that the Excavator notified 911 of the damage.

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

[REDACTED] \*\* .

At approximately 9:17 a.m., 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 may have been able to shut off the flow of gas to the

damaged service line by closing the valve. Unable to find the curb valve box, the Spire C&M crew called Missouri 811 at about 9:19 a.m. to request a utility locate so that they could dig down to the service line and perform a squeeze-off of the service line<sup>5</sup>. A Spire Service and Installation Department ("SAID") crew arrived on site at approximately 9:22 a.m. At approximately 9:24 a.m., 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 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.<sup>6</sup> Following the explosion, the residence was demolished. Figure 2 shows the home following the explosion.

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<sup>5</sup> A squeeze-off of pipe is completed by utilizing a clamping tool to constrict the pipe so that natural gas can no longer freely flow past the clamping tool.

<sup>6</sup> Estimates of property damage are from the Form PHMSA F 7100.1 Incident Report – Gas Distribution System that Spire submitted to PHMSA.



**Figure 2: Residence at 895 Glen Elm Dr. on January 3, 2025, following explosion. Photograph was taken from Glen Elm Dr. looking North. (Source: Staff Photograph)**

Staff's examination of the service line following the incident indicated 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. Staff believes that either the abandoned steel service line or active copper service line may have acted as a conduit to transport gas to the break in the copper service line near the foundation wall as a pathway for migration of released natural gas into the residence. Another potential migration pathway could have been the blowing gas from the damaged service line 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 10 feet.<sup>7</sup> The source of ignition is unknown. The home was demolished following the explosion.

The apparent cause of the incident was ignition of natural gas that was released due to excavation damage to a natural gas service line. The apparent cause of the excavation

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<sup>7</sup> Based on Staff observations and measurement of pipe length.

damage was Spire's failure to correctly mark the location of its natural gas service line prior to the start of excavation.

A summary of events is provided in Table 1:

TABLE 1: SUMMARY OF EVENTS	
January 3, 2025, Approximate Time	Activity
7:21 a.m.	Excavator contacted Missouri 811 for an emergency utility locate. Missouri 811 Ticket No. 250030078
8:09 a.m.	Ticket status was updated to show "Marked" by Spire.
8:40 a.m.	Excavator damaged Spire service line.
8:54 a.m.	Excavator notification of Dig Up to Missouri 811. Missouri 811 Ticket No. 250030307
8:56 a.m.	Spire notified of Dig Up by Missouri 811.
9:17 a.m.	First Spire crew (C&M Crew) arrived on site and began looking for curb valve. Unable to find the valve, Spire contacted Missouri 811 (Ticket No. 250030413) to request utilities be located in order to excavate to squeeze off service line.
9:22 a.m.	Spire Service Tech and Helper arrived on site.
9:24 a.m.	Spire Service Tech attempted to obtain gas readings at the exterior of the residence.
9:24 a.m.	Residence at 895 Glen Elm Drive exploded.
9:24 a.m.	Spire Service Tech and Helper began evacuation of occupants at 895 Glen Elm Drive.
9:29 a.m.	Spire notified 911.
9:30 a.m.	Evacuations began in nearby homes.
9:40 a.m.	Spire began leak surveys in area.
10:24 a.m.	Flow of gas was stopped by abandoning service line at main.

1. Regulatory Requirements and Commission Orders:

1.1 Applicable Rules

Commission Rule 20 CSR 4240-40.030(12)(C) requires in part that each operator prepare and follow a manual of written procedures for conducting operations and maintenance activities and for emergency response.

Commission Rule 20 CSR 4240-40.030(12)(J) Emergency Plans requires in part that each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:

- Receiving, identifying, and classifying notices of events which require immediate response by the operator;
- Establishing and maintaining adequate means of communication with the appropriate public safety answering point (i.e., 9–1–1 emergency call center), where direct access to a 9–1–1 emergency call center is available from the location of the pipeline, and fire, police, and other public officials;
- Responding promptly and effectively to a notice of each type of emergency, including the following:
  - Gas detected inside or near a building;
  - Fire located near or directly involving a pipeline facility;
  - Explosion occurring near or directly involving a pipeline facility; and
  - Natural disaster;
- Making available personnel, equipment, tools, and materials, as needed at the scene of an emergency;
- Taking actions directed toward protecting people first and then property;
- Taking necessary actions, including but not limited to emergency shutdown, valve shut-off, or pressure reduction, in any section of the operator's pipeline system, to minimize hazards of released gas to life, property, or the environment;
- Making safe any actual or potential hazard to life or property; and

- Beginning action under subsection (12)(L) (192.617), if applicable, as soon after the end of the emergency as possible.

## 1.2 Applicable Commission Order from Previous Incident

Following its investigation into an incident that occurred on February 19, 2013,<sup>8</sup> at JJ's Restaurant in Kansas City, Missouri, Staff filed a Complaint against a Spire predecessor company, Laclede Gas Company, doing business as Missouri Gas Energy.<sup>9</sup> The 2013 incident involved an explosion resulting from natural gas migration into a building following an excavation damage to a nearby pipeline. One of JJ's Restaurant employees was fatally injured, several other people were injured, JJ's restaurant was destroyed and there was damage to nearby buildings. Staff's Complaint in Commission Case No. GC-2014-0216 alleged in part that the company failed to:

- Quickly assess available information to determine that a hazard to nearby structures existed,
- Promptly determine the extent of the hazard by not determining if gas was accumulating in nearby structures, and
- Take immediate corrective action providing for public safety and protecting property.

Staff made several recommendations to the company, which were addressed in part by changes to the company's procedures. A Stipulation and Agreement filed in Commission Case No. GC-2014-0216 approved by the Commission on March 11, 2015, set forth changes to company procedures to resolve issues. One such procedure, *Missouri Gas Energy O&M Standard 3110S* stated in relevant parts (**Emphasis added**):

### 4.0 EMERGENCY RESPONSE

4.1 Employees responding to a potential emergency situation shall consider during the initial response, the following steps:

#### 4.1.1 Determine if a Hazard exists.

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<sup>8</sup> See *Staff's Gas Incident Report* filed on February 6, 2014, in Commission Case No. GS-2023-0400.

<sup>9</sup> See *Complaint* filed on February 6, 2014, in Commission Case No. GC-2014-0216.

4.1.1.1 Quickly assess available information to determine if a hazard exists. If so, **immediately take steps to protect all Company employees' lives and physical safety as well as the lives and physical safety of the public by, among other things, the establishment of a restricted zone.**

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#### 4.1.2 Determine the Extent.

4.1.2.1 **If there is reason to suspect gas may be escaping and/or accumulating inside of a structure,** the atmosphere shall be tested at the building's entrance with a combustible Gas indicator on the L.E.L. or Lower Explosive Limit scale... For gas readings inside of a structure at or in excess of 20 percent L.E.L. (1 percent gas) in free air **or if CGI checks are unable to be taken because there is no entry and there is reason to suspect gas may be migrating into the building, follow the procedures outlined in section 4.1.3.2 of this Standard. A member of the public reporting a gas odor inside of, or gas found adjacent to a structure is sufficient "reason to suspect".**

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#### 4.1.3 Protect Life.

4.1.3.1 The protection of human life and physical safety is ALWAYS our highest priority in any emergency situation...

4.1.3.2 Gas readings found inside of a structure at, or in excess of 20 percent L.E.L. (1 percent gas) in free air shall require the employee to take the following actions:

- **Initiate an evacuation by advising all occupants including employees within the sound of your voice that a dangerous situation exists and they need to evacuate immediately and move**

**away from the building and outside of any established restricted zone.**

- Instruct occupants that they should leave immediately and should not smoke, operate light switches or use the telephone while inside the building.

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2. Spire Actions to Comply with 20 CSR 4240-40.030(12)(J)1.:

Spire provided a copy of its *Emergency Plan Standard Operating Procedure (SOP) 220.D.7 Reissue date 11/14/2023* ("Spire's Emergency Plan") as the Company's Emergency Plan that was in effect on January 3, 2025.<sup>10</sup> \*\* [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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<sup>10</sup> Provided as Confidential Attachment 13 - 220.D Spire Emergency Plan SOP.pdf in response to Staff Data Request 00013.

[REDACTED]

[REDACTED]\*\*

Staff notes that this section of Spire's Emergency Plan references \*\* [REDACTED]

[REDACTED]

Spire's emergency response actions for the current incident were as follows:

- A. Spire dispatched a C&M crew and a SAID crew to the site at 895 Glen Elm Drive at 9:04 a.m.
- B. The C&M crew arrived at approximately 9:17 a.m. and began looking for a curb box containing a valve on the service line. The curb box was not found so the crew contacted Missouri 811 to request that utilities be located.
- C. The SAID crew arrived at approximately 9:22 a.m. to begin taking gas readings at the exterior of the home.
- D. Following the explosion, the service technicians evaluated themselves for injuries before moving the occupants of 895 Glen Elm Drive and the nearby residents to a safe distance.
- E. Spire personnel began moving vehicles to make room for the emergency responders to arrive.
- F. The C&M crew began excavating the service line in front of 1230 N. Sappington Rd for the abandonment and stop the flow of gas to 895 Glen Elm Drive. At 9:40 a.m. Spire started performing leak surveys in the area.

In its Confidential Post Incident Review (“PIR”), Spire listed its Emergency Plan in the

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Spire personnel arrived on site within 21 minutes of receiving the notification of the excavation damage. However, the first responding Spire personnel did not take any actions to measure gas concentrations within the residence at 895 Glen Elm Drive or initiate any evacuations of occupants.

### 3. Staff Analysis:

In the current incident, natural gas was released from a high-pressure service line within about 10 feet of an occupied residence. Additionally, Spire was aware that the gas release was a result of excavation damage, and that there was a natural gas service meter and regulator located inside the residence. Given these circumstances, Staff believes that it would have been reasonable to be concerned that natural gas could migrate from the point of damage to the service line into the residence.<sup>11</sup>

The actions taken by Spire’s first responding personnel were to attempt to find and close a curb valve. It is not clear to Staff that this was the most direct action or even the first action that should have been taken to achieve the objective: “Taking actions directed toward protecting people first and then property”, or that these actions would have satisfied the requirements of the Stipulation and Agreement in Case No. GC-2014-0216 that requires establishing a restricted zone. Nor is it known if closing the curb valve would have fully isolated the flow of gas into the building, because this valve was not under a routine inspection or maintenance program.<sup>12</sup> Further, even if this curb valve had been found and

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<sup>11</sup> Staff contends that this would have been a reasonable concern because it is known that excavation damages to service lines may result in damages at points where service lines connect to mains and service risers, especially when the damages result from equipment that can lift and bend pipeline assets (e.g. excavator buckets). See for example Commission Rule 20 CSR 4240-40.030(13)(N) which requires pressure testing of the service in both directions (to service line valve and to main) before reinstating a service line that has been disconnected due to excavation damage, and testing of customer fuel lines.

<sup>12</sup> Spire’s response to Staff Data Request 0057 stated that the curb valve for the service line at 895 Glen Elm Drive was not under an inspection program.

successfully closed, it is unclear if this action would have prevented the explosion, since Spire did not determine how much gas had already accumulated within the residence.

Staff believes that a more direct first action upon Spire's arrival on site would have been to evacuate the occupants in 895 Glen Elm Drive, or alternatively to take action to determine whether a hazardous environment was present within the residence. It appears to Staff based on review of Spire's Emergency Plan and actions taken by the second group of Spire personnel to arrive (Service Technician and Helper), that a likely next step for this Spire Service Technician and Helper would have been to \*\* [REDACTED] \*\*.<sup>13</sup> However, evacuation of occupants could have been initiated at any time between when the first Spire personnel arrived on site at 9:17 a.m. and the explosion occurred at 9:24 a.m., without Spire personnel first attempting to locate the curb valve or \*\* [REDACTED] \*\*.

Staff's reading of Spire's Emergency Plan includes an interpretation that evacuation of the occupants should have taken priority over other actions. \*\* [REDACTED] \*\*.  
[REDACTED]  
[REDACTED] \*\*. The presence of a gas release near the residence would have been evident upon arrival. The presence of gas within the residence could have been evaluated either by taking gas-in-air readings inside, or by speaking with the occupant \*\* [REDACTED] \*\*. Spire found in its PIR \*\* [REDACTED] \*\*. Staff believes that additional clarification is needed within Spire's Emergency Plan, and additional training is needed for Spire personnel implementing emergency procedures. Specifically, an emergency response priority should be the evacuation of people from structures in which natural gas either demonstrably has

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<sup>13</sup> Paragraph 4.1.2.1 of Spire's Emergency Plan requires that \*\* [REDACTED] \*\*, which appears to be what the Service Technician and Helper were attempting to accomplish when the residence exploded.

accumulated (as evidenced by gas odor or concentration measurements) or may reasonably be assumed to be accumulating.

4. Violations:

1. Spire's failure to take action to protect people first and then property was a violation of Commission Rule 20 CSR 4240-40.030(12)(J)1. Specifically, although Spire had personnel on site prior to the explosion, Spire's first actions were not directed toward either determining if gas had migrated inside the residence or evacuation of the people within the residence prior to the gas explosion
2. Spire's failure to immediately take steps to protect all Company employees' lives and physical safety and the lives and physical safety of the public by among other things establishment of a restricted zone was a violation of the Commission Order approving the Stipulation and Agreement in Case No. GC-2014-0216.

5. Staff Recommendations:

1. Staff recommends that Spire review and update its procedure SOP 220.D Emergency Plan to clarify actions that first responding employees should take immediately upon arrival to prioritize protecting the lives and physical safety of people first, and to include each element required by the Stipulation and Agreement approved by Commission Order in Case No. GC-2014-0216. This should include but not be limited to requirements to evacuate occupants whenever there is a reason to believe gas may be present within a structure (for example: a person stating they smell gas inside, based on gas-in-air readings inside the structure, observation of gas release near the building, indications of gas migration into sewers, or damage to a service line where there is an inside meter set).
2. Staff recommends that Spire conduct additional training of its personnel who may be engaged in activities that require implementation of Spire's Emergency Plan.

**B. Investigation of Failures and Incidents**

1. *Regulatory Requirements and Applicable Commission Orders:*

Commission Rule 20 CSR 4240-40.030(12)(L)2. requires in part that each operator must develop, implement, and incorporate lessons learned from a post-failure or incident review into its written procedures, including personnel training and qualification programs, and design, construction, testing, maintenance, operations, and emergency procedure manuals and specifications.

Paragraph 17 of the Stipulation and Agreement<sup>14</sup> approved by the Commission<sup>15</sup> in Case No. GC-2022-0087 requires:

Spire agrees to implement a root cause analysis procedure to investigate failures resulting in certain consequences by April 15, 2022.

Such consequences will include but not be limited to the following:

A reportable incident resulting in:

- a. Death
- b. An Injury beyond basic first aid
- c. Property Damage in excess of \$50,000
- d. An Over pressurization of the system
- e. An unintended outage of 100+ customers

The procedure will address how to determine the predominant reason(s) that the event occurred, and to identify where a change in behavior would reasonably be expected to lead to a change in the outcome, i.e. avoidance of the event. The root cause analysis may be conducted as part of an attorney-client privileged or work product protected incident review.

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<sup>14</sup> Case No. GC-2022-0087, Item 17, file date January 20, 2022.

<sup>15</sup> Case No. GC-2022-0087, Item 17, effective date March 4, 2022.

2. Spire Actions to Comply with 20 CSR 4240-40.030(12)(L) and Applicable

Commission Orders:

Spire provided its written procedure to investigate and analyze incidents, Investigation of Incidents Standard Operating Procedure (SOP) 220.O.2 (Reissue Date 12/6/2024) that was effective at the time of the incident.

Spire's procedure requires \*\*

[REDACTED]

\*\*.

Spire provided its February 11, 2025, Post-Incident Review (PIR) for the January 3, 2025, incident,<sup>16</sup> which included a list of events and actions, the results of Spire's procedure effectiveness review, and a list of action items to be taken by Spire. Spire provided the results of its Confidential Root Cause Analysis (RCA) of the incident on April 26, 2026.<sup>17</sup> As noted in *Staff's Gas Incident Report* in Case No. GS-2025-0295<sup>18</sup>, Spire has recently transitioned to using the "5 Why" methodology for conducting its RCA.

In its PIR, Spire identified six action items to be completed by Spire (Action Numbers 1-6 in Confidential Table 2 of this Report). Spire further identified one action item (Action Number 7 in Confidential Table 2 of this Report).

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<sup>16</sup> Spire CONF-Attachment 1-PIR provided with Spire's Response to Staff Data Request 0001.

<sup>17</sup> Spire CONF - 895 Glen Elm Dr., St. Louis, MO - RCA.xlsx, provided with Spire's Response to Staff Data Request 0060.

<sup>18</sup> Discussed on pages 17-19 of Staff's Gas Incident Report filed on April 30, 2026 for the April 22, 2025 Natural Gas Incident that occurred on April 22, 2025 in Kansas City, Missouri.

Table 2: Action Items Identified by Spire to be Completed by Spire	
Action Number	Action Summary
1	** [Redacted] **
2	* [Redacted] **
3	** [Redacted] **
4	** [Redacted] *
5	** [Redacted] **
6	** [Redacted] **
7	** [Redacted] **

The PIR list for Action Numbers 1-6 includes target dates from January 3, 2025 (date of incident), through May 31, 2025, and the RCA does not include target dates for Action Number 7. The information provided by Spire does not include the status of these action items.

**3. Staff Analysis:**

Spire's investigation of the January 3, 2025, incident appears to have met the minimum requirements of 20 CSR 4240-40.030(12)(L)2. Staff has not been provided with documentation showing progress towards completion of actions items.

Regarding Spire's compliance with the Commission approved Stipulation and Agreement in Case No. GC-2022-0087, as Staff noted in its Gas Incident *Staff's Gas*

*Incident Report* in Case No. GS-2025-0295<sup>19</sup>, Spire has recently transitioned to using the “5 Why” methodology for conducting its RCA. As in Staff’s investigation recently completed in Case No. GS-2025-0295, Staff questions for the present investigation whether Spire has fully implemented the 5-whys approach.

In Spire’s RCA for the January 3, 2025, incident, Spire evaluated the question:

\*\*

[REDACTED]

[REDACTED]\*\*. For any of these potential answers, additional why questions could be asked.

Additionally, Staff noted in *Section III.A* of this Report – *Incident Description and Emergency Response*, although Spire personnel were on site prior to and at the time of the explosion, Spire took no action to evacuate the occupants of the residence. Staff believes that there may be benefit for Spire to perform an additional Root Cause Analysis for this

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<sup>19</sup> Discussed on pages 17-19 of Staff’s Gas Incident Report filed on April 30, 2026 for the April 22, 2025 Natural Gas Incident that occurred on April 22, 2025 in Kansas City, Missouri.

incident asking the question: "Why were the occupants not evacuated prior to the explosion?", and develop potential solutions based on the findings.

4. Violations:

Although Staff has identified no violation of 20 CSR 4240-40.030(12)(L)2. regarding Spire's investigation of this incident, Staff has recommendations for Spire regarding implementation of actions and the approach for conducting RCAs.

5. Staff Recommendations:

1. Staff recommends that Spire provide the status of implementation for action items 1-7 in Confidential Table 2 of this report and for items not completed, provide quarterly updates to the Commission until the action items have been completed satisfactorily. If any action item is no longer considered to be necessary by Spire, the reason(s) should be explained when providing the status of implementation.
2. Staff recommends that Spire continue the RCA it began (copy included in Confidential Exhibit 3 to Appendix B of this report) by asking why \*\* [REDACTED] [REDACTED] \*\*. [REDACTED] \*\*.
3. Staff recommends that Spire conduct a supplemental RCA for this incident to evaluate why occupants were not evacuated from the residence prior to the explosion.
4. Staff recommends that going forward, if Spire continues to use the 5 Whys approach for conducting RCAs, that Spire complete the questioning until either five why questions have been asked and answered, or until no logical why questions remain.

**C. Incident Reporting Requirements**

1. Regulatory Requirements and Applicable Commission Orders:

Commission Rule 20 CSR 4240-40.020(3)(A) requires that at the earliest practicable moment following discovery, but no later than one (1) hour after confirmed discovery,<sup>20</sup>

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<sup>20</sup> 20 CSR 4240-40.020(2)(C) (defining "confirmed discovery" to mean when it can be reasonably determined, based on information available to the operator at the time a reportable event has occurred, even if only based on a preliminary evaluation.).

each operator shall give notice, in accordance with subsection (3)(B), of each federal incident as defined in section (2).

Commission Rule 20 CSR 4240-40.020(3)(B) requires that each notice required by subsection (3)(A) must be made to the NRC.<sup>21</sup>

Commission Rule 20 CSR 4240-40.020(3)(C) requires that within forty-eight (48) hours after the confirmed discovery of an incident,<sup>22</sup> to the extent practicable, an operator must revise or confirm its initial telephonic notice required in subsection (3)(B) with an estimate of the amount of gas released, an estimate of the number of fatalities and injuries, and all other significant facts that are known by the operator that are relevant to the cause of the incident or extent of the damages. If there are no changes or revisions to the initial report, the operator must confirm the estimates in its initial report.

Commission Rule 20 CSR 4240-40.020(4)(A) requires operators to notify designated Commission personnel by telephone within two hours following discovery of a Missouri reportable incident<sup>23</sup> by the operator, or as soon thereafter as practicable if emergency efforts to protect life and property would be hindered.

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<sup>21</sup> The NRC abbreviation represents the federal National Response Center which is operated by the United States Environmental Protection Agency in cooperation with the United States Coast Guard.

<sup>22</sup> 20 CSR 4240-40.020(2)(D) defines a Federal incident to mean any of the following events:

1. An event that involves a release of gas from a pipeline, gas from an underground natural gas storage facility (UNGSF), liquefied natural gas (LNG), liquefied petroleum gas, refrigerant gas, or gas from an LNG facility, and that results in one (1) or more of the following consequences:

A. A death or personal injury necessitating inpatient hospitalization; or

B. Estimated property damage of one hundred twenty-nine thousand three hundred dollars (\$129,300) or more, including loss to the operator and others, or both, but excluding the cost of gas lost; or

C. Unintentional estimated gas loss of three (3) million cubic feet or more;

2. An event that results in an emergency shutdown of an LNG facility or an UNGSF. Activation of an emergency shutdown system for reasons other than an actual emergency does not constitute an incident; or

3. An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraph (2)(D)1. or (2)(D)2.

<sup>23</sup> 20 CSR 4240-40.020(4)(A) (requiring reporting of the following events within areas served by the operator:

1. An event that involves a release of gas involving the operator's actions or pipeline system, or where there is a suspicion by the operator that the event may involve a release of gas involving the operator's actions or pipeline system, and results in one (1) or more of the following consequences: A. A death; B. A personal injury involving medical care administered in an emergency room or health care facility, whether inpatient or outpatient, beyond initial treatment and prompt release after evaluation by a health care professional;

Commission Rule 20 CSR 4240-40.020(6) requires that operators of distribution pipeline systems must submit U.S. Department of Transportation Form PHMSA F 7100.1 as soon as practicable but not more than 30 days after detection of an incident required to be reported under section (3).

A Commission approved<sup>24</sup> Stipulation and Agreement in Case No. GC-2022-0087 required in part that Spire amend its Spire Missouri Inc. Operations Procedure Manual (OPM) to include the 48-hour telephonic update to the NRC within 48 hours after the confirmed discovery of an incident as required by 20 CSR 4240-40.020(3)(C).<sup>25</sup>

2. Spire Actions to Comply with 20 CSR 4240-40.020(2)(C), (3), (4), and (6) and Applicable Commission Orders:

Spire confirmed discovery of an incident meeting the reporting requirements of 20 CSR 4240-40.020(2)(C) and (4)(A) at approximately 9:24 a.m. CDT on January 3, 2025.<sup>26</sup> The incident reporting requirements in 20 CSR 4240-40.020(3), (4), and (6) were completed as follows:

1. Spire made the initial telephone notification of a natural gas incident to designated commission personnel at approximately 11:19 a.m., CDT on January 3, 2025.
3. Spire notified the NRC of a natural gas incident at approximately 12:14 p.m. on January 3, 2025 (NRC Report Number 1420340).
4. 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).
5. 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.

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or C. Estimated property damage of seventeen thousand five hundred dollars (\$17,500) or more, including loss to the gas operator or others, or both, and including the cost of gas lost;

2. An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraph (4)(A)1.; or 3. An event that is reported as a Federal incident under section (3).

<sup>24</sup> Approved in Commission Order filed February 02, 2022, in Case No. GC-2022-0087.

<sup>25</sup> Paragraph 8 of the Stipulation and Agreement filed January 20, 2022, in Case No. GC-2022-0087.

<sup>26</sup> Spire response to Staff Data Request 005.

2. Staff Analysis:

Spire complied with the reporting requirements of 20 CSR 4240-40.020(4)(A) by telephone notification of a natural gas incident to designated commission personnel at approximately 11:19 a.m., CDT on January 3, 2025.

Spire complied with the reporting requirements of 20 CSR 4240-40.020(3)(A) and 20 CSR 4240-40.030(3)(B), by notification to the NRC of a natural gas incident at approximately 11:14 a.m., CDT on January 3, 2025.

Spire submitted its confirmation or revision of its initial incident notification to the NRC within 48 hours of confirmed discovery of the incident. The notification was submitted by Spire at approximately 9:58 p.m. CDT on January 4, 2025.

Spire complied with the requirements of 20 CSR 4240-40.020(6), by submitting its USDOT-PHMSA form PHMSA F 7100.1 titled "Incident Report – Gas Distribution System" to Staff and PHMSA on February 3, 2025. Spire's submission time was not more than 30 days after detection of an incident as required by 20 CSR 4240-40.020(6)(A).

4. Violations:

Staff found no violations with respect to compliance with the Commission's rules pertaining to incident reporting.

5. Staff Recommendations:

Staff has no recommendations with respect to compliance with the Commission's rules pertaining to incident reporting.

**D. Damage Prevention Program**

1. Regulatory Requirements and Applicable Commission Orders:

Commission Rule 20 CSR 4240-40.030(12)(l)1. requires each operator of buried pipelines to have and carry out a written program to prevent pipeline damage by excavation activities in accordance with subsection 20 CSR 4240-40.030(12)(l)1.

Commission Rule 20 CSR 4240-40.030(12)(l)3.G. requires that the written program provide for temporary marking of buried pipelines in the area of excavation activity before, as far as practical, the activity begins.

Commission Rule 20 CSR 4240-40.030(12)(C)1. requires that each operator prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response, including each of the requirements of section (12).<sup>27</sup>

The Commission approved<sup>28</sup> Stipulation and Agreement in Case No. GC-2022-0087 required in part that Spire adopt specific procedures for requiring locators to perform a visual scan of the work area and to confirm the location of Spire's facilities through conductive methods<sup>29</sup> (completed prior to approval). This Stipulation and Agreement additionally required Spire to:

- Establish and follow a schedule for annual review of revisions to Common Ground Alliance Best Practice Marking Standards in SOP 220.C (Spire's Damage Prevention Program), and to review revisions to Common Ground Alliance Best Practice Marking Standards to determine when and how to adopt those into Spire's procedures and training requirements according to the schedule established in SOP 220.C.,<sup>30</sup>
- To include and follow a requirement for Spire personnel and its contractors to report mapping errors of Spire's natural gas system when identified through the completion of activities related to SOPs 220.C, 230.C (Spire's Patrolling procedure), 230.D (Spire's Leak Survey procedure), and 220.R.5 (Spire's Contract Locating Procedure),<sup>31</sup> and
- To include and follow as part of its SOPs 220.C, 230.C, 230.D, and 220.R, a procedure to investigate each field reported mapping error and make timely correction of identified errors in the mapping system.<sup>32</sup>

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<sup>27</sup> 20 CSR 4240-40.030(12)(C)2.B. requires that the manual includes procedures for safe operating and maintaining the pipeline in accordance with each of the requirements of sections (12), (13) and (14) of 20 CSR 4240-40.030.

<sup>28</sup> Approved in Commission Order filed February 02, 2022, in Case No. GC-2022-0087.

<sup>29</sup> Paragraph 6 of the Stipulation and Agreement in Case No. GC-2022-0087.

<sup>30</sup> Paragraph 9 of the Stipulation and Agreement in Case No. GC-2022-0087.

<sup>31</sup> Paragraph 15 of the Stipulation and Agreement in Case No. GC-2022-0087.

<sup>32</sup> Paragraphs 16 of the Stipulation and Agreement in Case No. GC-2022-0087.

In the Stipulation and Agreement approved by the Commission in Case No. GC-2024-0305,<sup>33</sup> Spire agreed in part that Spire Missouri will implement and follow the plan attached to the Stipulation and Agreement as Highly Confidential Appendix 1, create or modify existing procedures to define the process of how contract locators are to communicate issues discovered in the field to Spire Missouri, and identify and define (in at least one of its procedures) each specific category it intends to use as a root cause description of an excavation damage event.<sup>34</sup>

2. Spire Actions to Comply with 20 CSR 4240-40.030(12)(I), Chapter 319 RSMo, and Applicable Commission Orders:

Spire provided a copy of its damage prevention program Damage Prevention Program Standard Operating Procedure (SOP), Document number 220.C.8 published August 9, 2024, that was in effect at the time of the incident.<sup>35</sup> The Damage Prevention Program requires compliance with Chapter 319, RSMo. Documentation created by Spire and Spire's Contract Locator indicate that Spire's Contract Locator employee responded to the Missouri 811 locate ticket at the incident location but did not mark the underground natural gas main within the "approximate location"<sup>36</sup> of the pipeline as required by Section 319.030, RSMo, at the location where the excavation damage occurred. Due to the inaccurate markings, Spire did not provide an indication to the Excavator that there was an underground natural gas main at the location where the excavation damage occurred. The markings placed by the Contract Locator employee were determined by Spire and Staff to be outside of the "approximate location" of Spire's gas main, therefore Spire's Contract Locator failed to mark the approximate location as required by Section 319.030, RSMo.

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<sup>33</sup> Stipulation and Agreement was filed November 14, 2024, approved by the Commission on December 4, 2024.

<sup>34</sup> Paragraphs 4, 6, and 8 of the Stipulation and Agreement in Case No. GC-2024-0305.

<sup>35</sup> Spire's Confidential Root Cause Analysis provided with Spire's response to Staff Data Request 0060 (a copy is included in Confidential Exhibit 3 to Appendix B of this Report).

<sup>36</sup> RSMo 319.015 defines "approximate location" to be a strip of land not wider than the width of the underground facility plus two feet on either side thereof. In situations where reinforced concrete, multiplicity of adjacent facilities or other unusual specified conditions interfere with location attempts, the owner or operator shall designate to the best of his or her ability an approximate location of greater width.

Additionally, according to Spire, Spire's Contract Locator did not follow certain requirements of Spire's contract locating procedure. Spire identified that the root cause of this incident was that \*\* [REDACTED]

[REDACTED]  
[REDACTED] \*\*.

Spire's Contract Locator submitted a Notice of Print Deficiency following the incident. This notification states in part that \*\* [REDACTED]

[REDACTED]  
[REDACTED] \*\*<sup>37</sup> .

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 incident.<sup>38</sup> 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 3 to Appendix B of this Report). Of the three maps shown in the Confidential PIR, two appear to have been created following the incident. Staff assumes that these two maps were created following the incident for the following reasons:

- One of the maps shows the service line as \*\* [REDACTED]

[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 following the incident and emergency response.

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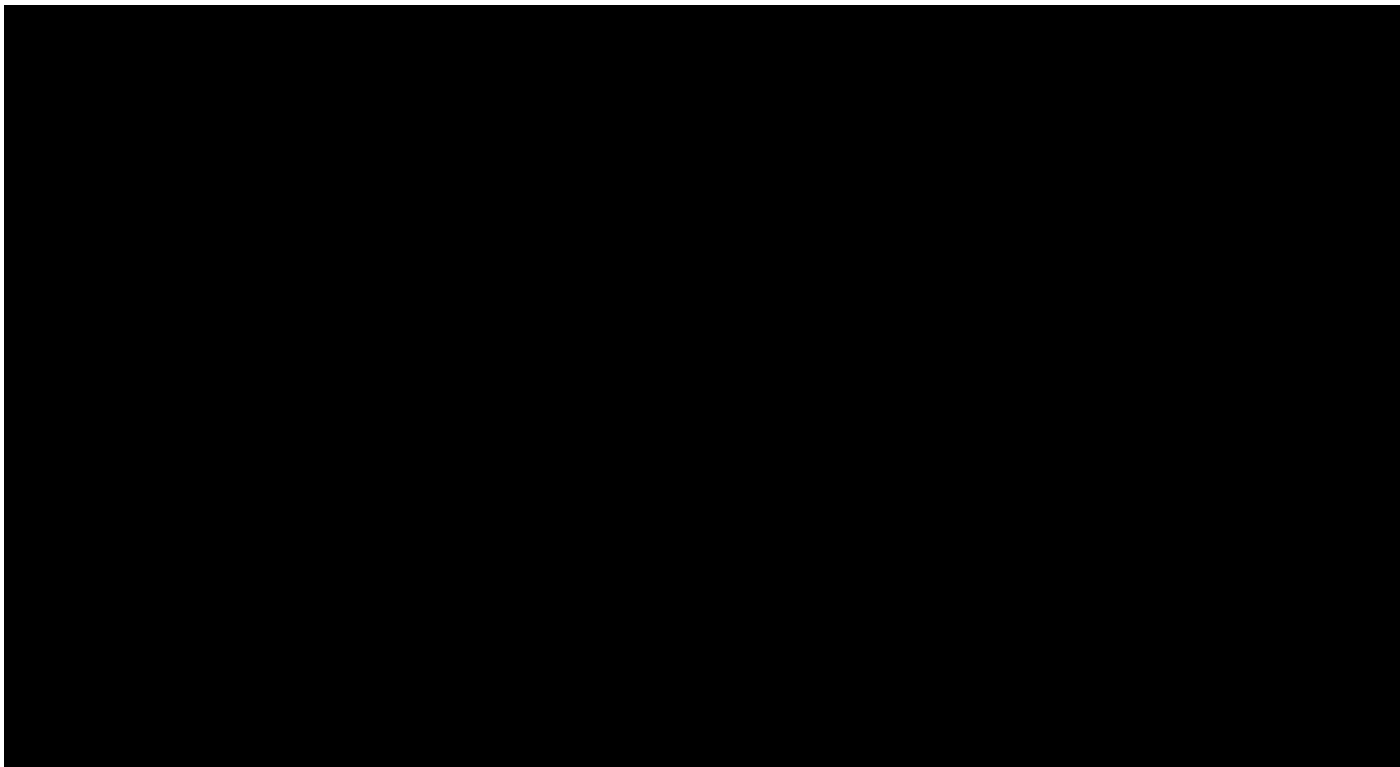
<sup>37</sup> From CONF Attachment 48 – USIC Notice of Print Deficiency to Spire provided in response to Staff Data Request 0048.

<sup>38</sup> Staff Data Request 0001.2.

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

[REDACTED] \*\*. Staff assumes that this map was created following the incident to illustrate that the location of Spire's service line to 895 Gen Elm Dr. had not been correctly marked prior to the incident.

The third map provided in Spire's PIR is provided below as Confidential Figure 3. This map incorrectly shows the location of the service line to 895 Glen Elm Drive\_\*\*. [REDACTED]



[REDACTED] \*\*.

3. *Staff Analysis:*

The apparent cause of this incident is that Spire failed to accurately mark the location of the service line to the residence. Additionally, while Spire identified that the root cause of

this incident was that \*\* [REDACTED] \*\* .

Staff believes that there is sufficient evidence that Spire failed to mark the location of the gas service line as required by Commission Rule 20 CSR 4240-40.030(12)(I)3.G., failed to mark the location within the "approximate location" as required by Section 319.030, RSMo., therefore failing to follow its written program to prevent damages by excavation required by Commission Rule 20 CSR 4240-40.030(12)(I)1.

Additionally, Staff believes there is sufficient evidence to assert that there were inaccuracies in Spire's mapping of the service line location prior to this incident which could have caused or contributed to the inaccuracy of the Contract Locator's marking of the facilities. Specifically, the location of the service line was \*\* [REDACTED] \*\* shown as Confidential Figure 3 of this Report. Additionally, Spire stated in its PIR that \*\* [REDACTED] \*\* .

Staff recognizes that a person tasked with locating underground facilities should not rely entirely on maps or historical measurements, however these can be useful tools and are provided by Spire to its contract locators. In the current instance, it appears to Staff that there were inconsistencies between what two of the documents Spire provided to its Contract Locator, \*\* [REDACTED] \*\* showed for the location of the service line to 895 Glen Elm Dr. One of these documents \*\* [REDACTED] \*\* showed the location in the incorrect location that was marked by the Contract Locator. Rather than relying on contractors to evaluate which information on various Spire documents may be more accurate, Staff believes that a better approach would be for Spire to perform a systematic review of the documentation that Spire provides to its contractors to identify inconsistencies, determine the correct actual locations of its assets,

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<sup>39</sup> Spire's Root Cause Analysis was provided as a Confidential Attachment to Spire's response to Staff Data Request 0060; a copy is provided in Confidential Exhibit 3 to Appendix B of this Report.

and improve the accuracy of its maps. Staff believes that adopting this approach would be beneficial for the following reasons:

1. Spire has more knowledge and expertise than its contractors in interpretation of Spire's location mapping system and supporting documents such as service cards and measurements,
2. Spire has authority and ability to make corrections to its mapping system that its contractors may not have.
3. At any location within Spire's service areas, there may be multiple requests over time to locate underground facilities. Reviewing and interpreting multiple potentially conflicting documents each time such a request is made would be less efficient than a single evaluation and correction of potential inconsistencies.

Staff notes that mapping deficiencies have been identified as potential causal or contributing factors in two other Staff investigations of Spire incidents resulting from excavation damages.<sup>40</sup> Staff made recommendations following each of these previous investigations which Staff believes Spire should continue to implement, and has an additional recommendation related to identification and correction of potential sources of mapping errors and inconsistencies as a result of the present incident.

4. Violations:

1. Spire's failure to correctly mark the location of the service line to 895 Glen Elm Drive was a violation of Commission Rule 20 CSR 4240-40.030(12)(I)3.G.
2. Spire's failure to follow its written program to prevent damage to its pipeline by excavation was a violation of 20 CSR 4240-40.030(12)(I)1. Specifically:
  - a. Commission Rule 20 CSR 4240-40.030(12)(I)1. requires each operator of a buried pipeline to carry out a written program to prevent damage to that pipeline by excavation activities. Spire's damage prevention program includes compliance with Chapter 319, RSMo. The locate markings on the ground surface above the natural gas main at the damage location were outside of

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<sup>40</sup> Specifically Staff's Investigation in Case No. GS-2021-0019 and related Complaint Case No. GC-2022-0087 and Staff's investigation in Case No. GS-2025-0068, and related Complaint Case No. GC-2026-0210.

the “approximate location” as required by Section 319.030, RSMo; therefore Spire’s failure to locate its underground facilities within the “approximate location” as required by Section 319.030, RSMo is a violation of Commission Rule 20 CSR 4240-40.030(12)(l)1., and

- b. Spire’s Contract Locator did not follow Spire’s contract locator procedure which resulted in incorrect locate markings at the incident location was a violation of Commission Rule 20 CSR 4240-40.020(12)(l)1.

5. *Staff Recommendations:*

Staff’s previous recommendations to Spire regarding identification and correction of its mapping errors and omissions has included a) reporting of potential inaccuracies by field personnel performing routine actions and active investigation and correction of identified errors,<sup>41</sup> and b) taking additional measurements of locations of buried facilities whenever these facilities are exposed for other reasons.<sup>42</sup>

Based on its investigation of the present incident, Staff additionally recommends that:

1. Spire develop and implement a plan to review the asset location information including maps, service cards and measurement references to:
  - a. Identify potentially inconsistent information pertaining to asset locations,
  - b. Obtain accurate information at locations where inconsistencies exist, and
  - c. Correct document errors found as a result of completing parts a, and b.

Additionally, Staff requests Commission authorization to submit a redacted (public) copy of this investigation report to the Missouri Attorney General’s Office (“AGO”) as information that may be used in the event the AGO wishes to take further action as provided in Section 319.045, RSMo.

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<sup>41</sup> Staff’s Investigation in Case No. GS-2021-0019 and related Complaint Case No. GC-2022-0087.

<sup>42</sup> Staff’s investigation in Case No. GS-2025-0068, and related Complaint Case No. GC-2026-0210.

**E. Drug and Alcohol Testing**

1. Regulatory Requirements:

Missouri pipeline safety rules adopt the Federal Drug and Alcohol Testing regulations<sup>43</sup> by reference.<sup>44</sup> At the time the incident occurred, the Commission Rules adopted the Code of Federal Regulations (“CFR”) dated October 1, 2019 49 CFR parts 40 and 199 by reference.<sup>45</sup> The descriptions and quotations of applicable requirements below are based on the October 1, 2019, 49 CFR parts 40 and 199.

49 CFR § 199.101 requires each operator to maintain and follow a written anti-drug plan that conforms to Part 199 and the Department of Transportation (“DOT”) Procedures.<sup>46</sup> 49 CFR § 199.202 requires each operator to maintain and follow a written alcohol misuse plan that conforms to Part 199 and the DOT Procedures.

20 CSR 4240-40.080(4)(B) states that the references to “accident” in 49 CFR § § 199.105 and 199.225 should refer to a “federal incident reportable under 20 CSR 4240-40.020.”

49 CFR § 199.3 defines “employee” and “covered employee” as: a person who performs a covered function, including persons employed by operators, contractors engaged by operators, and persons employed by such contractors.<sup>47</sup>

49 CFR § 199.3 defines “covered function” as: an operations, maintenance, or emergency-response function regulated by part 192, 193, or 195 of this chapter that is performed on a pipeline or on an LNG facility.<sup>48</sup>

49 CFR § 199.3 defines “prohibited drug” as follows:

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<sup>43</sup> 49 CFR §§ 40 and 199, effective October 1, 2019, incorporated by reference by the Commission at the time of the incident, effective January 30, 2022.

<sup>44</sup> 20 CSR 4240-40.080(1).

<sup>45</sup> Subsequent to the incident, Commission has opened a case to adopt more recent Federal amendments in File No. GX-2025-0249.

<sup>46</sup> 49 CFR § 199.3 (defining DOT procedures as the Procedures for Transportation Workplace Drug and Alcohol Testing Programs published by the Office of the Secretary of Transportation in part 40 of Title 49).

<sup>47</sup> 49 CFR § 199.3.

<sup>48</sup> *Id.*

Prohibited drug means any of the following substances specified in Schedule I or Schedule II of the Controlled Substances Act (21 U.S.C. 812): marijuana, cocaine, opiates, amphetamines, and phencyclidine (PCP).<sup>49</sup>

With respect to contractor employees, 49 CFR §§ 199.115 and 199.245 state that an operator may provide by contract that the drug and alcohol testing, education and training required by 49 CFR § 199 be carried out by the contractor, provided that a) the operator remains responsible for ensuring compliance with the requirements of 49 CFR § 199 and 40 and b) the contractor allows access to property and records by the operator, the Administrator, and if the operator is subject to the jurisdiction of a state agency, a representative of the state agency for the purpose of monitoring the operator's compliance with the requirements of this part.

Drug tests are required for covered employees for: pre-employment, post-accident and at any time during employment as part of a pool of covered employees subject to random selection for testing. These requirements are as follows:

- Pre-employment: 49 CFR § 199.105(a) requires that: “No operator may hire or contract for the use of any person as an employee unless that person passes a drug test or is covered by an anti-drug program that conforms to the requirements of this part.”<sup>50</sup>
- Randomly during employment: 49 CFR § 199.105(c) provides that “except as provided in paragraphs (c)(2) through (4) of this section, the minimum annual percentage rate for random drug testing shall be 50 percent of covered employees.”<sup>51</sup>

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<sup>49</sup> *Id.*

<sup>50</sup> 49 CFR § 199.105(a).

<sup>51</sup> 49 CFR § 199.105(c)(1).

- Post-Accident: 49 CFR § 199.105(b) provides the post-accident<sup>52</sup> drug testing requirements: “As soon as possible but no later than 32 hours after an accident, an operator shall drug test each employee whose performance either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. An operator may decide not to test under this paragraph but such a decision must be based on the specific information that the covered employee’s performance had no role in the cause(s) or severity of the accident.”<sup>53</sup>

Alcohol tests are required for covered employee’s post-accident:

- Post-Accident: 49 CFR § 199.225(a) provides the post-accident<sup>54</sup> alcohol testing requirements: “As soon as practicable following an accident, each operator must test each surviving covered employee for alcohol if that employee’s performance of a covered function either contributed to the accident or cannot be completely discounted as a contributing factor to the accident. The decision not to administer a test under this section must be based on specific information that the covered employee’s performance had no role in the cause(s) or severity of the accident. If a test required by this section is not administered within eight (8) hours following the accident, the operator shall cease attempts to administer an alcohol test and shall state in the record the reasons for not administering the test.”<sup>55</sup>

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<sup>52</sup> 20 CSR 4240-40.080(4)(B)(stating that the references to “accident” in §§199.3, 199.100, 199.105, 199.200, 199.221, 199.225, 199.227 and 199.234 should refer to a “federal incident reportable under 20 CSR 4240-40.020” instead.).

<sup>53</sup> 49 CFR § 199.105(b)(1).

<sup>54</sup> 20 CSR 4240-40.080(4)(B) (stating that the references to “accident” in §§199.3, 199.100, 199.105, 199.200, 199.221, 199.225, 199.227 and 199.234 should refer to a “federal incident reportable under 20 CSR 4240-40.020” instead.).

<sup>55</sup> 49 CFR § 199.225(1)-(2).

2. Spire's Actions to Comply with 20 CSR 4240-40.080:

Spire provided copies of the Drug and Alcohol Testing Policies for Spire employees that were in effect at the time of the incident.<sup>56</sup>

Four Spire employees that included: \*\* [REDACTED] were assigned to the project and were on site at the time of the incident. All four Spire employees were tested for drugs and alcohol following the incident. The Spire Contract Locator who incorrectly marked the service line location prior to the incident was also drug and alcohol tested.

<b>Table 3: Drug and Alcohol Testing</b>		
<b>Employee</b>	<b>Covered Functions Assigned on July 17, 2023<sup>57</sup></b>	<b>Time of Drug and Alcohol Specimen Collection on January 3, 2025</b>
Spire Service Technician ** [REDACTED] **	Inside Gas Leak Investigation; Outside Gas Leak Investigation; Walking Gas Leak Survey; Leak Test at Operating Pressure; Installation of Customer Meters and Regulators- Residential and Small Commercial; Installing Customer Meters-Large Commercial and Industrial	Alcohol- 3:22 p.m. Drug- 3:26 p.m.
Spire Helper ** [REDACTED] **	Inside Gas Leak Investigation; Outside Gas Leak Investigation; Walking Gas Leak Survey; Leak Test at Operating Pressure; Installation of Customer Meters and Regulators- Residential and Small Commercial; Installing Customer Meters-Large Commercial and Industrial	Drug- 3:34 p.m. Alcohol- 3:38 p.m.
Spire Leak Truck Foreman ** [REDACTED] **	Visual inspection for atmospheric corrosion; Visual inspection of buried pipe and components when exposed; Leak test at operating pressure; Joining of Pipe – threaded Joints; Coating application and repairs – wrapped; External coating application and repair – wrapped; Outside gas leak	Drug-2:09 p.m. 1/3/25 Alcohol-2:10 p.m.

<sup>56</sup> Spire's response to Staff Data Request 0017.

<sup>57</sup> The listing of Covered Functions was provided by Spire's response to Staff Data Request 20, parts A. and B.

Table 3: Drug and Alcohol Testing		
Employee	Covered Functions Assigned on July 17, 2023 <sup>57</sup>	Time of Drug and Alcohol Specimen Collection on January 3, 2025
	investigation; Damage prevention during excavation activities by or on behalf of the operator; Isolating abandoning and deactivating pipeline facilities	
Spire Truck Worker ** [REDACTED] **	Visual inspection for atmospheric corrosion; Visual inspection of buried pipe and components when exposed; Leak test at operating pressure; Joining of Pipe – threaded Joints; Coating application and repairs – wrapped; External coating application and repair – wrapped; Outside gas leak investigation; Damage prevention during excavation activities by or on behalf of the operator; Isolating abandoning and deactivating pipeline facilities.	Drug -2:24 p.m. Alcohol-2:25 p.m.
Spire Contract Locator ** [REDACTED] **	Locate Underground Pipelines	Alcohol -2:48 p.m. Drug – 2:58 p.m.

Spire provided copies of the post-accident testing along with the pre-employee testing to Staff. \*\* [REDACTED] \*\* .

3. Staff Analysis:

The initial release of gas occurred at 8:40 a.m. Spire was notified at 8:56 a.m. Ignition occurred at 9:24 a.m. Specimens for drug testing were collected from each of the four Spire employees who were on-site at the time of the incident within 8 hours as required by 49 CFR 199.105(b), adopted into Commission rule 20 CSR 4240-40.080. Specimens for alcohol testing were collected from each of the four Spire employees within 8 hours of the incident.



survey had been completed at about 11:00 a.m. and the Spire Service Technician and Spire Helper were tested at 3:22 p.m. and 3:34 p.m. respectively. Additionally, Spire's Contract Locator employee who had completed the service line locate earlier that morning was not on site at the time of the incident or involved in the emergency response in any way. However, over five hours elapsed between the time of the explosion (9:24 a.m.) and collection of drug (2:58 p.m.) and alcohol (2:48 p.m.) specimens from the Contract Locator employee.

Staff notes that it has previously investigated incidents on Spire facilities where drug and/or alcohol testing was not timely performed. In several of these investigations, as with the current investigation, actions by Spire employees or contractors working for Spire could not be ruled out as causing or contributing to the incident.<sup>58</sup>

4. Violations:

1. Spire's failure to timely perform post-incident alcohol testing of the Contractor Locator who incorrectly located the service line prior to the incident and the four Spire employees who initially responded to the excavation damage notification was a violation of 49 CFR 199.225(a)(1) as adopted by the Commission by promulgation of 20 CSR 4240-40.080.

5. Staff Recommendations:

1. For individuals such as the Contract Locator whose presence is not needed for the emergency response, Spire should initiate collection of alcohol and drug testing specimens as soon as possible following an incident.
2. To the extent that Spire has personnel available who can perform the required tasks, Spire should utilize personnel who were not directly involved in the incident to perform the emergency response actions, and expedite collection of drug and alcohol specimens for personnel whose actions cannot immediately be ruled out as causing or contributing to the severity of an incident.

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<sup>58</sup> See for example Staff's Gas Incident Reports in Cases GS-2019-0015 and GS-2024-0137.

## **F. Distribution Valves**

### *1. Regulatory Requirements:*

Commission Rule 20 CSR 4240-40.030(12)(C)2.A. requires that Spire Missouri Inc. Operations Procedure Manual (OPM) must have procedures for safely maintaining the pipeline in accordance with Section (13) - Maintenance.

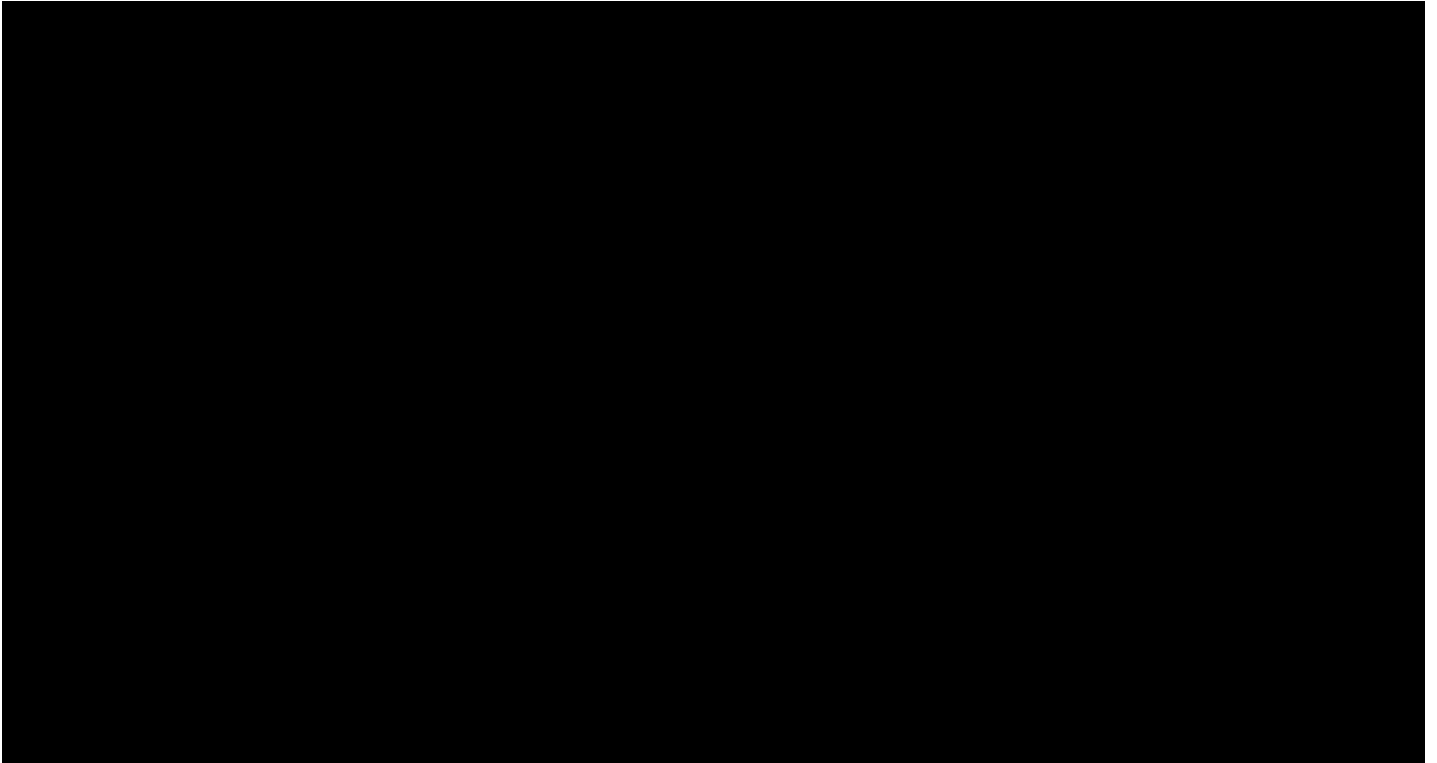
Commission rule 20 CSR 4240-40.030(13)(V) - Valve Maintenance - Distribution Systems require that operators have valve maintenance and inspection procedures.

At a minimum, the procedures must provide for:

1. Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked for accessibility and serviced at intervals not exceeding fifteen (15) months but at least once each calendar year.
2. Feeder line and distribution line valves, the use of which may be necessary for the safe operation of a distribution system, shall be inspected at intervals not exceeding fifteen (15) months but at least once each calendar year. At a minimum, the valves that are metallic must be partially operated during alternating calendar years.
3. Valves necessary for the safe operation of a distribution system include, but are not limited to, those which provide:
  - A. One hundred percent (100%) isolation of the system or any portion of it;
  - B. Control of a district regulator station, preferably from a remote location;
  - C. Zones of isolation sized such that the operator could relight the lost customer services within a period of eight (8) hours after restoration of system pressure; or
  - D. Extensive zone isolation capabilities where historical records indicate conditions of greater than normal pipeline failure risk.
4. Each operator must take prompt remedial action to correct any valve found inoperable, unless the operator designates an alternative valve.



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Spire stated within its' response to Staff Data Request 0059 that the Company was unable to estimate the approximate time it would have taken to close all 106 valves required for isolation.

The Company provided a narrative description of the Company's Post Incident Review (PIR)<sup>60</sup> of the gas incident at 895 Glen Elm Drive and within the \*\* [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] \*\*. Additionally, item 23. Within the Background Information of the PIR stated that \*\* [REDACTED]

[REDACTED] \*\*

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<sup>60</sup> Information obtained from Spire's response to Staff Data Request 0001.0.

The Company has an inspection program for certain curb valves and their inspection and maintenance procedures are found within the \*\* [REDACTED] [REDACTED] \*\*<sup>61</sup>. The curb valve for the service line at 895 Glen Elm Drive was not under Spire's curb valve inspection program.<sup>62</sup>

Section 46 titled Distribution Line Valves within the Spire Missouri Inc. Operations Procedure Manual (OPM) states the following:

\*\* [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] \*\*.

Spire stated that the Company was unable to estimate the approximate time it would have taken to close all 106 valves required for isolation.<sup>63</sup> Based on this response and the fact that main line valves were not used because there were multiple feeds to the area that would have taken a significant amount of additional time, Staff asserts that Spire did not meet the requirements of Commission Rule 20 CSR 4240-40.030(13)(V)3.A. to have sufficient valves to provide one hundred percent (100%) isolation of the system or any portion of it within a timely manner.

Additionally, Staff questions in this in this instance whether Spire would have been able to meet the requirements of Commission Rule 20 CSR 4240-40.030(13)(V)3.C. to provide a zone of isolation sized such that the operator could relight the lost customer services within a period of eight (8) hours after restoration of system pressure.

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<sup>61</sup> Information provided by Spire's response to Staff Data Request 0058.0.  
<sup>62</sup> Information provided by Spire's response to Staff Data Request 0057.0, part b).  
<sup>63</sup> Information obtained from Spire's response to Staff Data Request 0059.0

4. Violations:

1. Spire's failure to maintain a sufficient number of distribution line valves necessary to isolate the portion of the distribution system feeding the service line to 895 Glen Elm Dr. was a violation of Commission Rule 20 CSR 4240-40.030(13)(V)3.A.

5. Staff Recommendations:

1. Staff recommends that Spire reevaluate all curb valve or manual service line shut-off valve locations within the Spire Missouri East service territory for inclusion within the Company's curb valve inspection program based on the following criteria:

- a. The curb valve is not currently included within the Company's curb valve inspection program.
- b. The curb valve serves a gas service line that has an inside gas meter set.
- c. The gas distribution main that supplies gas to the curb valve and service line under consideration has multiple feeds to the area and it would take the Company more than eight (8) hours to restore lost gas service after closure of the main line valves and restoration of system pressure.
- d. For curb valves that can't be located within the gas distribution system as they are no longer accessible and items b) and c) above apply, the installation of a new curb valve or manual service line shut-off valve would be required for the service line. The Company would then evaluate the inclusion of the new curb valve within its' curb valve inspection program.

**IV. STAFF'S FINDINGS**

As a result of this investigation, Staff found sufficient facts and information exist to assert the following violations of Commission Rules:

1. Spire's failure to take action to protect people first and then property was a violation of Commission Rule 20 CSR 4240-40.030(12)(J)1.E. Specifically, although Spire had personnel on site prior to the explosion, Spire's first actions were not directed toward either determining if gas had migrated inside the residence or evacuation of the

people within the residence prior to the gas explosion. (See Section III.A – *Incident Description and Emergency Response* of this Report).

2. Spire's failure to immediately take steps directed to protect all Company employees' lives and physical safety and the lives and physical safety of the public by among other things establishment of a restricted zone was a violation of the Commission Order approving the Stipulation and Agreement in Case No. GC-2014-0216. (See Section III.A – *Incident Description and Emergency Response* of this Report).
3. Spire's failure to correctly mark the location of the service line to 895 Glen Elm Drive was a violation of Commission Rule 20 CSR 4240-40.030(12)(I)3.G. (See Section III.D – *Damage Prevention Program* of this Report).
4. Spire's failure to follow its written program to prevent damage to its pipeline by excavation was a violation of 20 CSR 4240-40.030(12)(I)1. Specifically, Commission Rule 20 CSR 4240-40.030(12)(I)1. requires each operator of a buried pipeline to carry out a written program to prevent damage to that pipeline by excavation activities. Spire's damage prevention program includes compliance with Chapter 319, RSMo.
  - A. The locate markings on the ground surface above the natural gas main at the damage location were outside of the "approximate location" as required by Section 319.030, RSMo; therefore Spire's failure to locate its underground facilities within the "approximate location" as required by Section 319.030, RSMo is a violation of Commission Rule 20 CSR 4240-40.030(12)(I)1., and
  - B. Spire's Contract Locator did not follow Spire's contract locator procedure which resulted in incorrect locate markings at the incident location is a violation of Commission Rule 20 CSR 4240-40.030(12)(I)1.  
  
(See Section III.D – *Damage Prevention Program* of this Report).
5. Spire's failure to timely perform post-incident alcohol testing of the Contractor Locator who incorrectly located the service line prior to the incident and the four Spire employees who initially responded to the excavation damage notification was a violation of 49 CFR 199.225(a)(1) as adopted by the Commission by promulgation of 20 CSR 4240-40.080. (See Section III.E – *Drug and Alcohol Testing* of this Report).

6. Spire's failure to maintain a sufficient number of distribution line valves necessary to isolate the portion of the distribution system feeding the service line to 895 Glen Elm Dr. was a violation of Commission Rule 20 CSR 4240-40.030(13)(V)3.A. (See Section III.F – *Distribution Valves* of this Report).

## **V. STAFF'S RECOMMENDATIONS**

In summary, throughout this Report, Staff has identified several areas that either require improvement or are violations of Commission Rules. Staff summarizes below its recommendations related to these areas requiring improvement and violations of Commission Rules.

1. Staff recommends that Spire review and update its procedure SOP 220.D Emergency Plan to clarify actions that first responding employees should take immediately upon arrival to prioritize protecting the lives and physical safety of people first, and to include each element required by the Stipulation and Agreement approved by Commission Order in Case No. GC-2014-0216. This should include but not be limited to requirements to evacuate occupants whenever there is a reason to believe gas may be present within a structure (for example: a person stating they smell gas inside, based on gas-in-air readings inside the structure, observation of gas release near the building, indications of gas migration into sewers, or damage to a service line where there is an inside meter set). (See Section III.A – *Incident Description and Emergency Response* of this Report).
2. Staff recommends that Spire conduct additional training of its personnel who may be engaged in activities that require implementation of Spire's Emergency Plan. (See Section III.A – *Incident Description and Emergency Response* of the Report).
3. Staff recommends that Spire provide the status of implementation for action items 1-7 in Confidential Table 2 of this report and for items not completed, provide quarterly updates to the Commission until the action items have been completed satisfactorily. If any action item is no longer considered to be

necessary by Spire, the reason(s) should be explained when providing the status of implementation. (See Section III.B – *Investigation of Failures and Incidents* of this Report).

4. Staff recommends that Spire continue the RCA it began (copy included in Confidential Exhibit 3 to Appendix B of this report) by asking why \*\* [REDACTED] [REDACTED] \*\* (See Section III.B – *Investigation of Failures and Incidents* of this Report).
5. Staff recommends that Spire conduct a supplemental RCA for this incident to evaluate why occupants were not evacuated from the residence prior to the explosion. (See Section III.B – *Investigation of Failures and Incidents* of this Report).
6. Staff recommends that going forward, if Spire continues to use the 5 Whys approach for conducting RCAs, that Spire complete the questioning until either five why questions have been asked and answered, or until no logical why questions remain. (See Section III.B – *Investigation of Failures and Incidents* of this Report).
7. Spire develop and implement a plan to review the asset location information including maps, service cards and measurement references to:
  - a. Identify potentially inconsistent information pertaining to asset locations,
  - b. Obtain accurate information at locations where inconsistencies exist, and
  - c. Correct document errors found as a result of completing parts a, and b.(See Section III.D – *Damage Prevention* of this Report).
8. For individuals such as the Contract Locator whose presence is not needed for the emergency response, Spire should initiate collection of alcohol and drug testing specimens as soon as possible following an incident. (See Section III.E – *Drug and Alcohol Testing* of this Report).
9. To the extent that Spire has personnel available who can perform the required tasks, Spire should utilize personnel who were not directly involved in the incident to perform the emergency response actions and expedite collection of drug and

alcohol specimens for personnel whose actions cannot immediately be ruled out as causing or contributing to the severity of an incident. (See Section III.E – *Drug and Alcohol Testing* of this Report).

10. Staff recommends that Spire reevaluate all curb valve or manual service line shut-off valve locations within the Spire Missouri East service territory for inclusion within the Company's curb valve inspection program based on the following criteria:

- a. The curb valve is not currently included within the Company's curb valve inspection program.
- b. The curb valve serves a gas service line that has an inside gas meter set.
- c. The gas distribution main that supplies gas to the curb valve and service line under consideration has multiple feeds to the area and it would take the Company more than eight (8) hours to restore lost gas service after closure of the main line valves and restoration of system pressure.
- d. For curb valves that can't be located within the gas distribution system as they are no longer accessible and items b) and c) above apply, the installation of a new curb valve or manual service line shut-off valve would be required for the service line. The Company would then evaluate the inclusion of the new curb valve within its' curb valve inspection program.

If for any recommendation Spire believes no action is necessary, Staff recommends the Commission order Spire to explain, and provide supporting documentation as available, the reason(s) Spire believes no action is required.

Additionally, Staff requests Commission authorization to submit a redacted (public) copy of this investigation report to the Missouri Attorney General's Office ("AGO") as information that may be used in the event the AGO wishes to take further action as provided in Section 319.045, RSMo.





