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Missouri Public Service Commission

MEMORANDUM

TO: Missouri Public Service Commission Official Case File
Case No. GO-99-155, Laclede Gas Company

FROM: Michael J. Loethen, Gas Department – Gas Safety

Utility Operations Division / Date

General Counsel's Office / Date 4/30/99

DATE: April 30, 1999

SUBJECT: Initial Staff Update Report Pertaining To An Investigation Into Laclede's Leak Survey And Copper Service Line Replacement Program.

BACKGROUND:

On October 30, 1998, the Missouri Public Service Commission (Commission) issued an Order Establishing Case, which created Case No. GO-99-155 for the purpose of receiving information relevant to the adequacy of Laclede Gas Company's (Laclede or Company) copper service line replacement program and the effectiveness of the Company's leak surveys and investigations. On December 4, 1998, the Commission's Gas Department – Gas Safety (Staff) filed a Motion for Modification of Order Establishing Case. Among other things, the purpose of the Staff's filing was for the Commission to clarify its order to reflect that the investigation in Case GO-99-155 was not a standard incident investigation, remove the investigation deadline, and modify the method of reporting to the Commission.

Subsequently, the Commission issued an Order Modifying Order Establishing Case, which ordered the Staff to file, no later than April 30, 1999, an update to Case No. GO-99-155. In response, the Staff has prepared this memorandum which constitutes its investigation and report to date.

INTRODUCTION:

Creation of Case No. GO-99-155

Two Staff Gas Incident Reports (Report(s)) involving Laclede, Case No. GS-98-422 (Pralle Lane) and Case No. GS-98-423 (Bergerac Drive) were filed on October 13, 1998. Staff's investigation into these cases initiated the creation of Case No. GO-99-155. The Staff made several recommendations in both Reports. Because similar issues existed in both cases i.e., adequacy of leak surveys and corrosion on direct-buried copper service lines, some Staff Recommendations in the Reports were similar. Therefore, any Laclede actions taken to satisfy the similar Staff Recommendations are also addressed in this report.

9.

STAFF INVESTIGATION / REPORT:

For purposes of this report, SECTION I describes the actions taken by Laclede and the events that have occurred since March 1998. SECTION II contains the Staff's evaluation of Laclede's actions. Finally, this update report will conclude with Staff's recommendations, and a proposal for submitting a final report to resolve this docket.

Brief Summary

Based upon the information gathered to date, the Staff believes a long-term systematic copper service line replacement program is warranted. The Staff anticipates that upon completion of a Company initiated combustible gas indicator (CGI)/bar-hole leak detection survey (Scheduled to be done by July 1999), a final Staff report will be submitted to the Commission by August 31, 1999. This final report will detail a long-term systematic copper service line replacement program, and the actions Laclede has taken to satisfy any pending Staff recommendations, complaint issue(s), or any related issues to the leak surveys and replacements of direct-buried copper service lines.

SECTION I **Actions Implemented or Completed by Laclede**

A. Identifying the Total Number of Direct-buried Copper Services

The Staff reported in 1992 that Laclede had over approximately 78,000 direct-buried copper service lines operating within its natural gas distribution system. In the two Reports filed on October 13, 1998, the Staff estimated that over 70% of this total number of direct-buried copper services were still in operation at the time of two incidents. As of April 1, 1999, Laclede has verified to the Staff that the actual number of direct-buried copper service lines in their natural gas operating system is 85,158.

Actual number of direct-buried copper service lines

This 85,158 number represents any service line that was installed from distribution main to meter as a direct-buried copper service line and has not been completely replaced, (main to meter). Therefore, any partially replaced direct-buried copper service line is included in this number. The discrepancy between the estimated numbers previously reported by the Staff and the actual number provided by Laclede on April 1, 1999, resulted from a comprehensive review of the Company's service line database, which comprised, in part, information from leak repair tickets and Systematic Service Inspection records.

B. Ringer Road Settlement

Three prior incidents were believed to have resulted from de-icing salts corrosively attacking Laclede's copper service lines. These were resolved in a Joint Settlement Agreement, approved March 1991, often referenced as the

"Ringer Road" incident. In this report, "Ringer Road Settlement" will be used to represent this settlement agreement.

Current Replacement Pace- Approx. 3,500 direct-buried copper services per year (main to meter)

Pursuant to the Ringer Road Settlement, Laclede has committed itself to replace a specified number of direct-buried copper service lines (identified prior to the settlement agreement), plus any adjacent service lines believed to be installed in actively corrosive soil. The Commission allowed Laclede to replace the direct-buried copper service lines identified in the Ringer Road Settlement over a 10-year period ending in March 2001. A total of 9,709 direct-buried copper service lines were identified for replacement, which includes the previously mentioned adjacent service lines. As of February 1, 1999, 2,665 direct-buried copper service lines have been replaced. **By March 15, 2001, Laclede is required to replace 7,044, or 3,522 per year, direct-buried copper service lines in known areas of active corrosion.** Of the 2,665 direct-buried copper service lines that have been accounted for as being replaced under the Ringer Road Settlement, a number of these service lines were only partially replaced, and remain accounted for in the total number of 85,158 direct-buried copper service lines mentioned above. Partial replacements were allowed as part of the Ringer Road Settlement.

C. Meeting the Ringer Road Settlement

Laclede has temporarily assigned 31 employees to the Company's Construction and Maintenance Department (C&M) from the Service and Installation Department (S.A.I.D.) and the Gas Supply and Control Department (GS&C). By allocating these 31 employees after January 1, 1999, to replacing direct-buried copper service lines, Laclede proposes that the replacements required in the Ringer Road Settlement, will be satisfied.

D. Training, Leak Surveys, and Monitoring and Prioritizing Leaks

1. TRAINING

In the time period June 1998 through March 1999, Laclede has modified its leak investigation procedures and has provided additional training and/or instructions relating to leak surveys to appropriate Company personnel. Below is a listing of these modifications.

Items a. & b. conducted from June – November 1998

a. S.A.I.D. personnel were provided refresher training, stressing the importance of leak checks in the sanitary sewers during leak investigations. This same department was also instructed to specifically ask persons reporting outside leak notifications whether natural gas odor has been detected inside the structure. (These items were recommended by the Staff in the Pralle Lane Report.)

b. The Company's C&M leak survey personnel were instructed on the use of instruments, documentation of surveys and proper survey techniques. (This

refresher training was recommended by the Staff in both the Pralle Lane and Bergerac Drive Reports.)

c. Systematic Service Inspection forms (SSI also referenced as Form 712) were modified to include the location of the main and service tee locations of the service lines. A Form 712 is constructed for each service line, and its information is generated on a computer card printout for leak surveyors to physically take with them while conducting leak surveys. (Providing these reference measurements on the Company's Form 712 was recommended by the Staff in the Pralle Lane and Bergerac Drive Reports.)

Providing service line tee locations enhance leak surveyors' abilities for more accurate leak surveys.

During January 1999 Company personnel conducting the SSI surveys were given instructions with regards to the modified Form 712. In addition, these individuals were reminded of the Company procedures addressing leak surveys during periods in which weather and soil conditions could impair venting of leaking natural gas. (This was recommended by the Staff in both the Pralle Lane and Bergerac Drive Reports.)

d. Laclede instructed their leak investigation personnel to identify any leaking service tee with the actual address it serves. Prior to this, a leak surveyor would identify a leak with the closest address. This resulted in leaks being identified by the house address across the street from the actual house being served by that service line. A database entry is then made, identifying a copper service line corrosion leak to a customer address that might have a service line made of material other than direct-buried copper piping. Ultimately, the leak, which would appear to be on a service line of material other than direct-buried copper, would not be used in determining known areas of active corrosion.

e. A manufacturer representative conducted training for the Company' s C&M leak survey personnel. This training included field observations and evaluations of Company personnel while conducting service line leak surveys, and an interactive classroom presentation.

2. LEAK SURVEYS

a. A flame ionization (FI)[1] leak detection survey covering over 13,000 service lines in known areas of active corrosion was conducted after the Pralle Lane and Bergerac Drive incidents occurred.

[1] A FI instrument can detect as little as one (1) part per million in an air sample. This unit is normally held inches above the ground surface while the leak surveyor walks over the facilities and is usually not assisted by bar-holes. A CGI unit measures a percentage of natural gas in the sample. The CGI unit, in most instances, is assisted by bar-holes when sampling below-grade.

b. Following an incident that occurred on February 22, 1999, still under investigation by the Staff (Case No. GS-99-371), the Company conducted two leak investigation surveys over approximately 599 service lines in the area of the incident. The first leak survey employed the use of only a FI leak detection unit. The second required bar-holes to be placed over the service tap, service riser and opposite street-side (for "long-sided" service lines) before sampling the subsurface atmosphere with a CGI.

c. Laclede initiated a CGI/bar-hole survey comprising all 85,158 direct-buried copper service lines. Two bar-holes, one at the service riser, another at the service tee location, will be made on "short-sided" service lines. Three bar-holes will be made on "long-sided" service lines; an additional bar-hole will be made at the street curbside, opposite of the service tap location. Laclede has committed that this survey will be completed in July 1999.

Initially, operating pressures in the applicable distribution systems were left at settings simulating winter load capacities during the CGI/bar-hole survey. These winter simulated operating pressures were lowered in April 1999.

d. Annually, the Company generates and distributes to each operating district the SSI cards, identifying service lines to leak survey for the year. This FI leak survey has been and will continue to be conducted as scheduled, regardless of any service lines being already incorporated within one of the above mentioned leak surveys.

e. For any generated service order involving work on a customer's premise where a direct-buried copper service line is operating, Laclede S.A.I.D. personnel will conduct a two bar-hole (for "short-sided" service lines) or three bar-hole (for "long-sided" service lines) leak detection survey.

3. MONITORING AND PRIORITIZING LEAKS

Any leak detected by the Company's C&M leak and drip inspectors (LDI) will be logged into the system database immediately. These LDI personnel conduct Laclede's SSI leak detection surveys. Before, Form 712 tickets were completed and held by the surveyor until submitting to a supervisor at the end of the day, for all detected Class 3 leaks.

All "unclassified" outside odor notifications are logged into the Leak Control System at the time they are dispatched. The Leak Control System associates an identification number with each of these individual notifications. All other leaks found by S.A.I.D. personnel during leak investigations are logged immediately. (This procedural modification relates to the Staff recommendation in the Pralle Lane Report where the Company take actions to "remedy the recurrence of losing or inappropriately filing a Class 3 leak,...")

Laclede has purchased cellular phones for its leak investigators and leak surveyors

To expedite an immediate assignment of a leak control number, the Company has purchased cellular phones for its S.A.I.D. personnel and has ordered cellular phones for its LDI personnel. S.A.I.D. personnel respond to outside odor notifications from the public and conduct most "service" work on customers' premises. LDI personnel conduct all SSI leak detection surveys. Previously, these leak surveyors physically left the leak scene to find a public telephone for reporting a Class 1 or Class 2 leak to the Company dispatcher.

As mentioned above, Laclede conducted a comprehensive review of its service line system database in March 1999 to more accurately identify the total number of direct-buried copper service lines. The Company believes these procedural modifications will more accurately identify and monitor leaks found on direct-buried copper service lines. This ability, accompanied by more detailed maps and prioritizing of existing leaks, will be utilized to identify and give precedence to areas in Laclede's distribution system needing replacements of direct-buried copper service lines. The Company proposes accurate estimates of direct-buried copper service line replacements, employee allocation, and equipment requirements will be completed after evaluating the results of the CGI/bar-hole survey (July 1999).

SECTION II Staff's Evaluation

A. Staff Actions

The Staff has made several on-site observations of Laclede's operations and has had numerous discussions with Company personnel, ranging from field operations to administration. On-site observations have allowed the Staff to monitor proposed modifications in actual operation. During the entirety of the Staff's investigation and evaluation, safety has always been the overall objective. The Staff will continue to evaluate the adequacy of the Company's copper service line replacement program for those direct-buried copper service lines identified as leaking and those existing in known areas of active corrosion, and a long-term systematic replacement schedule. This will continue until a resolution of Case No. GO-99-155 is reached.

With all that is stated in SECTION I, Laclede's completed efforts can be summarized into improvements made in the following areas:

- Training of personnel;
- Modification of Company forms and procedures for better documentation and reporting of leaks;
- Providing cellular phones to appropriate personnel thus minimizing the effect of losing leak tickets and increasing efficiency of Company personnel reporting detected natural gas leaks;

Known improvements

- More accurately accounting for all direct-buried copper service lines;
- Conducting additional surveys over direct-buried copper service lines; and,
- Increasing the annual number of direct-buried copper service line replacements in accordance with the requirements of the Ringer Road Settlement, established in March 1991.

Although Laclede has made progress, the Staff believes other items remain undetermined and will be investigated and evaluated further. Some of these undetermined items are:

Items still under investigation and evaluation

- Effects of elevated operating pressures on leaking copper service lines;
- Specifically identifying those copper service lines with active corrosion, and determining the rate of the corrosion;
- The results of Staff's investigation in Case No. GS-99-371. (Staff Gas Incident Report due to be filed July 6, 1999);
- Identifying corrosive soil conditions;
- Laclede's long-term commitment to replacing direct-buried copper service lines; and,
- The allocation of Company resources to maintain an extended replacement program, additional surveys, and any potential increase in customer inquires and/or complaints.

B. Satisfying Pralle Lane and Bergerac Drive Recommendations

In the Pralle Lane Report, three Staff Recommendations were specific in directing Laclede to modify its current procedures and operations. Each of the three have been satisfied and are delineated below. In the Bergerac Drive Report, the Staff made two recommendations requesting the same implementation of Company actions as in the Pralle Lane Report and are identified below.

1. PROVIDE ACCURATE REFERENCE MEASUREMENTS

a. This has been satisfactorily met, based upon the Staff's observations. Through its evaluation, the Staff understands that the reference measurements are only as accurate as the installation records show.

b. Main and tee locations are now shown on SSI forms. These leak surveys are conducted by the Company' s C&M leak survey personnel, also identified as LDI personnel.

c. The Company has also provided service line locations and material information to S.A.I.D. personnel during service order visits.

The Staff believes these items have satisfactorily met the requirements of Recommendation 1. in both the Pralle Lane and Bergerac Drive Reports. SECTION I, D above further details the Company's actions in response to these recommendations.

2. IMPLEMENTATION OF A TRAINING REVIEW

a. The Staff witnessed a Company refresher-training course held in early October 1998. A presentation was provided, followed by a quick-guide training video explaining the general operations and servicing of the FI leak detection instrument used primarily by SSI leak surveyors. The video briefly discussed and cautioned use of the instrument during certain weather conditions. The Staff believed a more advanced training program was warranted. Greater detail was needed describing fluctuations in the FI instrument's operations during ideal weather conditions and conditions potentially impairing the FI instrument's operations.

   In addition, personnel were also instructed on using the reference measurements (shown on Form 712) to more accurately locate the main and service line facilities.

Leak survey training

b. The Company contacted the manufacturer of the FI instrument to provide training to leak survey personnel. A representative of the manufacturer visited Laclede for two days in March 1999. The Staff accompanied the manufacturer representative while he observed and evaluated Company employees conducting SSI leak surveys. The manufacturer representative provided one-on-one advice and tips to the Company SSI leak surveyors. In addition, the manufacturer representative gave a classroom presentation discussing and demonstrating the leak survey techniques he observed of Company personnel.

   The Staff believes the training provided by the manufacturer representative should be provided to any future Company employee conducting leak surveys.

   As a refresher course, the video was sufficient in addressing the general use of the FI instrument. But, the personal training more appropriately addressed the detailed issues that arise during leak surveys and allowed questions to be addressed by someone with background knowledge of the FI instrument.

c. SECTION I, D above, described, in part, the training provided to the Company's S.A.I.D. personnel. Stressing the importance of checking the sanitary sewers, and asking respondents of outside odor notifications whether they detect gas inside the structure were specific items addressed in the Pralle Lane Report Recommendation 2. This training coupled with the

training identified above satisfies Recommendation 2. in both the Pralle Lane and Bergerac Drive Reports.

3. PREVENT LOSING OR INAPPROPRIATELY FILING A CLASS 3 LEAK

a. In the Pralle Lane Report the Staff recommended that Laclede review and revise, as necessary, its procedures and processing of Form 712 tickets when a Class 3 leak is detected. As part of its investigation, the Staff reviewed the Company's reporting and investigating procedures of Class 1, 2, & 3 leaks. The Staff believed that some type of communication device should be available to Laclede personnel conducting leak investigations and leak surveys. As previously mentioned in SECTION I., Laclede personnel were required to leave the scene of the detected leak to report a Class 1 or 2 leak.

The Company has committed to purchasing cellular phones for S.A.I.D. and LDI personnel. In addition, Laclede has implemented a mechanism to track certain leak notifications to verify a Form 712 ticket has been completed and entered into the computer for that particular leak. These actions are believed to be adequate in satisfying Recommendation 3. in the Pralle Lane Report, but Staff evaluations will continue to be made until Case No. GO-99-155 is closed.

SUMMARY, SCHEDULE, AND FURTHER RECOMMENDATIONS:

Staff's final report will be submitted by August 31,1999

Based upon the information gathered to date, the Staff believes a long-term systematic replacement program is warranted. The Staff proposes that upon completion of a Company initiated CGI/bar-hole leak detection survey, ending in July 1999, a final report be submitted by the Staff to the Commission on or before August 31, 1999. The final report will detail a long-term systematic replacement program, and the actions Laclede has taken to satisfy any pending Staff recommendations, complaint issue(s), or any related issue to the leak surveys and replacement of direct-buried copper service lines.

As part of its continued investigation, the Staff will request that Laclede provide monthly assessments of the CGI/bar-hole survey scheduled for completion in July 1999. Laclede has invited the Staff to review the results of the CGI/bar-hole survey and to discuss an enhanced copper service line replacement program. Laclede has also proposed an additional CGI/bar-hole survey to be initiated in March 2000 over all direct-buried copper service lines.

The Company proposes accurate estimates of future replacements, appropriate employee resource allocation, and equipment requirements will be completed after completing an evaluation of the CGI/bar-hole survey results (July 1999). At that time, the Staff believes it will be in better position to assess the capabilities and resources of Laclede, and their proposed replacement schedule.

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