BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Verified Application of Laclede Gas Company for an Order Establishing Replacement Requirements for The Final Phase of its Soft Copper Service Line Replacement Program Previously Approved Pursuant to Case No. GO-99-155	)))))	Case No. GS-2008-0038

AFFIDAVIT OF RICHARD A. FENNEL

STATE OF MISSOURI)
)
COUNTY OF COLE)

Richard A. Fennel, employee of the Missouri Public Service Commission, being of lawful age and after being duly sworn, states that he has participated in the preparation of the accompanying Staff Report and that the facts therein are true and correct to the best of his knowledge and belief.

Richard A. Fennel

Subscribed and sworn to before me this 11th day of September, 2008.

NOTARY PUBLIC SEAL STATE OF MISSOURI

SUSAN L. SUNDERMEYER
My Commission Expires
September 21, 2010
Callaway County
Commission #06942086

NOTARY PUBLIC

STAFF'S REPORT IN RESPONSE TO THE COMMISSION'S ORDER FOR STAFF TO CONTINUE ITS ANNUAL REPORTING TO THE COMMISSION IN CASE NO. GS-2008-0038

September 11, 2008

Attachment

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Background

On October 30, 1998, as a result of three natural gas incidents in Laclede Gas Company's operating area, the Commission issued an Order Establishing Case No. GO-99-155 for the purpose of receiving information relevant to the adequacy of Laclede Gas Company's (Laclede or Company) direct-buried copper service line replacement program and the effectiveness of the Company's leak survey procedures and investigations. The Staff investigated Laclede's replacement program and its leak survey procedures and reached an agreement with Laclede concerning a schedule for direct-buried soft copper service line replacement and the type and frequency of leak surveys. The Parties filed a Unanimous Stipulation and Agreement ("Agreement"), which was approved by the Commission in Case No. GO-99-155 on May 30, 2000.

As part of the Agreement, Laclede agreed to the annual replacement rate of 8,000 direct-buried copper service lines. In addition, Laclede agreed to submit annual reports to Staff detailing direct-buried copper service line replacements completed, and agreed to submit additional reports confirming the achievement of other milestones under the Agreement.

On August 1, 2003, Staff filed its Three-Year Summary Report in which Staff requested the Commission approve continuation of the requirements of the Agreement, with Staff reporting to the Commission annually. In its summary, Staff stated that the requirements of the Copper Service Line Replacement Program reflect the overall goals of protecting the public, achieving a substantial number of replacements annually, using effective leak detection methods, and the timely elimination of discovered leaks. Staff verified that Laclede met or exceeded the guidelines of the Agreement and that the crucial goal of public safety was being maintained. The Commission issued its Report and Order in March 2004 adopting Staff's recommendation that the Commission

continue the current requirements of the previously approved Stipulation and Agreement with annual reporting from Staff.

Since 2003, Staff filed Annual Reports updating the status of Laclede's direct-buried copper service line replacement program and leak surveys. In each year's Annual Report, Staff stated that Copper Service Line Replacement Program reflected the overall goals of protecting the public, achieved a substantial number of replacements annually, used effective leak detection methods, and timely eliminated discovered leaks. Each year Staff verified Laclede has met or exceeded the guidelines of the Agreement and that the crucial goal of public safety is being maintained.

On August 8, 2007, Laclede filed an application in this case (Case No. GS-2008-0038) requesting the Commission issue an Order revising replacement requirements set forth in Case No. GO-99-155.

In its Application, Laclede requested a reduction in the number of direct-buried soft copper service lines it is required to replace annually from 8,000 to 6,000 due to a significant reduction in the copper service line leak rate, increased integrity of the copper service lines remaining in service and increased costs of replacing the remaining copper lines. In addition, to the costs, Laclede noted the remaining copper service lines are scattered throughout high traffic areas or in locations where construction is difficult. Laclede further proposed to accelerate the replacement of those soft copper service lines that are located in Pressure Region I so that all remaining lines are replaced by the end of program year 9, which concludes in February 2009. In its Application, Laclede also noted this approach had been approved in the later stages of previous replacement programs.

On August 17, 2007, the Commission issued its Order directing Staff to file its recommendation in Case No. GS-2008-0038, no later than September 6, 2007.

On September 6, 2007, Staff filed its recommendation concerning Laclede's Application, suggesting the Commission issue an Order revising replacement requirements set forth in Case No. GO-99-155. In its recommendation, Staff indicated that Laclede's request is consistent with the goal of the program of assuring public safety and recommended establishing an accelerated replacement deadline of February 2009 (one year earlier than would have occurred in the original program) for all direct-

buried soft copper service lines in Pressure Region I. Staff made this recommendation because Pressure Region I is the area in which the previous incidents occurred and this area has the greatest present potential for additional leaks. Staff also suggested Laclede be required to replace 7,000 soft copper service lines annually, continue annual bar-hole leak surveys and comply with the guidelines set forth in the original Stipulation and Agreement. Staff noted that the overall average replacement rate for the duration of the program would still be approximately 8,000 service line replacements per year if Laclede followed Staff's recommendations. Staff also recommended the Commission allow Laclede the right to seek additional modifications in 2008 upon completion of the next leak survey.

On September 13, 2007, Laclede filed its response to the Staff Recommendation. Laclede stated it is willing to accept the modified replacement program terms as set forth in Staff's Recommendation and reserved the right to renew its request for additional modifications in terms of the program in 2008 upon completion of its next leak survey of direct-buried copper service lines.

On September 20, 2007, the Commission issued its Order: 1) directing Laclede to continue to meet all requirements of the Original Stipulation and Agreement; 2) permitting Laclede to reduce the number of direct-buried soft copper service lines from 8,000 to 7,000 lines annually, beginning in February 2008; 3) establishing an accelerated replacement deadline for all direct-buried soft copper service lines in Pressure Region I of February 2009; 4) continuing its requirement for Staff to report to the Commission annually and, if at any time the leakage rate increases or Staff determines that public safety is compromised, Staff shall immediately present this information to the Commission and recommend appropriate remedial action.

Report Overview

The report summarizes data obtained through August 2008 during Staff's ongoing monitoring of the program's progress, addresses information relevant to the adequacy of Laclede's revised copper service line replacement program, and discusses the effectiveness of the Company's leak surveys and investigations. For purposes of

this report, Staff will touch upon the major points of Laclede's program. The program does appear to be yielding positive results.

Staff Investigational/Annual Report

1. Copper Service Line Replacements

During program year eight (8) (12 months ending March 1, 2008), Laclede completed a total of 7,330 direct-buried copper service line replacements (main-to-meter). During the first eight (8) years of the program, Laclede has completed a total of 65,735 direct-buried copper service line replacements, which represents approximately 85 percent (85%) of the program's beginning total qualifying service lines (76,966). Approximately 96 percent (96%) of the copper service lines have been replaced in Pressure Region I. Through the end of program year eight (8), Laclede has averaged 8,217 direct-buried copper service line replacements each year, which exceeds the original Agreement's requirement for annual replacement of 8,000 direct-buried copper service lines. The annual replacement rate was reduced to 7,000 copper service lines during the program year ending February 2008. Details regarding the copper line replacements from 1999 through March 1, 2007 can be found in the Summary of Prior Years Actions section of this report.

Conclusion: The annual replacement rate (i.e. approximately 10% annually), based upon priority, with increased frequencies of leak surveys, continues to be successful, and unless otherwise ordered by the Commission, the revised annual requirement of a minimum of 7,000 direct-buried copper service line replacements (main-to-meter) should continue. Also, the accelerated replacement rate of copper service lines in Pressure Region I should be maintained. The results of the replacement program are a substantial annual reduction in the number of direct-buried copper service lines in the system, especially in Pressure Region I, and a reduced leakage rate (through the first seven (7) years of the program) for the remaining lines to be replaced.

2. Bar-hole Leak Surveys

Laclede conducted its 2008 bar-hole leak survey during the months of March - July 2008. Laclede personnel conducted a bar-hole leak survey over 854 direct-buried

copper service lines in Pressure Region I and conducted a bar-hole leak survey over 15,222 direct-buried copper service lines in Pressure Region II for a total of 16,076 direct-buried copper service lines bar-hole leak surveyed in 2008. Five new leaks were found in Pressure Region I and eighty new leaks were found in Pressure Region II for a total of eighty-five new leaks found during the 2008 direct-buried copper service line bar-hole leak survey. The eighty-five new leaks found during the 2008 bar-hole leak survey represents a 0.53 percent (0.53%) leak rate for the 2008 survey, which is a reduction from the leakage rate of 0.65% found during the 2007 survey. The leakage rate for new leaks discovered on copper service lines has decreased 84% since the beginning of the program.

Conclusion: While the bar-hole method for leak surveying demands more personnel time and effort, it is Staff's opinion that this method is far superior to other methods for detection of small leaks that might otherwise have gone undetected. The requirement for Laclede to use this superior method of leak detection, coupled with conducting the surveys on an annual basis, helps achieve the program goals of: (1) early detection before the leak becomes hazardous and (2) prioritization of replacements. This procedure exceeds MoPSC minimum pipeline safety regulations that require 3-year leak surveys on most residential service lines.

For these reasons, the Staff recommends Laclede continue to conduct an annual bar-hole leak survey of direct-buried copper service lines.

3. Leak Repairs

Expediting the repair of all leaks found during a bar-hole leak survey prior to conducting the subsequent year's bar-hole leak survey continues to enhance the downward trend in detected leaks during subsequent annual bar-hole leak surveys. Class 1 and 2 leaks are repaired immediately, and, in accordance with the Agreement, Class 3 leaks (considered non-hazardous) detected during an annual bar-hole leak survey are required to be repaired within six (6) months of discovery in Pressure Region I and within one (1) year of discovery in Pressure Region II. Laclede continues to exceed the requirements in the Agreement by repairing Class 3 leaks in Pressure Region I within an average time of approximately three (3) months from discovery and

within an average time of approximately seven (7) months from discovery in Pressure Region II. The guideline in the Agreement exceeds MoPSC minimum pipeline safety regulations that require Class 3 leaks to be monitored every six (6) months until repaired (within 5 years of discovery).

All locations of detected leaks, along with other historical information, are used in a prioritization model for identifying replacement areas in a consistent manner and prioritizing the scheduling of these areas for replacement. It is critical that any upward trends in new leaks on replacement program pipelines be identified promptly, as upward trends can point to the need to refocus efforts to meet the program's goals and objectives of proper prioritization of leak replacements.

Conclusion: Annual bar-hole leak surveys provide better information to detect any upward trends in leakage rate totals and, the requirements in the Agreement calling for annual bar-hole surveys and for Class 3 leaks in Pressure Region I to be repaired within six (6) months and Class 3 leaks in Pressure Region II to be repaired within one (1) year should be continued.

Recommendations

The requirements contained in the Agreement are the three-point foundation of Laclede's current direct-buried copper service line replacement program.

- Priority Replacements. The annual requirement to replace 7,000 (approximately 10%) of the direct-buried copper service line replacements (main-to-meter) should be maintained, unless otherwise ordered by the Commission. Also, the accelerated replacement rate (to be completed February 2009) of direct-buried copper service lines in Pressure Region I should be maintained.
- Leak Surveys. The Staff recommends that Laclede continue to conduct an annual bar-hole leak survey of direct-buried copper service lines.
- Timely Elimination of Discovered Leaks. The Staff recommends the requirements in the Agreement calling for Class 3 leaks in Pressure Region to be repaired within six (6) months and Class 3 leaks in Pressure Region II to be repaired within one (1) year be continued.

The program has been in place for over 8 years. A substantial number of direct-buried soft copper services have been replaced or eliminated, with almost all (96%) of those in Pressure Region I being eliminated. The leakage rate (calculated from annual bar-hole surveys) for direct-buried soft copper service lines has steadily decreased over the last 8 years of the program.

Priority replacements, leak surveys, and timely elimination of discovered leaks must be considered together in order to achieve the purpose of the Agreement, which is protection of the public's safety, and each, must therefore, complement the other. At this time, Staff believes that the efforts of the parties in meeting the Agreement's requirements are achieving this purpose, and this is supported by the results discussed in the preceding report.

For the term of this program, Staff has and will continue to monitor the effectiveness of Laclede' direct-buried copper service line replacements and leak surveys. If at any time, Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission.

Summary of Prior Years Actions

1. Copper Service Line Replacements

Laclede replaced or eliminated a total of 58,405 direct-buried copper service lines during the first seven (7) years of the program, which represents approximately 75 percent (75%) of the program's beginning total qualifying lines (76,966). The Agreement requires Laclede to replace or renew 8,000 lines annually (revised to 7,000 during program year eight) and Laclede has exceeded the annual required rate of renewals. Laclede was permitted, under the terms of the Agreement's replacement requirements, to do partial replacement of certain copper service lines. However, during the beginning of the second year of the program, Laclede discovered efficiencies and benefits in conducting full main-to-meter replacements and since that time (including the second year of the program) has been replacing, main-to-meter, over 8,200 copper service lines each year. Staff, in the previous annual reports has

recommended, unless otherwise ordered by the Commission, that Laclede continue to renew (main-to-meter replacement) a minimum of 8,000 direct-buried copper service lines annually (revised to 7,000 annually during program year eight).

2. Bar-hole Leak Surveys

Laclede successfully completed an annual bar-hole leak survey for each of the first six (7) program years, with each survey completed by July 1st of each year. In 1999, Laclede first completed a bar-hole leak survey producing a 3.4 percent (3.4%) leak rate. Laclede's 2002 bar-hole leak survey, of approximately 60,000 direct-buried copper service lines, produced a leak rate of 1.1 percent (1.1%). The reduction in leak rate from 1999 to 2002 was approximately a 68 percent (68%) reduction in discovery of new leaks during annual bar-hole leak surveys. Laclede's 2003 bar-hole leak survey of approximately 52,000 direct-buried copper service lines yielded a new leak discovery rate of slightly over one (1) percent (1.06%), but still below Year 2002 new leak rates. Laclede's Year 2004 bar-hole leak survey of approximately 44,624 direct-buried copper service lines yielded a total of 409 leaks, which represents a 0.92 percent (0.92%) leak rate for the 2004 survey and a 72 percent (72%) decrease in the leak rate since the beginning of the program. Laclede's Year 2005 bar-hole survey of approximately 37,557 direct-buried copper service lines yielded a total of 284 leaks, which represents a 0.76 percent (0.76%) leak rate, which is slightly less than the 2004 leak rate. This equates to a 78 percent (78%) decrease in the leak rate since the beginning of the program. Laclede's Year 2006 bar-hole survey of approximately 30,772 direct-buried copper service lines yielded a total of 201 leaks, which represents a 0.65 percent (0.65%) leak rate, which is slightly less that the 2005 leak rate. Laclede's Year 2007 bar-hole survey of approximately 23,046 direct-buried copper service lines yielded a total of 150 new leaks, which represents a 0.65 percent (0.65%) leak rate, which is the same as the 2006 leak rate. This equates to an 81 percent (81%) decrease in the leak rate since the beginning of the program. As reported in Staff's August 2003 Three-Year Summary Report, and Staff's 2004, 2005, 2006 and 2007 Annual Reports, results from bar-hole leak surveys have shown a continuing downward trend in the leak discovery rate (percentage) of new leaks discovered on copper service lines.

The Agreement mandates practices that provide for early leak detection on direct-buried copper service lines. Therefore, the Staff has recommended that, as it pertains to leak surveys, Laclede continue to perform an annual bar-hole leak survey. The Agreement specifically states that an annual bar-hole survey shall be conducted for the first three (3) program years. Because, at the time of Staff's Three-Year Summary Report, and 2004, 2005, 2006 and 2007 Annual Reports, no other testing method had been shown to be superior in the detection of sub-surface leaks than strategically placing bar-holes over certain service line locations and conducting a leak survey, the Staff continued to recommend that the annual bar-hole leak surveys continue.

3. Leak Repairs

Any Class 1 or 2 leak is repaired immediately. Otherwise, in accordance with the Agreement, leaks detected during an annual bar-hole leak survey are required to be repaired within six (6) months, or at the latest, within a year of discovery, depending on whether the leaks are located in Pressure Regions I (direct-buried copper service lines that can operate above 35 psig) or II (these same service lines operate below 35 psig). These leak repair requirements are more stringent than MoPSC Pipeline Safety Regulations, which generally require that Class 3 leaks, which are not considered to be a hazard, be monitored every six (6) months and repaired within five (5) years.

For the first three (3) years of the program, Laclede repaired most Class 3 leaks in Pressure Region I within an average time of three (3) to four (4) months after discovery, instead of the six (6) months allowed under the Agreement. During the fourth, fifth, sixth and seventh year of the program, Laclede repaired Class 3 leaks in Pressure Region I within an average time of three (3) months (down from the first three (3) years of the program). While the Agreement requires Class 3 leaks in Pressure Region II to be repaired within one (1) year of discovery, Laclede averaged seven (7) to nine (9) months for these repairs during the first three (3) years of the program. During the fourth, fifth, sixth and seventh year of the program, Laclede was repairing Class 3 leaks in Pressure Region II within an average time of seven (7) months (down from the first three (3) years of the program).

Making timely repairs prior to the subsequent bar-hole leak survey: (1) provides for more accurate studies of data; (2) facilitates determination of leak trends in leak totals; and (3) improves detection of differences in areas where corrosion may be more or less active. For these reasons, Staff recommended maintaining the timely repair requirements of six months for Pressure Region I leaks, and one year for Pressure Region II leaks, as stated in the Agreement.