

Audit

Follow-up

As of September 30, 2008



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Gas Infrastructure

(Report #0727 issued September 13, 2007)

Report #0904

December 10, 2008

Summary

Twenty-one of the 25 action plan steps due as of September 30, 2008, have been completed or resolved. Action to address the four remaining steps has been initiated.

In audit report #0727 we noted that, overall, the City has adequate and proper processes and procedures to ensure a safe and reliable infrastructure. We also noted that significant improvements and enhancements had been and were being made in regard to accounting for and tracking that infrastructure. We reported that installations of new infrastructure met federal and state requirements and that expansions and replacements were planned and funded. We reported that an effective public protection program was established. However, we also identified areas where improvements and enhancements were needed. Accordingly, recommendations were made to install an additional isolation valve, accurately designate critical valves in the Gas Utility geographic information system (GIS), develop a project management plan for refinement of the Gas Utility's GIS, protect stored pipe from environmental elements, ensure timely repair of non-critical leaks, and enhance monitoring of system pressures at a satellite utility facility. Recommendations were also made to improve documentation in several areas, including infrastructure testing and inspection, leak identification and repair, emergency notifications and responses, and other areas.

Twenty-seven action steps were developed to address the identified issues, for which 25 were due for completion prior to or as of September 30, 2008.

In our first follow-up report (#0810), we reported that 14 of those 25 action plan steps had been completed as of March 31, 2008. During this follow-up engagement, we found that seven of the 11 remaining steps were completed and actions had been initiated to address the four uncompleted steps.

Actions that were initiated and/or completed during the six-month period addressed by this follow up engagement included:

- Protecting stored pipe and fittings from direct sunlight to preclude ultraviolet degradation.
- Improved records and monitoring related to leak repairs and cathodic protection.
- Improved retention of support for, and management review of, performance measures reported to the DMA Office of Budget and Policy.

We appreciate the cooperation and assistance provided by Underground Utility and MSC staffs during this audit follow-up.

Scope, Objectives, and Methodology

We conducted this audit follow-up in accordance with the International Standards for the Professional Practice of Internal Auditing and Generally Accepted Government Auditing Standards. Those standards require that we plan and perform the audit follow-up to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit follow-up objectives.

Report #0727

The scope of report #0727 included a review of the Gas Utility's processes established to install (construct), maintain, protect, and account for the City's gas infrastructure. The objectives were to determine whether:

- Adequate and complete records were maintained to enable the Gas Utility to effectively and efficiently track, monitor, and manage the City's gas infrastructure;
- The Gas Utility had a process in place to ensure that additions (expansion and replacement) meet federal and state standards;
- The Gas Utility had a process in place to ensure gas infrastructure is safely and appropriately maintained;
- An adequate public protection program was maintained; and
- The Gas Utility had an adequate process for planning and funding gas infrastructure expansion and replacement.

The audit focused on programs and processes that were in effect during the time of our initial audit fieldwork in winter and spring 2007.

Report #0904

This is our second follow-up on action plan steps identified in audit report #0727. The purposes of this follow up is to report on the progress and status of efforts to complete action plan steps due for completion as of September 30, 2008. To determine the status of the action plan steps, we interviewed staff, made observations, and reviewed relevant documentation.

Background

The City's Gas Utility was established in 1956. Effective April 1, 2008 (subsequent to the initial audit), the Gas Utility was combined with the Water Utility into a new City department, Underground Utilities. The "Gas Utility" as referred to throughout this report is now a division within that new department.

At the time of our initial audit, the City's gas infrastructure was comprised of:

- Four gate stations;

- 780 miles of gas mains;
- 18 regulating stations;
- 27,925 service points;
- Approximately 6,900 gas valves; and
- Other miscellaneous components such as test stations and anodes, odorizing equipment, etc.

The City's gas pipelines (mains and service lines) are made up of either coated steel or polyethylene plastic. Polyethylene plastic is generally used for medium and low pressure lines while steel is used for all high pressure lines. Polyethylene plastic and steel pipe used for gas pipelines must be manufactured in accordance with specifications provided in governing federal regulations.

An independent contractor performs the vast majority of infrastructure expansion and replacement. Occasionally, City staff installs or replaces gas mains or other infrastructure for minor jobs or projects.

The primary authority controlling and regulating the City's gas infrastructure is the United States Department of Transportation, Office of Pipeline Safety. The State of Florida, Public Service Commission establishes additional regulations.

For fiscal years 2002 through 2006 (five-year period), the City incurred costs of approximately \$7.9 million to maintain and operate the City's Gas Utility (exclusive of fuel costs). During that same five-year period, the City expended approximately \$14.5 million through 10 capital projects for infrastructure expansion and replacement.

Previous Conditions and Current Status

In report #0727, we noted that, overall, the City has adequate and proper processes and procedures to ensure a safe and reliable infrastructure. We also noted that significant improvements and enhancements had been and were being made in regard to accounting for and tracking that infrastructure. We reported that installations of new infrastructure met federal and state requirements and that expansions and replacements were planned and funded. We reported that an effective public protection program was established. However, we also identified areas where improvements and enhancements were needed. As a result, we recommended that:

- A project management plan be developed to assist in the refinement of the Gas Utility’s geographic information system (GIS) as part of the on-going “Automation Implementation” capital project;
- Pipe stored at the City’s Municipal Supply Center (MSC) be better protected from environmental elements;
- An additional isolation valve be installed at one of the City’s 18 regulating stations, and the integration of other regulating station isolation valves into the GIS;
- The cathodic protection system (protects underground metallic pipe and components from corrosion) be tested at the required frequencies and intervals, and records of those tests be better documented;
- Training be enhanced for non-Gas Utility staff inspecting gas service lines for atmospheric corrosion;
- Grade 2 and 3 gas leaks (which do not represent immediate threats to public safety) be timely repaired, and better records be maintained to track and monitor the status of leaks and related repairs;
- Critical infrastructure valves be designated in the GIS;
- Upon completion of a system upgrade, Station 21 staff (satellite City utility facility) be trained in their expected roles in monitoring system pressures, and system alarms at the facility be reestablished;
- Emergency notification dispatches and responses be better documented; and
- Documentation be improved in other areas, including, for example, pipe specifications, reorder points and quantities, atmospheric corrosion, and valve inspections.

Twenty-seven action plan steps were developed to address the identified issues. Of those 27 steps, 14 were completed as of March 31, 2008, as reported in our initial follow up report #0810. Eleven additional steps were due for completion as of September 30, 2008. Table 1 that follows provides a summary of those 25 action plan steps (14 completed as of March 31, 2008, and 11 due for completion as of September 30, 2008).

**Table 1
Action Plan Steps from Audit Report #0727
Due as of September 30, 2008, and Current Status**

Action Plan Steps Due as of September 30, 2008	Current Status
Ensure proper materials are obtained and safeguarded	
Gas Utility	
<ul style="list-style-type: none"> • In conjunction with the Municipal Supply Center (MSC), a cost efficient method will be identified to protect stored polyethylene pipe and related fittings from direct sunlight. 	<ul style="list-style-type: none"> ▶ A roof was placed over the location used to store rolls of polyethylene pipe (e.g., 2 inch diameter pipe and smaller), thereby eliminating any significant exposure to direct sunlight. The various fittings are now stored inside the warehouse, also eliminating their exposure to direct sunlight. In regard to the stored lengths of pipe (e.g. 3 inch diameter and larger), most is now “black” polyethylene pipe that is resistant to degradation from direct sunlight pursuant to manufacturer specifications. Accordingly, no corrective actions need to be taken for that pipe. <p>For the few lengths of 6 inch diameter “yellow” pipe in inventory that have been exposed to direct sunlight, Gas Utility management indicated that the pipe will likely need to be replaced, as that pipe was determined to be susceptible to degradation based on manufacturer specifications. Gas Utility management indicated that pipe will either be replaced with black pipe or, if replaced with yellow pipe, the applicable storage locations will be protected from direct sunlight. We</p>

	will follow up on this issue in our subsequent follow-up engagement.
<ul style="list-style-type: none"> Updated pipe specifications will be provided to the MSC for all pipe materials and sizes. 	✓ Completed in a prior period.
<ul style="list-style-type: none"> Appropriate reorder points and quantities will be determined for current circumstances and provided to MSC. 	✓ Completed in a prior period.
Municipal Supply Center (MSC)	
<ul style="list-style-type: none"> In conjunction with Gas Utility staff, a cost beneficial method for protecting stored polyethylene pipe and fittings from direct sunlight will be determined. Upon that determination, the pipe and fittings will be stored accordingly. 	▶ See the first step in this table – same status applies to this step.
<ul style="list-style-type: none"> The PeopleSoft Financials system will be updated upon receipt of updated pipe specifications from the Gas Utility. 	✓ Completed in a prior period.
<ul style="list-style-type: none"> Upon receipt of recommended quantities from the Gas Utility, reorder points, quantities, and suggested maximum inventory levels will be adjusted in the PeopleSoft Financials system. 	✓ Completed in a prior period.
Ensure proper valve placement and records for regulating stations	
Gas Utility	
<ul style="list-style-type: none"> For the one regulating station, constructed subsequent to 1974 and identified on audit as not having an isolation valve located no more than 500 feet upstream from the station, an additional valve will be installed in accordance with PSC requirements. 	✓ Completed in a prior period.
<ul style="list-style-type: none"> The Gas Utility will ensure that isolation valves for other regulating stations (i.e., stations not selected for audit) are properly located in accordance with PSC regulations. Additional valves will be installed at those other stations if warranted. 	✓ Completed in a prior period.
<ul style="list-style-type: none"> The three applicable regulating station isolation valves will be incorporated into the Gas Utility GIS. 	✓ Completed in a prior period.
Ensure proper cathodic protection for metallic mains and service lines	
Gas Utility	
<ul style="list-style-type: none"> Testing of the sacrificial anodal system, rectifiers, and interference bond will be conducted at the required frequencies. All testing and related actions will be properly and adequately documented (i.e., test dates and results and repairs when applicable). 	✓ Our review of calendar year 2008 cathodic protection records show that all components are being tested at the required frequencies and that actions are being timely and adequately documented.
<ul style="list-style-type: none"> Gas Utility Maintenance Division management will periodically obtain and review records of tests performed to ensure that applicable staff is performing and documenting required testing of the sacrificial anodal system, rectifiers, and interference bond. 	✓ Completed in a prior period.
<ul style="list-style-type: none"> Complete and accurate records of each test station established for the cathodic protection system will be 	✓ Our review of calendar year 2008 cathodic protection testing activity show that complete and accurate records have been prepared and maintained to clearly

<p>prepared and maintained. Those records will clearly identify for each test station the area and system component (interconnected main, isolated main, rectifier, etc.) covered.</p>	<p>identify each test station. In addition, those records logically and accurately categorize those test stations by system component and geographical area.</p>
<p>Properly and timely identify and address atmospheric corrosion</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> In the event that non-Gas Utility staff continues to be assigned responsibility for identifying and reporting instances of atmospheric corrosion, additional and appropriate training will be provided to that staff in regard to proper identification of corrosion. As a quality control measure, knowledgeable Gas Utility staff will selectively follow up on efforts by the non-Gas Utility staff in their identification of corrosion. 	<ul style="list-style-type: none"> ✓ The Gas Utility is currently relying on its own staff to identify atmospheric corrosion; non-Gas Utility staff (e.g., meter readers) are no longer being used for that purpose. Gas Utility management indicated there are no plans to use non-Gas Utility staff to survey exposed metallic pipe for atmospheric corrosion in the future. Accordingly, this action step is considered resolved.
<ul style="list-style-type: none"> The PeopleSoft Customer Information System (CIS) will be used to document and track all instances of identified atmospheric corrosion. 	<ul style="list-style-type: none"> ✓ Staff changes subsequent to the initial audit resulted in a different Gas Utility employee being assigned responsibility for tracking and ensuring repairs of all instances of identified atmospheric corrosion. Currently, identified instances of atmospheric corrosion are generally addressed (repaired, generally through sanding and re-painting) immediately upon detection. Manual records are prepared and maintained to document each identified instance of atmospheric corrosion and the related repair, including the applicable staff and date. The designated supervisory employee organizes and retains those manual records. This process appears adequate to help ensure that the Gas Utility properly addresses atmospheric corrosion. This process is also an acceptable alternative to the use of the PeopleSoft CIS for documenting and tracking instances of identified atmospheric corrosion.
<ul style="list-style-type: none"> The processes and methods employed to identify, report, and monitor atmospheric corrosion will be documented in formal written procedures. Those procedures will address, at a minimum: (1) definitions of atmospheric corrosion and examples of instances that should be addressed and repaired, (2) staff assigned responsibility for conducting the inspections and making needed repairs, (3) frequency of inspections, (4) methods and timing of inspections, (5) time standards for addressing and repairing or otherwise disposing of reported instances, and (6) methods for recording and tracking identified corrosion and related dispositions. 	<ul style="list-style-type: none"> ▶ The Gas Utility is currently in the process of updating its Operations and Maintenance Manual. Management indicated that update would include documenting the processes and methods used to address atmospheric corrosion. Management indicated that update should be completed by December 31, 2008. We will follow up on this issue in our subsequent follow-up engagement.
<p>Ensure gas leaks are timely and properly addressed</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> Applicable staff will be reminded that all gas leaks will be repaired in a timely manner. To facilitate that repair, Gas Utility Maintenance Division management will obtain and review periodic reports that reflect the status of all identified leaks. 	<ul style="list-style-type: none"> ✓ Completed in a prior period.

<ul style="list-style-type: none"> • PeopleSoft CIS field activities and orders will be used to document, track, and record the repair of all identified leaks. Actions taken (e.g., repairs) will be timely recorded in that system. 	<ul style="list-style-type: none"> ✓ Subsequent to the initial audit, staff changes resulted in a different Gas Utility employee being assigned responsibility for tracking and ensuring repairs of all leaks found during routine surveys or found and reported by any other person or entity. That supervisor employee tracks the identified leaks on EXCEL worksheets. The leaks are grouped and tracked on the worksheet by date of identification and by grade (severity of the leak, i.e. grades 1, 2 and 3). Our cursory review of records and discussions with staff showed that those tracking records (EXCEL spreadsheets) were complete, supported by individual leak reports, and timely updated to reflect the status and repair actions. Those records demonstrated that identified leaks were being timely addressed and repaired. <p>Accordingly, these revised procedures and processes are an acceptable alternative to the use of the PeopleSoft CIS for documenting and tracking identified leaks and the related repairs.</p>
<p>Ensure other required inspections are performed</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> • Upon completion of applicable hydraulic modeling, critical valves (including isolation, key, and other critical designations) will be accurately and clearly designated in the Gas Utility GIS. 	<ul style="list-style-type: none"> ✓ Completed in a prior period.
<ul style="list-style-type: none"> • Valve and regulating station inspection records will be properly and adequately completed and imaged into the City’s Electronic Data Management System (EDMS) for storage. The imaged documents will be adequately indexed so as to allow efficient identification and retrieval of inspection documents for a specific valve(s) or regulating station(s). 	<ul style="list-style-type: none"> ✓ Completed in a prior period.
<p>Ensure adequate monitoring of system pressurization</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> • Upon completion of the Supervisory Control and Data Acquisition (SCADA) system upgrade, Gas Utility staff will (1) provide appropriate training to Station 21 staff as to their expected roles and assigned responsibilities and (2) reestablish meaningful system alarms at Station 21 that indicate potential system over or under pressurizations. (NOTE: Station 21 is a satellite utility facility that, among other things, receives and dispatches emergency calls after normal working hours. Station 21 staff is also available to monitor gas flows on behalf of the Gas Utility.) 	<ul style="list-style-type: none"> ✓ Completed in a prior period.
<p>Ensure appropriate and timely emergency responses</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> • Gas Utility staff responding to reported gas emergencies will be reminded of the requirement to properly and timely document their responses and 	<ul style="list-style-type: none"> ✓ Completed in a prior period.

<p>actions taken in regard to the emergencies. Those responses/actions will be recorded in the PeopleSoft CIS through completed field activities/orders and also recorded in the new MOBILE Work Management System through a system interface.</p>	
<p>Station 21</p>	
<ul style="list-style-type: none"> • Station 21 staff will be reminded of the requirement to create and dispatch a PeopleSoft CIS field activity/order to the Gas Utility for each gas emergency notification received, regardless of whether a verbal dispatch was also made. In addition, CIS reports will be periodically generated and reviewed by supervisors to ensure the accuracy and documentation of field orders created by Station 21 staff and to assess staff performance. 	<ul style="list-style-type: none"> ✓ Completed in a prior period.
<p>Ensure accurate and clear performance measure reporting</p>	
<p>Gas Utility</p>	
<ul style="list-style-type: none"> • Appropriate support for reported performance measures will be retained for a minimum of three years after the measures are initially reported. 	<ul style="list-style-type: none"> ✓ Gas Utility staff is retaining records that substantiate the reported performance measures. Those records (source records, worksheets, formulas, etc.) are stored electronically and/or manually, depending on the nature of the data and record.
<ul style="list-style-type: none"> • Calculations and determinations of performance measures will be reviewed by independent staff to ensure that measures are proper and accurate 	<ul style="list-style-type: none"> ✓ Our discussions with staff and review of records show that Gas Utility management reviews reported performance measures for accuracy and propriety.
<ul style="list-style-type: none"> • Appropriate language will be used to clarify what the “emergency response” performance measure represents. 	<ul style="list-style-type: none"> ▶ Initial Gas Utility plans were to expand the performance measure to reflect response times exceeding 30 minutes for events other than just cut pipelines, such as customer phone calls regarding suspected and potential leaks. However, due to the ambiguous nature of many of those calls and the inefficient process of gathering information from various sources as to the times of those initial calls, a determination was made that the performance measure would continue to capture only response times relating to cut lines. Because standard reports are prepared to document each cut line event, and because those events are generally the most significant emergencies, this management decision appears reasonable. Accordingly, management has determined that it will revise the language for this performance measure to reflect it applies only to cut service lines for which standard cut line reports are prepared. We will review this revised language and the reported measures in our subsequent follow-up engagement.

Table Legend:

- Issue to be addressed from the original audit
- ▶ Issue partially completed and actions to finalize are in process
- ✓ Issue addressed and resolved

Conclusion

Table 1 above shows that 14 action steps were completed in a prior period, and that management completed seven of the 11 additional action plan steps due during the period April 1, 2008, through September 30, 2008. As described in the table, actions have been initiated to complete the remaining four steps

In addition to finalizing those four partially completed action plan steps, significant actions to be completed in subsequent periods include:

- Development of a project management plan to assist in the refinement of the Gas Utility's GIS as part of the on-going "Automation Implementation" capital project and
- Incorporation of the City of Midway gas infrastructure into the SCADA system.

We appreciate the cooperation and assistance provided by Underground Utility and MSC staffs during this audit follow-up.

Appointed Official's Response

City Manager:

I am pleased with the results of this follow-up audit report. It reflects management's commitment to internal control and improved efficiency and effectiveness. We appreciate the assistance of the audit staff.

Copies of this audit follow-up #0904 or audit report #0727 may be obtained from the City Auditor's website (<http://talgov.com/auditing/index.cfm>) or via request by telephone (850 / 891-8397), by FAX (850 / 891-0912), by mail or in person (Office of the City Auditor, 300 S. Adams Street, Mail Box A-22, Tallahassee, FL 32301-1731), or by e-mail (auditors@talgov.com).

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