TRA Gas Pipeline Safety Division Newsletter

Members of TRA's GPSD are (left to right) Tom Woosley, Eric Cherry, Pete Hut, Benita Williams, Chief Larry Borum, Clift Phillips and Scott Schriver.

Improving Documentation

Many violations are cited because of incorrect, inaccurate or unavailable documentation. Documentation, for many, may be the most difficult part of performing a task. With the anticipated Distribution Integrity Management system, documentation will be vital in demonstrating successful compliance.

Most operators have become very familiar with the basics of documenting a required maintenance or operations task, however many times the operator fails to document problems that are found within his/her system or the subsequent resolution of problems. These problems may consist of a valve that is not working correctly, a problem with an odorant injection system, a regulator not working properly, or a short in their cathodic protection system. All of these problems should be documented and pursued to resolution similar to the documentation of leaks identification and repair. The operator should document when the problem is recognized, evaluate the seriousness of the problem and then schedule a repair. Once the repair is made, documentation should be completed.

Operators should also examine the details and determine if there are deeper issues not being addressed. Here is an example to illustrate this issue.

Suppose an operator has a corrosion leak on their pipeline which was caused by a coating flaw (not a 3rd party damage). Most operators would repair the leak and ensure there are no other coating flaws in the same area. While this is a correct course of action, it does not end there.

Coatings are put on steel pipelines to separate the steel from the soil and therefore inhibit corrosion. However coatings are not perfect and have flaws that sometimes are not caught by a holiday detector when installed. As a result, cathodic protection is installed on the line to protect any areas where a flaw may be present. One can conclude that since the corrosion leak was caused by a coating flaw and that these flaws should be mitigated by a cathodic protection system, that the operator did not provide sufficient cathodic protection for this pipeline. Therefore, not only should the operator repair the leak, but also evaluate their cathodic protection system and make adjustments if needed.

Operator Qualifications

Since its inception in 2002, the operator qualification (OQ) rule has had many amendments and supplemental materials published to help understand how this rule is to be administered.

The maximum reevaluation interval for most covered tasks is three years unless an operator elects to perform a DIF (difficulty, importance, frequency) analysis of the covered task. This analysis evaluates the covered task in detail to determine if the reevaluation interval may be extended past the three-year reevaluation interval requirement. Some covered tasks may have a one-year reevaluation interval requirements due to the complexity and frequency of the covered task. Welding has both 6-month and one-year re-qualification intervals, based on the type of steel being welded.

Operators are encouraged to perform an audit of their OQ records to help ensure personnel performing covered tasks have current OQ documentation demonstrating their aptitude to perform each of the covered tasks they perform. Many operators have elected to demonstrate the knowledge requirement using computer based training (CBT) courses, such as those offered by the Tennessee Gas Association (TGA). The operator should be able to demonstrate this knowledge requirement with the successful completion of the written exam or a certificate of completion accompanied by either the blank version of the completed test, the study materials used to prepare for the completed examination or a computer demonstration of the materials which were covered in the examination used to obtain the certificate of completion. Many operators elect to demonstrate the skill and ability requirement using a detailed field procedural checklist while evaluating the personnel as they perform each step of that particular covered task. Because each operator has equipment, tools and materials which are unique to their gas systems', each operator is encouraged to develop detailed field procedural checklists outlining each step of these covered task procedures which are unique to these tools, equipment and pipeline facilities.

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2009 Update

The TRA Gas Pipeline Safety Dvision received a score of 100 on its evaluation by the U.S. Department of Transportation's Pipeline and Hazardous Material Safety Administration in August.

Construction Notifications

Please notify the TRA Gas Pipeline Safety Division when planning natural gas pipeline projects of 2500 feet in length or more. This allows staff to schedule construction inspections of the projects while construction is underway.

For public work projects in excess of $25,000, state law (T.C.A. 62-2-107) requires a registered engineer prepare the plans, specifications and estimates. For projects meeting these guidelines, a copy of the plans and specifications must be submitted to the TRA. While the review is cursory in nature, pipeline issues that can be addressed more efficiently prior to the bidding process or start of construction may be identified. Even though there are many competent engineers providing good, functional designs and employing sound engineering practices, occasionally there are conflicts with PHMSA pipeline safety regulations. These conflicts are more easily identified and resolved prior to construction. Our review may identify these issues and prevent project delays and additional expense due to changes and modifications to the project necessary for compliance with regulations.

To provide notice, simply prepare a memo with a brief description of the project and the anticipated start and completion dates. This may be faxed, mailed or emailed at the convenience of the pipeline operator. When applicable, the plans and specifications for the project may be sent separately. These will be reviewed by staff members at the first opportunity. The operator or engineer contracted by the operator will be contacted if issues are identified or additional information is needed.

Regulator Station Inspections

An operator should be able to verify the regulator and corresponding relief valve capacities for each regulator station in the gas distribution system. If an operator modifies or changes any of the regulator equipment, relief valve equipment or associated appurtenances; the operator is required to perform a capacity calculation or verify with reproducible manufacturer documentation that the relief valve capacity meets or exceeds the associated regulator capacity for these types of regulator station configurations. Many regulators have a specific build up pressure associated with their final relief pressures. The operator is required to incorporate this build up pressure when determining the final set relief pressure on the relief valve; most importantly when these relief pressures approach the associated downstream pipeline's maximum allowable operating pressure.

With regard to the field portion of an inspection, the operator should have prominent signage with accurate and current emergency phone numbers in visible locations at these regulator stations. This signage should be legible at a reasonable distance from these regulator stations in the event of an emergency situation. Please refer to 49 CFR Part 192.707 for the minimum specified content and letter sizing requirements of this signage. Relief valves should be locked open at all times, unless

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Gas Pipeline Safety Division

Pressure Testing Replacement Pipe

During a leak repair there are many things to remember, ensuring the public is safe, removing all ignition sources, donning all necessary personal protective equipment, and finally evaluating the leak. It can be easy to overlook something as simple as ensuring that the replacement pipe has been pressure tested. 49 CFR Part §192.503 basically states that ALL pipe, which includes new and replaced segments, must be pressure tested. These replaced sections must be pressure tested in accordance with the MAOP of the pipe it replaces.

You may be asking, "What about the tie in joints for the repaired section? How are these to be pressure tested?" The Minimum Federal Safety Standards make provisions for these joints in §192.503(d). In a nutshell, this section states that these joints are exempted from the pressure test requirements but non-weld joints must be leak tested at the operating pressure or greater.

To meet the requirements of this regulation, some operators pressure test the entire main or service that is being repaired, however this is not the most common method. Most operators meet the requirements of this regulation by pre-testing some of their pipe. The pre-tested pipe is then set aside to be used specifically for repairs.

Most Cited Violations

We thought you might enjoy knowing our most cited violations of 2008. The list below states the number of times they were cited, code reference, and brief description. Please keep in mind that most of these violations can be cited for more than one reason. However, most of the time these violations are cited due to the operator failing to perform an action within the code prescribed time frame.

Times Cited	Code Reference	Description
27	192.805 or 192.807	Operator Qualification
14	192.605	Operations & Maintenance Manual
13	192.625	Odorization
8	192.463	Cathodic protection: Monitoring
8	192.615	Emergency Plan

>>OQ from pg. 1

The final protocol of the OQ rule is Protocol 9. Our office has conducted a number of OQ Protocol 9 inspections in the previous year and will be performing these inspections throughout the coming year. OQ Protocol 9 inspections entail a review of the operator's OQ records to ensure they are current and compliant as well as conducting field evaluations of personnel using the field procedural checklists employed by the operator in the OQ evaluation of personnel for these covered tasks. The primary focus of the OQ rule was to help minimize risk associated with the personnel performing covered tasks on the pipeline facility. As with each of the regulations and rules enforced by the gas pipeline safety division, compliance by the operator helps to ensure the operator has made every effort to make their gas system as safe as they can possibly make it. Thank you for your cooperation concerning natural gas pipeline safety.

Quick Updates & Reminders

Annual Reports

Federal form RSPA F7100.1-1 (Annual Report) is due to OPS by March 15. You can file online using the Online Data Entry System link located at www.ops.dot.gov. Be sure to send a copy to the TRA Gas Safety office by April 1.

Drug and Alcohol Testing

The minimum annual percentage rate for random drug testing remains at 25 percent of covered employees. (Effective January 1 through December 31, 2009.)

Email Communication

In an effort to improve communication, our office will be using e-mail more frequently. If you have any questions, please e-mail GPS Division Chief Larry Borum at larry.borum@state.tn.us. Please pay attention if you see an email from this address for this will allow us to provide timely guidance on problems found in the field as well as pass along information from PHMSA.

2009 Update

Calculating Anode Life

With the new emphasis on integrity management you may find it beneficial to calculate the life span of your anodes, specifically anodes on your isolated services. It is important to protect these services with the proper size anode to ensure a long service life. According to Peabody's "Control of Pipeline Corrosion" The following formula is used to determine the life of an anode.

$$\text{Life} = \frac{(.116)*(\text{Anode Weight})*(\text{Efficiency})*(\text{Utilization Factor})}{(\text{Design Current})}$$

According to Peabody the standard efficiency rating for a Magnesium anode is 50% and the standard utilization factor for a Magnesium anode is 85%. The utilization factor simply means that when 85% of the anode is used up, it will have to be replaced. We will use a educated guess of 1 pound for anode weight. Now we have to determine the design Current. To do this we will follow equations found in the National Association of Corrosion Engineers' (NACE) material.

First you must determine the approximate surface area of the pipe you are protecting. In this scenario we have determined that there is a 1 inch diameter (d) isolated service line that is 100 feet long (L). The surface area of the pipe is

$$\text{Area} = (\pi)*(\text{Diameter})*(\text{Length}) = 3.14 * 1/12*100 = 26.2\text{sqft}$$

Through testing we have determined that the soil resistivity is 10000 ohm cm, which is a fairly conservative number for our state. Given this resistivity and that the coating is in fairly good shape, we can conclude through the help of a NACE table that our average current leakage resistance per square foot (r) is 10000 ohms/ sqft. Now we can estimate the current leakage for the entire surface area of the pipe (R).

$$R = r/A = 10000 / 26.2 = 381.7 \text{ ohms}$$

The voltage potential for magnesium is -1.55 Volts while the voltage potential for steel pipe is -.75 Volts. The voltage potential shift is calculated as follows.

$$E = -1.55v-(-.75v) = -.80 \text{ volts}$$

Therefore the current required to protect the pipe is

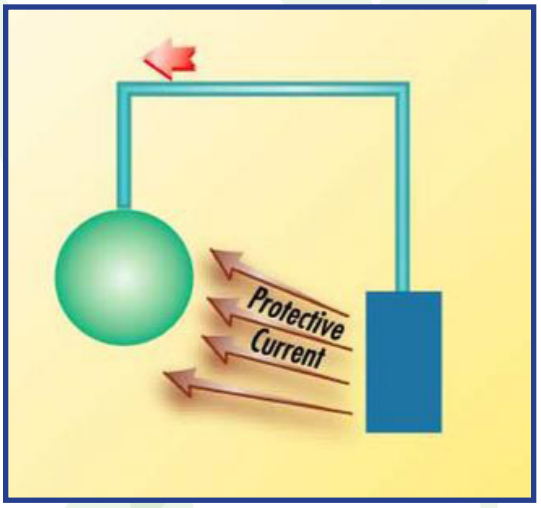
$$I = E/R + .80/381.7 = 0.0021 \text{ amps}$$

Using a **1 lb anode** the protection life span can be calculated:

$$\text{Life} = \frac{(.116)*(1)*(.5)*(.85)}{(.0021)} = \sim 23.5 \text{ Years}$$

"Call Before You Dig" number, 811 was created to help protect you from unintentionally hitting underground utility lines while working on digging projects.

This life span calculation does not include other factors such as cut wires or shorts which can also affect the integrity of isolated services. It should also be noted, that when installing an anode it is best to install it as close to the middle of the surface area length as possible.



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maintenance is being performed on this equipment. Bypass valves on regulator stations should be locked closed and valves on the relief should be locked open at all times, unless the operator is performing a required operation and maintenance function associated with this equipment. Failure to lock either of these pieces of equipment could result in an over-pressurization condition of the downstream piping due to failure or impairment of related equipment or the unintentional bypassing of the associated pressure relief equipment.

These are some critical areas of gas pipeline safety which an operator should focus attention on with respect to the regulator stations within their gas distribution systems.

Gas Pipeline Safety Division

Private

Atmos Energy
Bristol- Cherry
Columbia- Phillips
Franklin- Schriver
Greeneville- Phillips
Johnson City- Woosley
Kingsport- Hut
Maryville- Schriver
Morristown- Hut
Murfreesboro- Woosley
Shelbyville- Hut
Union City- Cherry
Chattanooga- Schriver
Chattanooga(Clev)- Phillips
Counce- Schriver
GASCO(Jellico)- Cherry
GASCO (Byrdstown)- Schriver
Hartsville- Hut
Nashville Gas- Woosley

Municipal

Adamsville- Schriver
Athens- Woosley
Athens (Ardmore)- Hut
Bells- Hut
Bolivar- Phillips
Brownsville- Cherry
Centerville- Woosley
Clarksville- Cherry
Clifton- Cherry
Collinwood- Cherry
Cookeville- Schriver
Covington- Woosley
Dickson- Cherry
Dunlap- Phillips
Dyersburg- Phillips
Englewood- Cherry
Etowah- Hut
Fayetteville- Phillips
Ft. Campbell- Cherry
Friendship- Phillips
Gainesboro- Woosley
Gallatin- Hut
Gallaway- Phillips
Halls- Hut
Harriman- Woosley
Henderson- Schriver
Henning- Cherry
Hohenwald- Schriver
Humboldt- Woosley
Jackson- Hut
Jamestown- Phillips
Knoxville- Phillips
Lafayette- Woosley
Lawrenceburg- Schriver
Lebanon- Cherry
Lenoir City- Hut
Lewisburg- Woosley
Lexington- Hut
Linden- Hut
Livingston- Phillips
Lobelville- Schriver
Loretto- Cherry
Loudon- Hut
Madisonville- Phillips
Marion- Cherry
Martin- Hut
Mason- Hut
Maury City- Woosley
Memphis- Phillips
Mt. Pleasant- Woosley
Munford- Woosley
Newbern- Phillips
Obion- Cherry
Parsons- Schriver
Pikeville- Hut
Portland- Schriver
Pulaski- Hut
Red Boiling Sprs.- Woosley
Ridgetop- Schriver
Ripley- Woosley
Rockwood- Schriver
Savannah- Phillips
Selmer- Phillips
Smyrna- Cherry
Somerville- Schriver
South Fulton- Hut
Springfield- Phillips
St. Joseph- Woosley
Sweetwater- Cherry
Trimble- Phillips
Troy- Schriver
Waynesboro- Schriver

Utility District

Bedford County- Phillips
Citizens Gas- Woosley
Claiborne Co.- Hut
Clay Gas- Hut
Crockett Public-Cherry
Elk River Public- Cherry
Gibson County- Woosley
Hardeman/Fayette- Cherry
Hawkins County- Woosley
Horton Highway- Hut
Humphreys Co.- Cherry
Jefferson-Cocke- Phillips
Lake County- Schriver
Middle Tennessee Gas
- Crossville- Cherry
- Dayton- Woosley
- McMinnville- Cherry
- Smithville- Phillips
- Sparta- Hut

Oak Ridge- Schriver
Paris/Henry Co.- Phillips
Poplar Grove- Hut
Powell/Clinch- Schriver
Powell Valley- Woosley
Sevier County- Cherry
Tipton Co., First- Schriver
Unicoi County- Woosley
Upper Cumb.- Cherry
West TN Public- Woosley
Volunteer Energy - Schriver

Housing Authority

Columbia- Phillips
Covington- Woosley
Gallatin- Hut
Harriman- Woosley
Hartsville- Hut
Huntingdon- Phillips
Jackson- Hut
Jefferson City- Cherry
Lawrenceburg- Schriver
Lebanon- Cherry
Livingston- Phillips
Martin- Hut
McKenzie- Woosley
Memphis- Schriver
Metro Dev/Hous.- Woosley
Murfreesboro- Woosley
Parsons/Decatur- Schriver
Portland- Schriver
South Pittsburg- Cherry
Tullahoma- Cherry
Union City- Cherry

Apartment

Alexian Village- Hut
Avalon West- Woosley
Georgetown- Schriver
Green Hills Terr.- Phillips
Johnson Bible - Phillips
Kirby Pines Est.- Hut
Pentad (Crestview)- Phillips
Pentad (Hill.& Pkwy)- Phillips
Rose Garden- Cherry

Mobile Home Park

Fern Creek- Schriver

Intrastate Pipeline

Atlas Energy- Hut
Clear Creek- Woosley
Coalfield- Woosley
COPCO- Cherry
Evan Energy- Schriver
Fentress Gas- Phillips
NGas- Woosley
TENGASCO- Schriver
Titan Energy- Schriver

Direct Sale

AcuPowder- Phillips
Asahi Glass(Church Hill)- Cherry
Asahi Gass (Kingsport)- Cherry
AOC- Cherry
ALCOA- Hut
Bowater- Phillips
Dept. of Energy- Schriver
Domtar Paper - Schriver
Eastman Chem.- Hut
General Shale- Hut
Holston (Kingsport)- Phillips
Holston (Mt. Carmel)- Phillips
MD Recycling- Schriver
Occidental Chem.- Woosley
Olin Corporation- Woosley
Packaging Corp. of Am – Schriver
Smelter- Hut
Solutia- Schriver
TN Air Ntl. Gd.- Cherry
TVA (Gallatin)- Phillips
TVA (New J'ville)- Woosley
TVA (Lagoon Crk)- Woosley
Turney Center- Cherry
UCAR- Hut

LNG

Nashville(Bordeau)- Woosley
Memphis(Caple.)- Woosley

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