Tennessee Gas Pipeline
an El Paso company

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JUN 27 2008

June 26, 2008

Mr. R.M. Seeley, Director
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Southwest Region Office
8701 South Gessner, Suite 1110
Houston, TX 77074

Re: CPF No. 4-2008-1008

Dear Mr. Seeley:

We are in receipt of your Notice of Probable Violation ("NOPV"), Proposed Civil Penalty and Proposed Compliance Order, dated May 19, 2008, in which the Southwest Region of the Pipeline and Hazardous Materials Safety Administration ("PHMSA") asserts that Tennessee Gas Pipeline Company ("TGP") may have violated the Pipeline Safety Regulations, Title 49, Code of Federal Regulations. TGP received the NOPV May 27, 2008. This letter and its exhibits comprise our response to the captioned NOPV. This response is formatted to correspond with the items in that NOPV. Text inserted from the NOPV document are shown within quotation marks.

1. **"§192.163 Compressor stations: Design and construction.**
   (d) Fenced areas. Each fence around a compressor station must have at least two gates located so as to provide a convenient opportunity for escape to a place of safety, or have other facilities affording a similarly convenient exit from the area. Each gate located within 200 feet (61 meters) of any compressor plant building must open outward and, when occupied, must be openable from the inside without a key.

It was observed during the field portion of the inspection that Alamo compressor station had a locked personnel gate approximately 50' west of the compressor. The operator later supplied PHMSA with pictures showing that a crash bar was installed on this gate."

TGP Response:

As noted by PHMSA above, TGP rectified this issue and provided visual evidence to your office. TGP appreciated this item being brought to our attention and the opportunity to remedy the situation.

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2. **"§192.179 Transmission line valves.**
   (b) Each sectionalizing block valve on a transmission line, other than offshore segments, must comply with the following:
   (1) The valve and the operating device to open or close the valve must be readily accessible and protected from tampering and damage.

During the inspection it was observed that, a 16" block valve (507G-106) and a 24" valve (512-1) at Hwy 332 and valve 404 were not protected against damage and were accessible to vehicular traffic. Inadequate protection from damage was also observed at some other valve locations: Lirette on line 523R100 were only enclosed by a 4 foot high fence; Fences were unlocked and downed (due to Katrina) at the Mississippi River crossing.

Also during the inspection it was observed that valves were not protected from tampering. The operator installs locks on its valves to prevent tampering but these locks were not present at some locations: valves at Lirette on line 523R100; valves at LaRose, Delta Duck and Mississippi River crossing."

<u>TGP Response:</u>

Project approval has been received to proceed with fencing at 16" Valve 507G-106 and 24" Valve 512-1 in order to address the problem identified. Barriers have been installed at Valve 404 to provide the protection described and a picture is attached as Exhibit 1 showing this protection equipment. Also, funds have been budgeted for 2009 in order to provide additional protection at Lirette, Line 523R100, and the Narin crossing of the Mississippi River. Regarding the valves at Lirette, LaRose, Delta Duck, and the Mississippi River crossing, the deficiencies identified have been corrected and TGP's security policies have been reinforced with appropriate personnel. TGP would also like to note that some of these facilities are only accessible by aircraft or watercraft.

3. **"§192.317 Protection from hazards.**
   (b) Each above ground transmission line or main, not located offshore or in inland navigable water areas, must be protected from accidental damage by vehicular traffic or other similar causes, either by being placed at a safe distance from the traffic or by installing barricades.

Tennessee Gas is not protecting their pipeline from accidental damage where lateral 14D-100 takes off from line 1 and line 2. During the inspection it was observed that there was evidence of the above ground piping being struck by agricultural equipment."

<u>TGP Response:</u>

Barricades have now been installed and pictures of this location are attached as Exhibit 2 to show the barriers.

4. **“§192.475 Internal corrosion control: General**
   (b) Whenever any pipe is removed from a pipeline for any reason, the internal surface must be inspected for evidence of corrosion. If internal corrosion is found-
   (1) The adjacent pipe must be investigated to determine the extent of internal corrosion:
   (2) Replacement must be made to the extent required by the applicable paragraphs of §192.485, §192.487, or §192,489; and,
   (3) Steps must be taken to minimize the internal corrosion.

During the inspection it was identified that two 4 inch hot taps were installed on July 14-22, 2005 on Morales line. As a part of this activity hot tap coupons were removed. Records were requested during the inspection but Tennessee Gas Pipeline did not provide a record of an internal inspection as required by 192.475 (b).”

TGP Response:

TGP disagrees with PHMSA’s assertion that this is the intent of the regulatory section cited. 49 CFR 192.475 says, “Whenever any *pipe* is removed……….” From 49 CFR 192.3, “pipe” is defined as “any pipe or tubing used in the transportation of gas, including pipe-type holders.” This regulation does not say, “Whenever any portion of pipe or piece of pipe wall is removed………” TGP believes that this is the language that would have been used had there been an intent for operators to examine the inside surface of a hot tap coupon. Furthermore, 192.475(b)(1) says, “The *adjacent* pipe must be investigated……” Investigating the adjacent pipe from the hole produced by a hot tap is impractical to accomplish considering the presence of the hot tap machine, the fact that the taps are normally made in the top or on the side of the carrier pipe, and that a hot tap is performed while the carrier pipe is pressurized. We believe the phrase “adjacent pipe” supports an interpretation that a circumferential cut through the pipe resulting in a separated segment is really the consideration in 192.475.

TGP’s procedures include an ultrasonic and visual inspection of the hot tap coupon. The PHMSA finding asserts that TGP “did not provide a record of an internal inspection as required by 192.475(b)”. While this is true, TGP’s personnel involved in the project have been questioned and provided assurance that the removed hot tap coupons were visually inspected with no indications of internal corrosion found. In this instance, the procedures were followed but the technician failed to properly document the inspection. TGP’s personnel responsible for non-destructive testing also performed an ultrasonic examination of the pipe before the hot tap procedure commenced. The results of the ultrasonic work showed no wall thickness loss in the area where the hot taps were to be made, indicative of the absence of both internal and external corrosion.

While TGP believes that no violation of 49 CFR 192.475 occurred, we have nevertheless modified our procedures to require inspection of the internal surface of retrieved hot tap coupons including documentation of such inspections. Should hot tap coupons not be retrieved, this will also be documented in order to explain why an internal surface inspection was not performed. Finally, the awareness of this issue has been raised for TGP personnel involved in hot tap procedures.

5. **"§192.475 Internal corrosion control: General.**
   (a) Corrosive gas may not be transported by pipeline, unless the corrosive effect of the gas on the pipeline has been investigated and steps have been taken to minimize internal corrosion.

   §192.477 Internal corrosion control: Monitoring.
   If corrosive gas is being transported, coupons or other suitable means must be used to determine the effectiveness of the steps taken to minimize internal corrosion. Each coupon or other means of monitoring internal corrosion must be checked two times each calendar year, but with intervals not exceeding 7 1/2 months.

As part of TGP's overall corrosion control program, they install internal corrosion monitoring coupons to evaluate the corrosive effect of their product. TGP's procedures specify that they install coupons for short periods of time (usually 1 month) and then the coupons are evaluated. Specific response and remediation actions are established depending on the condition of the coupon. Per §192.477 and accepted industry standards these coupons should remain in the gas stream continuously, then removed and evaluated two times per year. TGP's conduct and written procedures do not follow the prescriptive requirement of these regulations.

At TGP's Kinder station the internal corrosion monitoring coupon (S4504) was installed on 12/14/04 and removed on 01/19/05. Records provided during the inspection and TGP's procedures require (based on the condition of the coupon) that TGP "re-evaluate immediately". A replacement monitoring coupon (S5340) was not installed at that location until 01/20/06. TGP did not comply with applicable requirements and could not demonstrate that it followed its own procedures.

During the inspection it was observed that TGP's coupons used to investigate internal corrosion are not always placed in effective locations. It is unlikely that installations such as can be found on platform Ship Shoal 167A (where the coupon is held off to the side of a vertical rise) will be able to provide meaningful results. The coupons should be placed such that they are near the area where corrosive constituents accumulate most (bottom of the pipe)."

<u>TGP Response:</u>

This response is broken down to separately address individual PHMSA statements comprising this finding.

PHMSA Statement:

"As part of TGP's overall corrosion control program, they install internal corrosion monitoring coupons to evaluate the corrosive effect of their product. TGP's procedures specify that they install coupons for short periods of time (usually 1 month) and then the coupons are evaluated."

TGP Comments:

TGP uses electron microscope (EM) coupons instead of traditional weight-loss coupons. A weight-loss coupon is a pre-weighed coupon that is installed and exposed to the internal environment. The difference in the coupon's weight before and after installation can be converted into a corrosion rate and is intended to represent the corrosion rate for that part of the system. Weight-loss coupons are installed for extended periods of time, typically 60 to 90 days or more, to generate a metal loss corrosion rate and produce detectable and measurable pitting attack, but short term exposures (15 to 45 days) may provide some information, according to NACE Standard RP0775-2005 Preparation, Installation, Analysis, and Interpretation of Corrosion Coupons in Oilfield Operations.

EM coupons provide the same basic information as a weight-loss coupon plus additional information will be obtained due to its highly polished surface and the use of microscopic examinations but in a shorter period of time (typically 30 to 45 days). EM coupons may be exposed for longer periods of time, but the information pertaining to corrosion initiation is lost and reverts to a common weight-loss coupon. EM coupon analysis is used to provide the basic weight loss corrosion rate plus define the initial corrosion attack by determining the nature of corrosion (i.e. uniform "etching" and/or pitting corrosion) and the corrosion mechanism (i.e. pit morphology initiated by bacteria vs. abiotic attack). EM coupon technology has been evaluated and reported in numerous NACE technical papers and industry journals. EM coupon use is an advancement in internal corrosion monitoring technology, where mitigation efforts are directed at corrosion/pitting initiation.

TGP prefers the EM coupon over the traditional weight-loss coupon since more information about the environment can be obtained in a shorter amount of time so a quicker response can be made to mitigate a possible corrosive situation. According to NACE SP0106 Control of Internal Corrosion in Steel Pipelines and Piping Systems "the exposure time for coupons and probes in the stream is based on the type of gas or liquid, velocity of its flow, objective of the survey, and the expected corrosion rates."

PHMSA Statement:

"Specific response and remediation actions are established depending on the condition of the coupon."

TGP Comments:

TGP evaluates coupons based on traditional general corrosion rate and pitting rate plus microscopic examinations to provide pitting characterization, corrosion severity, and check for the influence of bacterial attack. When required, pro-active remedial measures are generated from this evaluation process.

PHMSA Statement:

"Per §192.477 and accepted industry standards these coupons should remain in the gas stream continuously, then removed and evaluated two times per year. TGP's conduct and written procedures do not follow the prescriptive requirement of these regulations."

TGP Comments:

In corrosive gas environments TGP checks EM coupons, or other means of monitoring internal corrosion, twice per year not to exceed 7 ½ months. Based on the situation, the exposure period for an EM coupon normally is 30-45 days to obtain viable information from the EM coupon process. If the EM coupon is exposed for as long as 6 months in a corrosive environment, the information pertaining to corrosion initiation is lost and reverts to a common weight-loss coupon.

TGP takes the position that neither §192.477 nor industry standards (NACE) specifically state coupons or other means of monitoring are to be exposed or checked continuously for the monitoring interval and its conduct and written procedures meet the requirements of the regulations for corrosive gas streams.

TGP also takes the position that §192.477 does not limit an operator from doing anything deemed appropriate in determining *if* the gas stream is corrosive. Should an operator choose to use a coupon for detection purposes, as TGP does in a non-corrosive gas stream, such a coupon is not subject to the provisions of §192.477.

PHMSA Statement:

"At TGP's Kinder station the internal corrosion monitoring coupon (S4504) was installed on 12/14/04 and removed on 01/19/05. Records provided during the inspection and TGP's procedures require (based on the condition of the coupon) that TGP "re-evaluate immediately". A replacement monitoring coupon (S5340) was not installed at that location until 01/20/06. TGP did not comply with applicable requirements and could not demonstrate that it followed its own procedures."

TGP Comments:

TGP has investigated this location and the coupon history. Following is a timeline of events that occurred at this location:

- Historically this is a non-corrosive gas stream where EM coupons are installed periodically for detection purposes. Since these are detection coupons in a non-corrosive gas stream they do not fall under the requirements of §192.477 Internal Corrosion Control: Monitoring.

- Coupon (S3374) results reported on 11/25/2003 confirmed a non-corrosive gas stream.

- Coupon (S4504) results reported on 2/28/2005 confirmed a non-corrosive gas stream.

- Coupon (S4504) was reviewed on 5/19/2005. The Subject Matter Expert (SME), based on the coupon results, documented a comment "assign new coupon for confirmation". Based on the 5/19/2005 evaluation there was no immediate concern and another coupon was scheduled on 9/20/2005 for installation on 10/4/2005.

- Hurricanes Katrina (8/29/2005) and Rita (9/24/2005) struck the Gulf of Mexico and the coupon (S5340) was not installed until 1/20/2006.

- On 10/25/2005, the database management software (TSIMS) used to document internal corrosion data had the preliminary version of an EM Coupon Auto-Evaluation enhancement added to the TSIMS software.

    - The function of this enhancement was to automate a recommendation process for EM coupons based on algorithms using the laboratory coupon analysis results.
    - Part of the implementation process for this software enhancement was to run this feature on the existing database to provide recommendations for all previous EM coupon results in the database to test the functionality of the algorithms.
    - The SME performed an evaluation of the coupon on 5/19/2005, recorded a recommendation to "assign new coupon for confirmation", and scheduled a coupon for installation on 9/20/2005.
    - Some time after 10/25/2005, the EM Coupon Auto-Evaluation software algorithm automatically generated a recommendation to "re-evaluate immediately" for coupon (S4504). This auto recommendation was generated after the SME's evaluation and recommendation.
    - Subsequently, the parameters of the EM Coupon Auto-Evaluation software were modified to be more consistent with Company policies and procedures.
    - A replacement monitoring coupon (S5340) was installed on 1/20/2006.

- Coupon (S5340) results reported on 3/24/2006 confirmed a non-corrosive gas stream.

- During the DOT inspection in Kinder Area in May 2006 a TSIMS report was generated for the inspector that showed the coupon in question (S4504) had a TSIMS EM Coupon Auto-Evaluation recommendation to "re-evaluate immediately".

- For TGP, the SME review, evaluation and recommendation process for coupons takes precedence over software-generated recommendations, since the SME evaluates data that is not taken into consideration by the EM Coupon Auto-Evaluation software.

TGP takes the position that it was following its procedures for coupon evaluations.

PHMSA Statement:

"During the inspection it was observed that TGP's coupons used to investigate internal corrosion are not always placed in effective locations. It is unlikely that installations such as can be found on platform Ship Shoal 167A (where the coupon is held off to the side of a vertical riser) will be able to provide meaningful results. The coupons should be placed such that they are near the area where corrosive constituents accumulate most (bottom of the pipe)."

TGP Comments:

TGP has examined the coupon location at Ship Shoal 167A and has determined the following:

- Historically this is a non-corrosive gas/liquid hydrocarbon (two-phase) stream where EM coupons are installed periodically for *detection* purposes. Since these are detection coupons in a non-corrosive gas stream they do not fall under the requirements of §192.477 Internal Corrosion Control: Monitoring

- TGP agrees coupon locations are important. The following is an excerpt from TGP's procedures:

  "Pipeline Services should be consulted for the selection of coupon locations. As a general rule, coupons should be placed in:
  1. representative locations available in that system, and
  2. the most severe location with respect to corrosion. Many operational and environmental conditions influence the optimal selection of locations for coupon installations.

  Ideally, coupons should be placed at or near the six o'clock position in most horizontal pipelines. Coupons may be installed at the 12 o'clock position, typically when it is known that there are very little or no free liquids, but there is high enough water content in the gas to allow condensation to occur. In some cases, the fitting may be installed at the top of pipe with a coupon reaching to the bottom. The placement of the coupon, therefore, is often one of the most critical elements in obtaining meaningful internal corrosion information."

- At Ship Shoal 167A platform, see Figure 1 below, TGP has a common offshore configuration where gas and hydrocarbon liquids (free water is removed from the hydrocarbon distillate) are separated on a production platform, measured, and recombined to bring the product to onshore separation facilities.

    - Even though this is considered a non-corrosive two-phase location on this particular system, company practice is to chemically treat the product leaving select platforms that have liquid re-injection with corrosion inhibitor to provide protection in the underwater pipelines from potential upset conditions.
    - The coupon in this instance is located upstream of chemical injection to evaluate the corrosivity of the gas/hydrocarbon mixture. This coupon location being a *detection* location is evaluating the corrosivity of the product (gas and hydrocarbons) coming into the system at this platform.
    - The coupon has been placed in a worst case scenario for monitoring corrosion by installing the coupon in a sample chamber to collect liquids. If water is in the hydrocarbon phase, the stagnant conditions in this chamber will allow the water to separate at the coupon.
    - This is the most opportune location on the platform to measure the corrosion potential of the commingled liquid prior to chemical injection and pigging operations. These conditions exist over only 4 ½ feet of piping which is all in the vertical position. For a two-phase pipeline this location with the liquid product flowing downward provides useful information on the corrosivity of the gas-liquid stream.

- Coupons are located downstream, onshore to evaluate the effectiveness of the chemical treatments on this particular offshore gathering system.

TGP takes the position that this is a detection coupon in a non-corrosive gas stream and it does not fall under the requirements of §192.477 Internal Corrosion Control: Monitoring. TGP asserts this is an effective coupon monitoring location for the purposes of determining the corrosivity of a gas/liquid hydrocarbon (two-phase) stream.

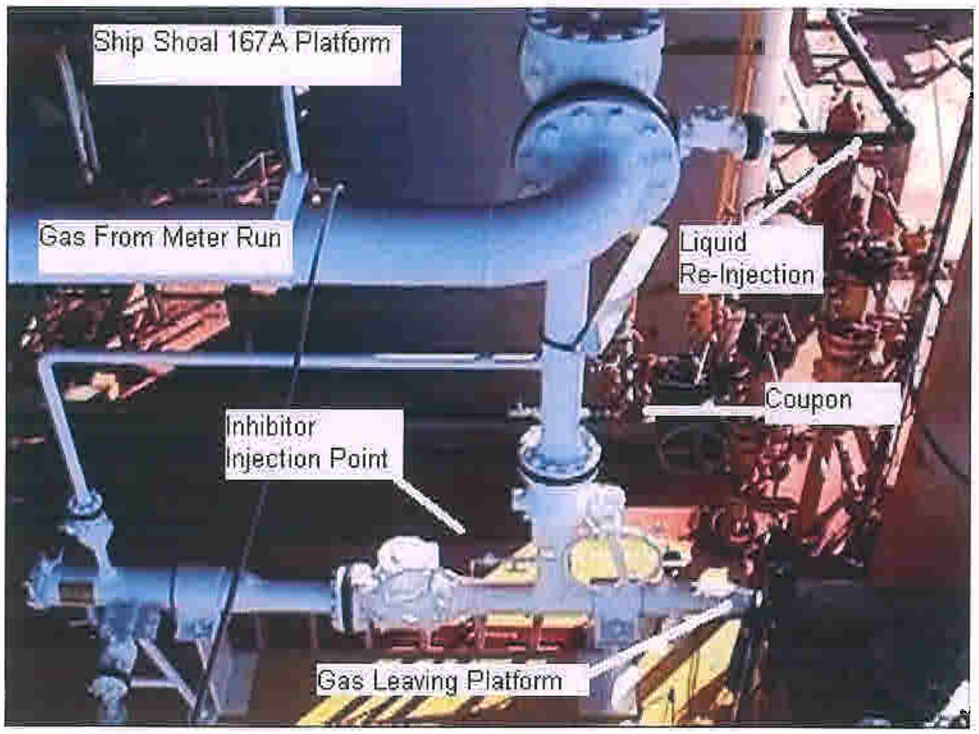

Figure 1

6. **"§192.481 Atmospheric corrosion control: Monitoring.**
   (a) Each operator must inspect each pipeline or portion of pipeline that is exposed to the atmosphere for evidence of atmospheric corrosion, as follows:

If the pipeline is located:	**Then the frequency of inspection is:**
Onshore	**At least once every 3 calendar years, but with intervals not exceeding 39 months.**
Offshore	**At least once each calendar year, but with intervals not exceeding 15 months.**

The Tennessee Gas Pipeline/Nautilus interchange was installed January 2002. Tennessee Gas could not provide documentation at the inspection to demonstrate that subsequent atmospheric corrosion control monitoring and inspection had occurred."

TGP Response:

PHMSA is correct in this finding. The TGP/Nautilus Interchange was indeed installed in January 2002. No documentation exists to indicate that atmospheric corrosion inspections were performed during any calendar year up to and including 2005. Atmospheric corrosion inspections were performed however in the calendar years 2006, 2007 and 2008. The results of these inspections indicated that no atmospheric deficiencies requiring remediation were detected.

TGP attributes this oversight to a breakdown in the process of transferring project completion information into tracking tools used for scheduling periodic operations and maintenance tasks. TGP is reviewing all related processes in order to insure a "seamless" transition of projects from construction to operation.

7. **"§192.706 Transmission lines: Leakage surveys.**
   Leakage surveys of a transmission line must be conducted at intervals not exceeding 15 months, but at least once each calendar year. However, in the case of a transmission line which transports gas in conformity with §192.625 without an odor or odorant, leakage surveys using leak detector equipment must be conducted-
   (a) In Class 3 locations, at intervals not exceeding 7 1/2 months, but at least twice each calendar year; and
   (b) In Class 4 locations, at intervals not exceeding 4 1/2 months, but at least four times each calendar year.

Tennessee Gas class 3 leak survey on lines 409A - 101 and 409A - 102 exceeded 7.5 months in 2005. The survey was conducted on March 8, 2005 and not again until November 9, 2005."

TGP Response:

PHMSA is correct in this finding. TGP has reviewed and modified its scheduling procedures and has raised the awareness of operations personnel regarding this issue in an effort to prevent a recurrence.

8. **"§192.745 Valve maintenance: Transmission lines.**
   (a) Each transmission line valve that might be required during any emergency must be inspected and partially operated at intervals not exceeding 15 months, but at least once each calendar year.

According to records reviewed during the inspection, valve maintenance on "El Banito" line exceeded 15 months between January 26, 2004 to August 17, 2005."

TGP Response:

PHMSA is correct in this finding. TGP has reviewed and modified its scheduling procedures and has raised the awareness of operations personnel regarding this issue in an effort to prevent a recurrence.

Proposed Civil Penalty:

Funds in the amount of $10,000.00 will be paid to the account of the U.S. Treasury by wire transfer in accordance with 49 CFR 89.21(b)(3) and the instructions included in the NOPV. This electronic transfer will constitute payment of the civil penalty assessed for Item 6 in the NOPV.

Pursuant to the response provided above regarding Item 5 of the NOPV, Tennessee Gas Pipeline respectfully contests this finding and is seeking elimination of the proposed civil penalty in the amount of $18,000.00. While TGP is not requesting a hearing on this matter at this time, we would like to reserve the right to a hearing pending the outcome of the aforementioned request to PHMSA.

Proposed Compliance Order and TGP Response:

Please note that the TGP response to each compliance order item immediately follows that item in bold type.

1. "In regard to Item Number 2 of the Notice, TGP should review their procedures related to §192.179. TGP should survey their valve locations and install adequate protection from tampering and damage." **TGP is proceeding with this directive.**

2. "In regard to Item Number 3 of the Notice, TGP should review their procedures related to §192.317. TGP should take the necessary steps to ensure that their facilities are protected from accidental damage." **TGP is proceeding with this directive.**

3. "In regard to Item Number 5 of the Notice, TGP should review their procedures related to use and evaluation of internal corrosion coupons and make necessary changes to be in compliance." **TGP objects to Item Number 3 of the Proposed Compliance Order on the basis of the explanation presented previously in this document corresponding to the NOPV Item 5 and respectfully requests that this Proposed Compliance Order Item Number 3 be withdrawn. TGP believes its procedures for the use and evaluation of internal corrosion coupons meet and exceed the requirements of 49 CFR 192.**

4. "In regard to Item Number 6 of the Notice, TGP should review their procedures related to §192.481. TGP shall conduct the appropriate inspection and perform any required remediation." **Please reference the discussion previously presented in this document for NOPV Item 6. TGP asserts that this Proposed Compliance Order Item Number 4 is unnecessary since the company's processes are being reviewed, corrections and enhancements will be made, and the appropriate inspections have been performed with no finding of atmospheric corrosion deficiencies. Consequently, TGP respectfully requests that this Proposed Compliance Order Item Number 4 be withdrawn.**

Conclusion:

TGP appreciates your attention to these matters and looks forward to working with both you and your staff toward ensuring a continued safe pipeline system.

Respectfully submitted,

Patrick F. Carey, P.E.
Director, D.O.T. Compliance Services