

NOV 17 2011

VIA CERTIFIED MAIL AND FAX TO: (205-325-7528)

Mr. Jesus Soto, Jr.
Vice President, Operations Services
Tennessee Gas Pipeline Company, LLC
1001 Louisiana Street
P.O. Box 2511
Houston, TX 77252-2511

Re: CPF No. 3-2011-1018H

Dear Mr. Soto:

Enclosed is a Corrective Action Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. It requires you to take certain corrective actions with respect to your hazardous natural gas pipeline system designated as the Line 200-4 pipeline in connection with the November 16, 2011 failure near Glouster in Morgan County, Ohio. The requirements of this Corrective Action Order are in addition to those in Consent Order, No 3-2011-1001S. Service is being made by certified mail and facsimile. Your receipt of this Corrective Action Order constitutes service of that document under 49 C.F.R. § 190.5. The terms and conditions of this Order are effective upon receipt.

Sincerely,

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Enclosure: Corrective Action Order and Copy of 49 C.F.R. §190.233

cc: Mr. Bill Cope, Vice President, Eastern Operations, Tennessee Gas Pipeline Company, LLC, 569 Brookwood Village, Suite 501, Birmingham, AL 35209
Mr. Pat Carey, Director, DOT Compliance, Tennessee Gas Pipeline Company, LLC
1001 Louisiana Street, P.O. Box 2511, Houston, TX 77252-2511
Mr. David Barrett, Director, Central Region, PHMSA
Mr. Alan Mayberry, Deputy Associate Administrator for Field Operations, Pipeline Safety

**U.S. DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
OFFICE OF PIPELINE SAFETY
WASHINGTON, D.C. 20590**

In the Matter of)	
)	
Tennessee Gas Pipeline Company, LLC)	CPF No. 3-2011-1018H
)	
Respondent.)	
)	

CORRECTIVE ACTION ORDER

This Corrective Action Order is being issued, under authority of 49 U.S.C. § 60112, to require Tennessee Gas Pipeline Company, LLC (Tennessee Gas or Respondent), a subsidiary of El Paso Corporation, to take the necessary corrective action to protect the public, property, and the environment from potential hazards associated with its Line 200 Pipeline System hazardous natural gas pipeline system and designated as Line 200-4.

On March 11, 2011, PHMSA issued a Notice of Proposed Safety Order (Notice)¹ to Tennessee Gas, alleging that certain segments of Respondent’s natural gas pipeline system designated as the Line 200 Pipeline System had conditions that, without corrective measures, would pose a pipeline integrity risk to public safety, property, or the environment. Specifically, the Notice alleged that the conditions causing a February 10, 2011 failure on Line 200-4 in mainline valve section 214 (Line Section 214-4), approximately 2.5 miles southeast of the town of Hanoverton, Ohio, and the March 1, 2011 failure on Line 200-1 in mainline valve section 209 (Line Section 209-1), approximately 0.5 miles downstream of the Cambridge Compressor Station 209, demonstrated the presence of integrity risks on those segments of Lines 200-1, 200-2, 200-3, and 200-4 running from Compressor Station 200 to Compressor Station 219, including the Pittsburg Spur (Affected Segments). PHMSA and Tennessee Gas entered into a Consent Agreement that was incorporated by reference into a Consent Order issued on March 31, 2011.²

On November 16, 2011, another failure occurred on Respondent’s Line 200-4, a 36-inch diameter natural gas pipeline near Glouster, Ohio. The failure resulted in the release of natural gas, as more fully described below. The cause of the failure has not yet been verified. Pursuant

¹ *In the Matter of Tennessee Gas Pipeline*, CPF No. 3-2011-1001S, issued March 31, 2011.

² Respondent agreed that the integrity risk identified in the Notice existed in the Affected Segments and agreed to address it by completing the actions specified in Section II of the Consent Agreement (“Work to be Performed”), including the actions set forth in any work plans and schedules, each of which would automatically be incorporated into the Consent Agreement upon approval. *Id* at Section II, pages 3-8.

to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), initiated and continues an investigation of the incident.

Preliminary Findings

- Respondent's Line 200 Pipeline System is composed of four parallel lines, namely, Lines 200-1, 200-2, 200-3, and Line 200-4, which are generally located within a common right-of-way.
- At approximately 8:45 a.m. EST on November 16, 2011, a failure occurred on Respondent's 36-inch natural gas pipeline, Line 200-4 in mainline valve section 205(Failure). The failure occurred in Morgan County, Ohio, approximately four miles southeast of Glouster, Ohio. The Failure was reported to the National Response Center at 10:21 a.m. EST on November 16, 2011 (NRC Report No. 995666).
- The Failure occurred downstream of the Albany Compressor Station in valve section 205-4 at Mile Post +11.08.³
- In response to the Failure, Tennessee Gas initially isolated the pipeline from valve section 204-4 at the Albany Compressor Station to mainline valve (MLV) 206-4. Lines 200-1, 200-2 and 200-3 remain in service.
- The Affected Pipeline is approximately 230 miles in length. The pipeline runs from the Greenup Compressor Station in Greenup County, Kentucky (MLV 200), to the Mercer Compressor Station in Mercer County, Pennsylvania (MLV 219), (Affected Pipeline).
- The release and ignition of an undetermined amount of gas produced a fireball that destroyed two homes and one other structure, damaged three other homes and caused three injuries. The two homes that were destroyed were approximately 300 yards from the failure location. Another home was also evacuated.
- The Failure was in a Class 1 rural location. The Affected Pipeline traverses "high consequence areas" (including populated areas) and crosses various roads and highways.
- A visual inspection by PHMSA and Tennessee Gas indicates that the pipeline failed at a girth weld. The apparent cause of the Failure is unknown and the investigation is ongoing. Line 200-4 remains shutdown and isolated from the Albany Compressor Station (MLV 204-4) to MLV 206-4.
- Respondent's Lines 200-1, 200-2, 200-3, and 200-4 originate from a common discharge header at the Greenup Compressor Station in Kentucky.

³ The Failure occurred in the Mercer operating area of Respondent's Line 200 Pipeline System. The Mercer Area is comprised of the Albany Compressor Station (MP 204) and four parallel mainline segments, Lines 200-1 (26"), 200-2 (26"), 200-3 (26") and 200-4 (36"), across six mainline valve sections. The mainline valve sections are 204, 205, 206, 207, 208 and 209.

- At the time of the incident, the discharge pressure at the Albany Compressor Station, located upstream of the Failure site was 763 psig. The maximum allowable operating pressure (MAOP) for the four parallel Lines is 790 psig.
- At the Failure site, the Line 200-4 pipeline was constructed in 1963 of 36-inch x 0.344-inch wall thickness, grade API-5L X60, DSAW seam, manufactured by National Tube. It has a coal tar enamel coating and an impressed current cathodic protection system. The Line 200-4 pipeline was constructed in sections from 1962 to 1968, which includes pipe by National Tube and other manufacturers using similar girth welding processes.
- The pipeline in the area of the Failure was last hydrostatically tested in 1971 to a test pressure of 1,042 psig.
- Earlier this year, Tennessee Gas experienced similar failures on its Line 200 Pipeline System. On February 10, 2011, Line 200-4 experienced a girth weld failure in a road crossing in valve section 214-4, resulting in an explosion and fire. Then, on March 1, 2011, Line 200-1 experienced a girth weld failure in valve section 209-1.
- As required by the March 2011 Consent Order, CPF #3-2011-1001S, Respondent re-evaluated its 2005 in-line inspection (ILI) results from MLV 214-4 to MLV 219-4 to determine whether any features with similar characteristics to the feature at the failure site were present elsewhere in this portion of Line 200-4.
- On June 1, 2011, Respondent performed an ILI on Line 200-4 from MLV 204-4 to MLV 209-4 using magnetic flux leakage technology. The grading report from the ILI provided one indication of an immediate repair and Respondent scheduled 25 additional digs. No actionable anomalies were reported in the vicinity of the Failure site.
- Tennessee Gas, a subsidiary of El Paso Corporation, has 876 miles of pipeline within the State of Ohio. El Paso recently announced that it was being purchased by Kinder Morgan Pipelines. The El Paso Pipeline Group operates a 43,000-mile interstate pipeline system.

Determination of Necessity for Corrective Action Order and Right to Hearing

Section 60112 of Title 49, United States Code, provides for the issuance of a Corrective Action Order, after reasonable notice and the opportunity for a hearing, requiring corrective action, which may include the suspended or restricted use of a pipeline facility, physical inspection, testing, repair, replacement, or other action as appropriate. The basis for making the determination that a pipeline facility is hazardous, requiring corrective action, is set forth both in the above-referenced statute and 49 C.F.R. § 190.233, a copy of which is enclosed.

Section 60112, and the regulations promulgated thereunder, provide for the issuance of a Corrective Action Order without prior opportunity for notice and hearing upon a finding that failure to issue the Order expeditiously will result in likely serious harm to life, property or the environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the Order.

After evaluating the foregoing preliminary findings of fact, I find that the continued operation of the pipeline without corrective measures would be hazardous to life, property and the environment. Additionally, after considering the age of the pipe, the circumstances surrounding the Failure, the proximity of the pipeline to populated areas, public roadways and high consequence areas, the hazardous nature of the product being transported, the uncertainties as to the cause of the Failure, the ongoing investigation to determine the cause of the Failure and the existing Consent Agreement, I find that a failure to issue this Order expeditiously to require immediate corrective action would result in likely serious harm to life, property, and the environment. Accordingly, this Corrective Action Order mandating immediate corrective action is issued without prior notice and opportunity for a hearing. The terms and conditions of this Order are effective upon receipt.

Within 10 days of receipt of this Order, Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, delivered personally, by mail or by telecopy at (202) 366-4566. The hearing will be held in Kansas City, Missouri or Washington, D.C., on a date mutually convenient to PHMSA and Respondent.

After receiving and analyzing additional data in the course of this investigation, PHMSA may identify other corrective measures that need to be taken. Respondent will be notified of any additional measures required and amendment of this Order will be considered. To the extent consistent with safety, Respondent will be afforded notice and an opportunity for a hearing prior to the imposition of any additional corrective measures.

Required Corrective Action

Pursuant to 49 U.S.C. § 60112, I hereby order Tennessee Gas Pipeline to immediately take the following corrective actions with respect to Line 200-4 from the Greenup Compressor Station (MLV 200-4) to the Mercer Compressor Station (MLV 219-4) (the Affected Pipeline):

1. Tennessee Gas shall not operate the 26.8-mile segment of the Affected Pipeline from the isolated valve section from the MLV 204-4 at the Albany Compressor Station to MLV 206-4, until authorized to do so by the Director, Central Region (Director).
2. Tennessee Gas will maintain a 20% pressure reduction in the operating pressure along the Affected Pipeline between MLV 200-4 to MLV 219-4. The operating pressure will not exceed eighty percent (80%) of the actual operating pressure in effect immediately prior to the Failure. This pressure restriction will remain in effect until written approval to increase the pressure or return the pipeline to its pre-failure operating pressure is obtained from the Director pursuant to Item 14. By November 18, 2011, provide the Director a listing of the actual operating pressure at each compressor station on Line 200-4 at the time of failure, and the reduced discharge pressure settings at each compressor station.
3. Prior to resuming operation of the isolated segment from MLV 204-4 to MLV 206-4, develop and submit a written re-start plan for prior approval of the Director, Central

Region, OPS, Pipeline and Hazardous Materials Safety Administration, 901 Locust Street, Suite 462, Kansas City, MO 64106-2641. The restart plan shall include actions to confirm the integrity of the isolated segment.

4. After receiving authorization from the Director to restart the isolated section, the pressure is not to exceed 608 psig. This pressure restriction will remain in effect until written approval to increase the pressure or return the pipeline to its pre-failure operating pressure is obtained from the Director pursuant to Item 14.
5. Within 45 days of receipt of this Order, complete mechanical and metallurgical testing and failure analysis of the failed pipe, including analysis of soil samples and any foreign materials. Complete the testing and analysis as follows:
 - A. Document the chain-of-custody when handling and transporting the failed pipe section and other evidence from the failure site;
 - B. Utilize the mechanical and metallurgical testing protocols, including the testing laboratory approved by the Director;
 - C. Prior to commencing the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow a PHMSA representative to witness the testing; and
 - D. Ensure that the testing laboratory distributes all resulting reports in their entirety (including all media), whether draft or final, to the Director at the same time as they are made available to Respondent.
6. Within 15 days following receipt of this Order, submit a report to the Director identifying sections of the Affected Pipeline where; any buildings intended for human occupancy are within the Potential Impact Radius (as defined in 49 C.F.R. § 192.903), all road and railway crossings, all High Consequence Areas, and all Class 2, 3 and 4 locations.
7. Within 60 days following receipt of this Order, complete a root cause failure analysis for the November 16, 2011 accident that is supplemented and facilitated by an independent third-party acceptable to the Director. Elements of the root cause analysis must include but are not limited to: a scoping document of the root cause analysis; procedures associated with root cause analysis; multiple methods used for the analysis and updates on each method as it progresses. The root cause analysis must document all contributory factors and the decision-making process. Submit a final report of the root cause process results to the Director including any lessons learned and whether the findings are applicable to other locations within the Respondent's Tennessee Gas Pipeline system.
8. Within 90 days following receipt of this Order, submit a remedial work plan (Work Plan) to the Director for approval. The Work Plan must provide for the verification of the integrity of the Affected Pipeline on a prioritized basis, considering both risk and

consequences of failure for those pipe sections identified per Item 6, and must address all factors known or suspected in the Failure, including, but not limited to the following:

- A. If the root cause analysis determines that girth weld or heat affected zone irregularities are a contributory or root cause of the failure, the Work Plan must provide for the engagement of a consultant specializing in identification and remediation of these conditions and a schedule for implementation of recommended mitigative measures to remediate these threats;
- B. The integration of the results of the failure analyses and other actions required by this Order with all relevant operating data, including all historical repair information, construction, operating, maintenance, testing, metallurgical analysis or other third-party consultation information, and assessment data for the delivery line. Data gathering activities must include a review of the failure history (in service and pressure test failures) of the pipeline and development of a written report containing all available information regarding locations, dates, and causes of leaks and failures;
- C. The performance of additional field testing, inspections, and evaluations to determine whether and to what extent the conditions associated with the failures, or any other integrity-threatening conditions are present elsewhere on the pipeline. At a minimum, the inspections and evaluations must consider use of in-situ non-destructive examination of girth welds on the Affected Pipeline. Include a detailed description of the criteria to be used for the evaluation and prioritization of any integrity threats and anomalies that are identified;
- D. The performance of repairs or other corrective measures that fully remediate the condition(s) associated with the pipeline failures and any other integrity-threatening condition everywhere along Line 200-4. Based on the known history and condition of the pipeline, the plans for repairs must include consideration of: (1) in-situ non-destructive examination and removal or reinforcement of girth welds (or technical justification for not doing so); (2) replacement of the pipe segments (or technical justification for not doing so); and (3) pressure testing at sufficient pressure to assure that remaining anomalies no longer pose a long-term integrity threat. Include a detailed description of the criteria and method(s) to be used in undertaking any repairs, replacements, or other remedial actions;
- E. The implementation of continuing long-term periodic testing and integrity verification measures to ensure the ongoing safe operation of Line 200-4, considering the results of the analyses, inspections, and corrective measures undertaken pursuant to the Order; and
- F. A schedule for completion of the Items A–E.

9. The Work Plan will be incorporated into this Order. Respondent must revise the Work Plan as necessary to incorporate the results of actions undertaken pursuant to this Order and whenever necessary to incorporate new information obtained during the failure investigation and remedial activities. Submit any such plan revisions to the Director for prior approval. The Director may approve plan elements incrementally.
10. Implement the Work Plan as it is approved by the Director, including any revisions to the plan.
11. Submit quarterly reports to the Director that: (1) include all available data and results of the testing and evaluations required by this Order; and (2) describe the progress of the repairs or other remedial actions being undertaken. The first quarterly report for the period from November 16 through January 30, 2012, shall be due by February 28, 2012.
12. It is requested but not required that Respondent maintain documentation of the costs associated with implementation of this Corrective Action Order. Include in each monthly report submitted, the to-date total costs associated with: (1) preparation and revision of procedures, studies and analyses; (2) physical changes to pipeline infrastructure, including repairs, replacements and other modifications; and (3) environmental remediation, if applicable.
13. With respect to each submission that under this Order requires the approval of the Director, the Director may: (a) approve, in whole or part, the submission; (b) approve the submission on specified conditions; (c) modify the submission to cure any deficiencies; (d) disapprove in whole or in part, the submission, directing that Respondent modify the submission, or (e) any combination of the above. In the event of approval, approval upon conditions, or modification by the Director, Respondent shall proceed to take all action required by the submission as approved or modified by the Director. If the Director disapproves all or any portion of the submission, Respondent must correct all deficiencies within the time specified by the Director, and resubmit it for approval.
14. The Director may allow the removal or modification of the pressure restriction set forth in Item 3 upon a written request from Respondent demonstrating that the hazard has been abated and that restoring the pipeline to its pre-failure operating pressure is justified based on a reliable engineering analysis showing that the pressure increase is safe considering all known defects, anomalies and operating parameters of the pipeline. The Director may grant an extension of time for compliance with any of the terms of this Order upon a written request timely submitted demonstrating good cause for an extension.

The actions required by this Corrective Action Order are in addition to and do not waive any requirements that apply to Respondent's pipeline system under 49 C.F.R. Part 195, under any other order issued to Respondent under authority of 49 U.S.C. § 60101 et seq., or under any other provision of Federal or State law, including the Consent Agreement and Consent Order, CPF No. 3-2011-1001S, issued March 31, 2011.

Respondent may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator shall be final.

Failure to comply with this Order may result in the assessment of civil penalties and in referral to the Attorney General for appropriate relief in United States District Court pursuant to 49 U.S.C. § 60120.

The terms and conditions of this Corrective Action Order are effective upon receipt.

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Date Issued