



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

February 14, 2014

VIA CERTIFIED MAIL AND FAX TO: (304) 357-2644

Mr. Shawn L. Patterson
President
Columbia Gulf Transmission Company
1700 MacCorkle Avenue, SE
Charleston, WV 25314

Re: CPF No. 2-2014-1001H

Dear Mr. Patterson:

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 the operation of Columbia Gulf Transmission's Line 200 in Kentucky and Tennessee northeast of the Hartsville Compressor Station. The Corrective Action Order requires you to take immediate action to protect the public, property, and environment in connection with the failure of this pipeline on February 13, 2014, near Knifley, Kentucky.

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. Please direct any questions on this matter to Wayne T. Lemoi, Director, Southern Region, OPS, at (404) 832-1160.

Sincerely,


for: Jeffrey D. Wieso
Associate Administrator
for Pipeline Safety

Enclosure

cc: Mr. Wayne T. Lemoi, Southern Region Director, OPS

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

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In the Matter of)

Columbia Gulf Transmission Company,)

Respondent)
_____)

CPF No. 2-2014-1001H

CORRECTIVE ACTION ORDER

Purpose and Background

This Corrective Action Order is being issued, under authority of 49 U.S.C. § 60112, to require Columbia Gulf Transmission Company (Respondent or CGT), to take the necessary corrective actions to protect the public, property, and the environment from potential hazards associated with a failure of CGT's Line 200 natural gas pipeline, that occurred between the Clementsville Compressor Station and the first immediate downstream valve setting, near Knifley, Kentucky, in Adair County.

On February 13, 2014, a failure occurred on Respondent's 30-inch line approximately 0.75 miles north of Knifley, Kentucky, and approximately 8.7 miles south of the Clementsville Compressor Station, resulting in the release of natural gas. The cause of the failure has not yet been determined.

Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety, Southern Region initiated an investigation of the incident. The preliminary findings of the investigation are as follows:

Preliminary Findings

- The Columbia Gulf Transmission (CGT) natural gas pipeline system is part of the Columbia Pipeline Group. It originates along the Gulf Coast of the United States and transports natural gas through Louisiana, Mississippi, Tennessee, and Kentucky. CGT's pipeline system terminates at the Leach Meter Station, approximately 3 miles south of Catlettsburg, Kentucky, where the natural gas is transferred to another Columbia Pipeline Group company, Columbia Gas Transmission. The CGT pipeline system consists of three natural gas transmission pipelines as follows:

- Line 100, 30-inch outside diameter MAOP of 935 psig
 - Line 200, 30-inch outside diameter, MAOP of 1,008 psig (the ruptured line)
 - Line 300, 36-inch outside diameter, MAOP of 1,008 psig
- At approximately 2:05 am EST on February 13, 2014, a rupture occurred on Respondent's 30-inch 200 Line, resulting in a reported release of approximately 26.3 MMCF of natural gas.
 - CGT reported the incident to the National Response Center on February 13, 2014 (NRC Report No. 1073825).
 - In Kentucky Line 200 is one of CGT's three parallel natural gas transmission pipelines. The other lines are Line 100 and Line 300. Line 200 crosses over the Tennessee/Kentucky border northeast of Nashville and then runs from the southwest to the northeast through Kentucky terminating at the Leach Meter Station, approximately 3 miles south of Catlettsburg, KY.
 - The failure occurred in a remote location with several houses, several barns, and other buildings within a mile of the pipeline.
 - The released natural gas ignited causing a fire that destroyed two houses, three small buildings, one carport and four cars. It also damaged one other house and several other buildings.
 - Two persons were injured, treated for burns at a local hospital, and released. There were no reported fatalities. Four persons were unable to return to their homes.
 - Following the February 13, 2014 failure, CGT personnel shut down compressor unit # 1 at the Clementsville Compressor Station (CS) at 02:08 a.m. eliminating the discharge of gas. They then closed a valve on the discharge side of the station at 02:11 a.m. using a valve actuator. Valve 313, approximately 13.92 miles downstream (south) of the CS, was already closed at the time of the failure. CGT dispatched personnel to complete the isolation of the pipeline by closing the Adair Interconnect valve, approximately 11.81 miles south of the Clementsville Compressor Station. The isolation was complete approximately 30-35 minutes after the pressure drop. CGT later discovered that Valve 313 was leaking so CGT personnel shut down valve 312, which was the next downstream main line block valve and located approximately 25.20 miles downstream of the CS.
 - At the time of the incident, the estimated failure site operating pressure of Line 200 was 961 psig. The reported maximum allowable operating pressure (MAOP) of this line segment is 1008 psig.
 - Line 200 is shut-in from valve 312 at pipeline station number 3294 +56 (approximately 25.20 miles south of the Clementsville Compressor Station to a discharge valve on the

south side of the Clementsville Compressor Station. When it is returned to service the pressure will not exceed 769 psig.

- The Line 200 pipe was manufactured by U.S. Steel in 1965. The pipe is 30-inch, 0.323-inch w.t., X-65, coated with modified primer enamel with fiberglass and kraft paper.
- The cause of the failure is unknown and the investigation is ongoing.

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 portions of Respondent's Line 200 in Tennessee and Kentucky, without corrective measures, would be hazardous to life, property and the environment. Additionally, after considering the age of the pipe, circumstances surrounding this failure, the proximity of the pipeline to populated areas and public roadways the hazardous nature of the product the pipeline transports, the pressure required for transporting the material, the uncertainties as to the cause of the failure, and the ongoing investigation to determine the cause of the failure, 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 Atlanta, Georgia or Washington, D.C. on a date that is 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. CGT 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

The "*Affected Segment*" below means approximately 254.35 miles of CGT's 30-inch Line 200 from the Hartville Compressor Station in Tennessee to the Leach Meter Station, approximately 3 miles south of Catlettsburg, Kentucky.

The "*Isolated Segment*" means the 25.20-mile segment of CGT's 30-inch Line 200 from main line valve 312 at Station 3294+56 to a block valve on the discharge side of the Clementsville Compressor Station at station 4625+30. It is the portion of the "Affected Segment" that was shut-in after the failure on February 13, 2014, and that must remain shut-in until a restart plan is approved by the "Director."

The "*Director*" means the Director, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety, Southern Region. The Director's address is 233 Peachtree St., Suite 600, Atlanta, GA 30303.

Pursuant to 49 U.S.C. § 60112, I hereby order CGT to immediately take the following corrective actions with respect to the Line 200 pipeline:

1. ***Isolated Segment Shut In.*** CGT must not operate the Isolated Segment until authorized to do so by the Director.
2. ***Operating Pressure Restriction.*** CGT must reduce and maintain a twenty percent (20%) pressure reduction in the actual operating pressure along the entire length of the Affected Segment such that the operating pressure along the Affected Segment will not exceed eighty percent (80%) of the actual operating pressure in effect immediately prior to the failure on February 13, 2014.
 - a. This pressure restriction is to 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.
 - b. By February 20, 2014, CGT must provide the Director the actual operating pressures of each compressor station and each main line pressure regulating station on the Affected Segment at the time of failure and the reduced pressure restriction set-points at these same locations.
 - c. This pressure restriction requires any relevant remote or local alarm limits, software programming set-points or control points, and mechanical over-pressure devices to be adjusted accordingly.
 - d. When determining the pressure restriction set-points, CGT must take into account any in-line inspection (ILI) features or anomalies present in the Affected Segment

to provide for continued safe operation while further corrective actions are completed.

- e. CGT must review the pressure restriction monthly by analyzing the operating pressure data. Take into account any ILI features or anomalies present in the Affected Segment and immediately reduce the operating pressure to maintain the safe operations of the Affected Segment, if warranted by the monthly review. Submit the results of the monthly review to the Director. The results must include, at a minimum, the current discharge set-points (including any additional pressure reductions), and any pressure exceedance at discharge set-points.
3. **Restart Plan.** Prior to resuming operation of the Isolated Segment, develop and submit a written Restart Plan to the Director for prior approval.
- a. The Director may approve the Restart Plan incrementally without approving the entire plan but the Isolated Segment cannot resume operation until the Restart Plan is approved in its entirety.
 - b. Once approved by the Director, the Restart Plan will be incorporated by reference into this Order.
 - c. The Restart Plan must provide for adequate patrolling of the Isolated Segment during the restart process and must include incremental pressure increases during start-up, with each increment to be held for at least 2 hours.
 - d. The Restart Plan must include sufficient surveillance of the pipeline during each pressure increment to ensure that no leaks are present when operation of the line resumes.
 - e. The Restart Plan must specify a day-light restart and include advance communications with local emergency response officials.
 - f. The Restart Plan must provide for a review of the Isolated Segment for conditions similar to those of the failure including a review of construction, operating and maintenance (O&M) and integrity management records such as ILI results, hydrostatic tests, root cause failure analysis of prior failures, aerial and ground patrols, corrosion, cathodic protection, excavations and pipe replacements. Operator must address any findings that require remedial measures to be implemented prior to restart.
 - g. The Restart Plan must also include documentation of the completion of all mandated actions, and a management of change plan to ensure that all procedural modifications are incorporated into CGT's operations and maintenance procedures manual.
 - h. Prior to restart, submit to the Director a contingency plan to operate and monitor the Isolated Segment during flooding conditions, including enhanced patrolling and surveillance.
4. **Return to Service.** After the Director approves the Restart Plan, CGT may return the Isolated Segment to service but the operating pressure must not exceed eighty percent

(80%) of the actual operating pressure in effect immediately prior to the failure on February 13, 2014, in accordance with Item 2 above.

5. ***Removal of Pressure Restriction.***

- a. The Director may allow the removal or modification of the pressure restriction upon a written request from CGT demonstrating 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 and considering all known defects, anomalies, and operating parameters of the pipeline.
- b. The Director may allow the temporary removal or modification of the pressure restrictions upon a written request from CGT demonstrating that temporary mitigative and preventive measures are implemented prior to and during the temporary removal or modification of the pressure restriction. The Director's determination will be based on the failure cause and provision of evidence that preventative and mitigative actions taken by the operator provide for the safe operation of the Affected Segment during the temporary removal or modification of the pressure restriction. Appeals to determinations of the Director in this regard will be decided by the Associate Administrator for Pipeline Safety.

6. ***Instrumented Leakage Survey.*** Within 30 days of receipt of this Order, CGT must perform an aerial or ground instrumented leakage survey of the Affected Segment. CGT must investigate all leak indications and remedy all leaks discovered. CGT must submit documentation of this survey to the Director within 45 days of receipt of this Order.

7. ***Records Verification.*** As recommended in PHMSA Advisory Bulletin 2012-06, verify the records for the Affected Segment to confirm the maximum allowable operating pressure (MAOP). CGT must submit documentation of this this record verification to the Director within 45 days of receipt of this Order.

8. ***Review of Prior Inline Inspection (ILI) Results.*** Within 30 days of receipt of this Order, conduct a review of any previous ILI results of the Affected Segment. Re-evaluate all ILI results from the past 10 calendar years; include a review of the ILI vendors' raw data and analysis. Determine whether any features were present in the failed pipe joint and/or any other pipe removed. Also, determine if any features with similar characteristics are present elsewhere on the Affected Segment. CGT must submit documentation of this ILI review to the Director within 45 days of receipt of this Order as follows:

- a. List all ILI tool runs, tool types, and the calendar years of the tool runs.
- b. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI features present in the failed joint and/or other pipe removed.
- c. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI features with similar characteristics present elsewhere on the Affected Segment.
- d. Explain the process used to review the ILI results and the results of the reevaluation.

9. ***Mechanical and Metallurgical Testing.*** Within 45 days of receipt of this Order, complete mechanical and metallurgical testing and failure analysis of the failed pipe, including an 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. Within 10 days of receipt of this Order, develop and submit the testing protocol and the proposed testing laboratory to the Director for prior approval.
 - c. Prior to beginning the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow for an OPS representative to witness the testing.
 - d. Ensure the testing laboratory distributes all reports whether draft or final in their entirety to the Director at the same time they are made available to CGT.
10. ***Root Cause Failure Analysis.*** Within 90 days following receipt of this Order, complete a root cause failure analysis (RCFA) and submit a final report of this RCFA to the Director. The RCFA must be supplemented/facilitated by an independent third-party acceptable to the Director and must document the decision making process and all factors contributing to the failure. The final report must include findings and any lessons learned and whether the findings and any lessons learned are applicable to other locations within CGT's pipeline system.
11. ***Emergency Response Plan and Training Review.*** CGT must review and assess the effectiveness of its emergency response plan with regards to the failure to include actions CGT took on February 13, 2014, to isolate and make the pipeline safe. Include in the review and assessment the on-scene response and support, coordination, and communication with emergency responders and public officials. Also, include a review and assessment of the effectiveness of its emergency training program. CGT must amend its emergency response plan and emergency training, if necessary, to reflect the results of this review. The documentation of this Emergency Response Plan and Training Review must be available for inspection by OPS or provided to the Director, if requested.
12. ***Public Awareness Program Review.*** CGT must review and assess the effectiveness of its Public Awareness Program with regards to the failure. CGT must amend its Public Awareness Program, if necessary, to reflect the results of this review. The documentation of this Public Awareness Program Review must be available for inspection by OPS or provided to the Director, if requested.
13. ***Integrity Verification and Remediation Plan (IVRP).***
 - a. Within 90 days following receipt of this Order, CGT must submit an Integrity Verification and Remediation Plan (IVRP) to the Director for approval.
 - b. The Director may approve the IVRP incrementally without approving the entire IVRP.

- c. Once approved by the Director, the IVRP will be incorporated by reference into this Order.
- d. The IVRP must specify the tests, inspections, assessments, evaluations, and remedial measures CGT will use to verify the integrity of the Affected Segment. It must address all known or suspected factors and causes of the February 13, 2014, failure. CGT should consider both the risk of another failure and the consequence of another failure to develop a prioritized schedule for IVRP related work along the Affected Segment.
- e. The IVRP must include a procedure or process to:
 - i. Identify pipe in the Affected Segment with characteristics similar to the contributing factors identified for the February 13, 2014, failure.
 - ii. Gather all data necessary to review the failure history (in service and pressure test failures) of the Affected Segment and to prepare a written report containing all the available information such as the locations, dates, and causes of leaks and failures.
 - iii. Integrate the results of the metallurgical testing, root cause failure analysis, and other corrective actions required by this Order with all relevant pre-existing operational and assessment data for the Affected Segment. Pre-existing operational data includes, but is not limited to, construction, operations, maintenance, testing, repairs, prior metallurgical analyses, and any third party consultation information. Pre-existing assessment data includes, but is not limited to, ILI tool runs, hydrostatic pressure testing, direct assessments, close interval surveys, and DCVG/ACVG surveys.
 - iv. Determine if conditions similar to those contributing to the failure on February 13, 2014, are likely to exist elsewhere on the Affected Segment.
 - v. Conduct additional field tests, inspections, assessments, and/or evaluations to determine whether, and to what extent, the conditions associated with the failure on February 13, 2014, and other failures from the failure history [see 13(e)(ii) above] or any other integrity threats are present elsewhere on the Affected Segment. At a minimum, this process must consider all failure causes and specify the use of one or more of the following:
 - 1. ILI tools that are technically appropriate for assessing the pipeline system based on the cause of failure on February 13, 2014, and that can reliably detect and identify anomalies,
 - 2. Hydrostatic pressure testing,
 - 3. Close-interval surveys,
 - 4. Cathodic protection surveys, to include interference surveys in coordination with other utilities (e.g. underground utilities, overhead power lines, etc.) in the area,

5. Coating surveys,
6. Stress corrosion cracking surveys,
7. Selective seam corrosion surveys; and,
8. Other tests, inspections, assessments, and evaluations appropriate for the failure causes.

Note: CGT may use the results of previous tests, inspections, assessments, and evaluations if approved by the Director, provided the results of the tests, inspections, assessments, and evaluations are analyzed with regard to the factors known or suspected to have caused the February 13, 2014, failure.

- vi. Describe the inspection and repair criteria CGT will use to prioritize, excavate, evaluate, and repair anomalies, imperfections, and other identified integrity threats. Include a description of how any defects will be graded and a schedule for repairs or replacement.
 - vii. Based on the known history and condition of the Affected Segment, describe the methods CGT will use to repair, replace, or take other corrective measures to remediate the conditions associated with the pipeline failure on February 13, 2014, and to address other known integrity threats along the Affected Segment. The repair, replacement, or other corrective measures must meet the criteria specified in 13(e)(vi) above.
 - viii. Implement continuing long-term periodic testing and integrity verification measures to ensure the ongoing safe operation of the Affected Segment considering the results of the analyses, inspections, evaluations, and corrective measures undertaken pursuant to the Order.
 - ix. Implement specific actions CGT will take on its entire pipeline system as a result of the lessons learned from work on this Order.
- f. Include a proposed schedule for completion of the IVRP.
- g. CGT must revise the IVRP as necessary to incorporate new information obtained during the failure investigation and remedial activities, to incorporate the results of actions undertaken pursuant to this Order, and/or to incorporate modifications required by the Director.
- i. Submit any plan revisions to the Director for prior approval.
 - ii. The Director may approve plan revisions incrementally.
 - iii. Any and all revisions to the IVRP after it has been approved and incorporated by reference into this Order will be fully described and documented in the CAO Documentation Report (CDR).
- h. Implement the IVRP as it is approved by the Director, including any revisions to the plan.

14. **CAO Documentation Report (CDR).** CGT must create and revise, as necessary, a CAO Documentation Report (CDR). When CGT has concluded all the items in this Order it will submit the final CDR in its entirety to the Director. This will allow the Director to complete a thorough review of all actions taken by CGT with regards to this Order prior to approving the closure of this Order. The intent is for the CDR to capture summations of all activities and the documentation associated with this Order in one document.
- a. The Director may approve the CDR incrementally without approving the entire CDR.
 - b. Once approved by the Director, the CDR will be incorporated by reference into this Order.
 - c. The CDR must include but not be limited to:
 - i. Table of Contents;
 - ii. Summary of the pipeline failure of February 13, 2014, and the response activities;
 - iii. Summary of pipe data/properties and all prior assessments of the Affected Segment;
 - iv. Summary of all tests, inspections, assessments, evaluations, and analysis required by the Order;
 - v. Summary of the Mechanical and Metallurgical Testing as required by the Order;
 - vi. Summary of the RCFA with all root causes as required by the Order;
 - vii. Documentation of all actions taken by CGT to implement the IVRP, the results of those actions, and the inspection and repair criteria used;
 - viii. Documentation of any revisions to the IVRP including those 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;
 - ix. Lessons learned while completing this Order;
 - x. A description of the specific actions CGT will take on its entire pipeline system as a result of the lessons learned from work on this Order; and
 - xi. Appendices (if required).

OTHER REQUIREMENTS

1. **Reporting.** Submit quarterly reports to the Director that: (1) include all available data and the 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 is due on April 10, 2014. Subsequent quarterly reports are due 10 days after the close of the calendar

close of the calendar quarter; e.g. 1st quarter - due April 10, 2014, 2nd quarter - due July 10, 2014, 3rd quarter - due October 10, 2014. The Director may change the interval for the submission of these reports.

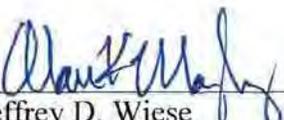
2. **Documentation of the Costs.** It is requested but not required that Respondent maintain documentation of the costs associated with implementation of this Corrective Action Order. Include in each quarterly report submitted, the to-date total costs associated with: (1) preparation and revision of procedures, studies and analyses; (2) physical changes to pipeline infrastructure, including repairs, replacements and other modifications; and (3) environmental remediation, if applicable.
3. **Approvals.** 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.
4. **Extensions of Time.** 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 Order are in addition to and do not waive any requirements that apply to Respondent's pipeline system under 49 C.F.R. Part 192, 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.

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

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 Date Issued