

August 15, 2023

VIA ELECTRONIC MAIL TO: stanley_chapman_III@tcenergy.com

Mr. Stanley Chapman III
Executive Vice President and President US & Mexico Natural Gas
TC Energy Corporation
700 Louisiana Street
Houston, Texas 77002

CPF No. 1-2023-051-CAO

Dear Mr. Chapman:

Enclosed please find the Amended Corrective Action Order (ACAO or Order) issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), in the above-referenced case. It requires Columbia Gas Transmission, LLC (CGT or Respondent), a subsidiary of TC Energy Corporation, to take certain corrective actions with respect to a rupture that occurred on the 26-inch Line VB pipeline located in Strasburg, Virginia.

Service of the ACAO by electronic transmission is deemed complete upon transmission and acknowledgment of receipt, or as otherwise provided under 49 C.F.R. § 190.5. The terms and conditions of this Order are effective upon completion of service.

Sincerely,

For Alan Mayberry
Associate Administrator
for Pipeline Safety

Enclosure: CAO

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, OPS
Mr. Robert Burrough, Director, Eastern Region, OPS
Mr. Dan Cercone, Senior Manager, Regulatory Compliance, TC Energy
Corporation, dan_cercone@tcenergy.com

CONFIRMATION OF RECEIPT REQUESTED

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In the Matter of)	
)	
Columbia Gas Transmission, LLC,)	CPF No. 1-2023-051-CAO
a subsidiary of TC Energy Corporation,)	
)	
Respondent.)	
)	

² With the exception of the amendment to the pressure restrictions in Required Corrective Measure 2 below, all other relevant deadlines and required actions under the “Required Corrective Measures” section remain the same as ordered in the initial July 28, 2023, CAO (i.e., the specified deadlines will still be calculated from the CAO’s July 28 issuance date).

sudden pressure drop on their SCADA screens indicating a possible failure of Line VB. At 8:45 a.m. CGT personnel at the downstream, nearby Strasburg Compressor Station (Strasburg CS) observed the fire and smoke resulting from the failure. At 8:50 a.m. CGT's control room initiated automated valve closure of Valve 3080 at the Dysart Gate Mainline Valve site upstream of the failure location. At 9:06 a.m. CGT operational personnel arrived at the scene of the failure.

- CGT initially reported the Incident to the National Response Center (NRC) at 9:42 a.m. on July 25, 2023 (NRC Report No. 1374102), indicating there was a fire and release of an unknown volume of natural gas greater than 3,000 MCF. In its 48-hour update to the NRC CGT identified the volume of gas released to be 70,478 MCF.
- The natural gas was released to the atmosphere with no injuries, fatalities or evacuations associated with this incident. CGT discovered ejected pipe from the VB pipeline in three segments within the right of way totaling approximately 250 feet of pipe.
- Prior to the rupture, Line VB was operating at 777 pounds per square inch gauge (psig). The maximum allowable operating pressure (MAOP) of Line VB is 800 psig. Line VB was out of service for a class location replacement from May 30, 2023 until July 24, 2023 when the line was returned to service at approximately 7:43 p.m., about 13 hours prior to the Incident.
- Line VB was shut in at approximately 9:17 a.m., when upstream Valve 3130 at the Moo Manor Valve Setting and downstream Valve VB-013 at the Strasburg CS were manually closed.
- The failed portion of the pipeline was constructed in 1950 with a 26-inch nominal diameter, 0.281-inch wall thickness, X-52 grade pipe that was manufactured by A.O. Smith. The pipe has an electric flash welded (EFW) longitudinal seam and has a coal tar coating. Alignment sheets reviewed for Line VB identified a significant portion of the line is comprised of pipe of this vintage and manufacturer. Line VB originates at the Dysart Gate Mainline valve site and terminates at the Virginia/Maryland border where it moves into CGT's Maryland system.
- Pipe manufactured by A.O. Smith using flash welding has had in-service incidents reported for pipe manufactured in nearly every year from 1928 – 1971.
- CGT also operates Lines VB-5, a 36-inch, double submerged arc welded (DSAW) natural gas pipeline built in 1968 with a 1,000 psig MAOP, and Line VB-Loop, a 26-inch, submerged arc welded (SAW) natural gas pipeline built in 1958 with an 800 psig MAOP. Both of these lines are in the same right-of-way as Line VB. Line VB-5 is approximately 25 feet from Line VB at the failure location and is currently isolated from Valve 4115 at the Dysart Gate Mainline Valve site to Valve 3643 at the Strasburg CS, and is holding pressure at approximately 476 psig. Line VB-Loop, located further from the VB pipeline within the right-of-way, has remained in normal operation.

- The Incident occurred in a Class 1 location, non-high consequence area. The isolated segment of line VB from Valve 3130 at the Moo Manor valve to Valve VB-013 at the Strasburg CS contains both Class 3 and High Consequence Areas (HCA).
- CGT completed a project in 2022 to make Line VB able to accept and utilize an in-line inspection (ILI) tool. The first in-line inspection integrity assessment was planned for November 2023.
- The cause of the failure is currently unknown, but based on initial observations of the failed pipe, environmental cracking is the suspected cause of the Incident.

On August 3, 2023, CGT submitted a request for amendments to the CAO for PHMSA's consideration. The requested changes included revisions to Corrective Action 2 to clarify aspects of the pressure restrictions imposed on the *Affected Pipelines* defined below. Pursuant to this request, PHMSA is amending the CAO to specify the existing operating restrictions that have been imposed on each of the three (3) pipelines within the VB system. The amendment made below in Corrective Measure 2 is, in part, to reflect clarification regarding the pressure restrictions imposed in the July 28 CAO. The amendment is also to specify the appropriate present operating pressure restrictions for pipelines VB-5 and VB Loop, as based on PHMSA's continuing investigation and additional pipeline integrity information provided by CGT since the incident on adjacent Line VB occurred.

Section 60112 authorizes PHMSA to determine that a pipeline facility is or would be hazardous to life, property, or the environment and if there is a likelihood of serious harm, to issue an order without prior notice to the operator of the facility to take necessary corrective action, including suspended or restricted use of the facility, physical inspection, testing, repair, replacement, or other appropriate action. An order issued without notice must provide an opportunity for a hearing as soon as practicable after the order is issued.

In deciding whether to issue an order, PHMSA must consider the following, if relevant: (1) the characteristics of the pipe and other equipment used in the pipeline facility, including the age, manufacture, physical properties, and method of manufacturing, constructing, or assembling the equipment; (2) the nature of the material the pipeline facility transports, the corrosive and deteriorative qualities of the material, the sequence in which the material are transported, and the pressure required for transporting the material; (3) the aspects of the area in which the pipeline facility is located, including climatic and geologic conditions and soil characteristics; (4) the proximity of the area in which the natural gas pipeline facility is located to environmentally sensitive areas; (5) the population density and population and growth patterns of the area in which the pipeline facility is located; (6) any recommendation of the National Transportation Safety Board made under another law; and (7) other factors PHMSA may considers appropriate.

After evaluating the foregoing preliminary findings of fact, and having considered the age of the pipelines, the known issues with the manufacturing method of the failed pipeline segment, the material properties of the pipelines, the significant length of the pipeline of this same vintage and manufacturer, the hazardous nature of the product transported, the proximity of the pipelines to Class 3 and HCA populated areas, the pressure required for transporting the material, the uncertainty as to the cause of the failure, the uncertainty of potential impacts of the Incident to the other two pipelines in the ROW and the similar pipe characteristics and integrity threats, the lack of any prior data from an in-line inspection on the failed pipeline segment and other portions of the isolated segment of Line VB, and the possibility that the same condition(s) that may have caused the failure remain present in the pipelines, I find that continued operation of the pipeline without corrective measures is or would be hazardous to life, property, or the environment, and that failure to issue this Order without notice would result in the likelihood of serious harm.

Accordingly, under 49 C.F.R. § 190.233(b), this Amended 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 Amended Order, Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, with a copy to the Director, Eastern Region, PHMSA (Director). If a hearing is requested, it will be held in accordance with 49 C.F.R. § 190.211.

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, if appropriate, PHMSA will consider amending this Order. 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 Actions

Definitions:

Affected Pipelines – The “*Affected Pipelines*” means the entire length of Line VB from the Dysart Gate Mainline Valve setting to its termination at the Virginia/Maryland border, and Lines VB-5 and VB-Loop between the Dysart Valve setting and the Strasburg CS.

Isolated Segment – The “*Isolated Segment*” means the shut-in segment of CGT’s Line VB from Valve 3130 at the Moo Manor valve setting to Valve VB-013 at the Strasburg CS.

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

1. ***Shutdown of the Isolated Segment.*** The *Isolated Segment* must remain shut in and may not be operated until authorized to be restarted by the Director in accordance with the terms of this Order.
2. ***Operating Pressure Restriction.*** CGT must reduce and maintain pressure reduction in the actual operating pressure along the *Affected Pipelines*, such that upon restart the operating pressure along this portion of Line VB will not exceed eighty percent (80%) of the actual operating pressure in effect at the failure location immediately prior to the failure on July 25, 2023. Line VB-5 will not exceed eighty percent (80%) of the actual operating pressure recorded in the previous 60 days prior to the failure on July 25, 2023. Line VB Loop will not exceed the actual operating pressure in effect at the time of failure on July 25, 2023. As such the reduced operating pressure for the *Affected Pipelines* are as follows: Line VB: 621 psig, Line VB Loop: 769 psig and Line VB-5: 774 psig.
 - 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. This written approval may be obtained on an individual pipeline basis within the *Affected Pipelines*.
 - b. Within 15 days of receipt of the CAO, CGT must provide the Director the actual operating pressures of each compressor station and each main line pressure regulating station on the *Affected Pipelines* 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 Pipelines* 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, taking into account any ILI features or anomalies present in the *Affected Pipelines*. CGT must immediately reduce the operating pressure further to maintain the safe operations of the *Affected Pipelines*, if warranted by the monthly review. Further, CGT must submit the results of the monthly review to the Director including, at a minimum, the current discharge set-points (including any additional pressure reductions), and any pressure exceedance at discharge set-points. Submittals may be made quarterly, in accordance with Item 15 below.
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 and adjacent landowners.
 - 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. CGT 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 O&M procedures manual.
4. ***Return to Service.*** After the Director approves the *Restart Plan*, CGT may return the *Isolated Segment* to service according to the terms of the *Restart Plan*, but the operating pressure must not exceed the limit 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 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 available information, including the failure cause and provision of evidence that preventative and mitigative actions taken by the operator provide for the safe operation of the *Affected Pipelines* during the temporary removal or modification of the pressure restriction. Appeals of

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 the CAO, CGT must perform an aerial or ground instrumented leakage survey of the *Affected Pipelines*. 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 the CAO.
7. ***Records Verification.*** CGT must verify the records for the *Affected Pipelines* that were used to establish the MAOP in accordance with § 192.619, including any adjustments needed for the current class locations per §§ 192.609 and 192.611. CGT must submit documentation of this this record verification to the Director within 45 days of receipt of the CAO.
8. ***Mechanical and Metallurgical Testing.*** Within 45 days of receipt of the CAO, CGT must complete mechanical and metallurgical testing and failure analysis of the failed pipe, including an analysis of soil samples and any foreign materials. Mechanical and metallurgical testing must be conducted by an independent third-party acceptable to the Director and must document the decision-making process and all factors contributing to the failure. CGT must 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 the CAO, 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.
9. ***Root Cause Failure Analysis.*** Within 90 days following receipt of the CAO, complete a root cause failure analysis (RCFA) and submit a final report of this RCFA to the Director. The RCFA must be supplemented or 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 lessons learned are applicable to other locations within CGT's pipeline system.
10. ***Remedial Work Plan (RWP).***
 - a. Within 90 days following receipt of the CAO, CGT must submit a remedial work plan (RWP) to the Director for approval.

- b. The Director may approve the RWP incrementally without approving the entire RWP.
- c. Once approved by the Director, the RWP will be incorporated by reference into this Order.
- d. The RWP must specify the tests, inspections, assessments, evaluations, and remedial measures CGT will use to verify the integrity of the *Affected Pipelines*. It must address all known or suspected factors and causes of the July 25, 2023 failure. CGT must consider the risks and consequences of another failure to develop a prioritized schedule for RWP-related work along the *Affected Pipelines*.
- e. The RWP must include a procedure or process to:
 - i. Identify pipe in the *Affected Pipelines* with characteristics similar to the contributing factors identified for the July 25, 2023 failure, including the age and manufacture of the entire length of the *Affected Pipelines*.
 - ii. Gather all data necessary to review the failure history (in service and pressure test failures) of the *Affected Pipelines* 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 Pipelines*. Pre-existing operational data includes, but is not limited to, design, 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 July 25, 2023 are likely to exist elsewhere on the *Affected Pipelines*.
 - v. Conduct additional field tests, inspections, assessments, and evaluations to determine whether, and to what extent, the conditions associated with the failure on July 25, 2023, and other failures from the failure history (see (e)(ii) above) or any other integrity threats are present elsewhere on the *Affected Pipelines*. At a minimum, this process must include hydrostatic pressure testing of the *Isolated Segment*, must consider all failure causes and must 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 July 25, 2023, and that can reliably detect and identify anomalies,
 - 2) Close-interval surveys,
 - 3) Cathodic protection surveys, to include interference surveys in coordination with other utilities (e.g. underground utilities, overhead power lines, etc.) in the area,

- 4) Coating surveys,
- 5) Stress corrosion cracking surveys,
- 6) Selective seam corrosion surveys; and
- 7) 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 July 25, 2023, 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 Pipelines*, describe the methods CGT will use to repair, replace, or take other corrective measures to remediate the conditions associated with the pipeline failure on July 25, 2023 and to address other known integrity threats along the *Affected Pipelines*. The repair, replacement, or other corrective measures must meet the criteria specified in (e)(vi) above.
 - viii. Implement continuing long-term periodic testing and integrity verification measures to ensure the ongoing safe operation of the *Affected Pipelines* considering the results of the analyses, inspections, evaluations, and corrective measures undertaken pursuant to the Order.
- f. Include a proposed schedule for completion of the RWP.
 - g. CGT must revise the RWP 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 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. All revisions to the RWP after it has been approved and incorporated by reference into this Order will be fully described and documented in the *CAO Documentation Report*.
 - h. Implement the RWP as it is approved by the Director, including any revisions to the plan.
11. ***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 summarize all activities and 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 is not necessarily limited to, the following:
 - i. Table of Contents;
 - ii. Summary of the pipeline failure of July 25, 2023 and the response activities;
 - iii. Summary of pipe data, material properties and all prior assessments of the *Affected Pipelines*;
 - 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 RWP, the results of those actions, and the inspection and repair criteria used;
 - viii. Documentation of any revisions to the RWP 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 path forward describing 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:

12. ***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.
13. ***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.

14. **Reporting.** 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 is due on September 30, 2023. The Director may change the interval for the submission of these reports.
15. **Documentation of the Costs.** It is requested 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.

Be advised that all material you submit in response to this enforcement action is subject to being made publicly available. If you believe that any portion of your responsive material qualifies for confidential treatment under 5 U.S.C. § 552(b), along with the complete original document you must provide a second copy of the document with the portions you believe qualify for confidential treatment redacted and an explanation of why you believe the redacted information qualifies for confidential treatment under 5 U.S.C. § 552(b).

In your correspondence on this matter, please refer to “CPF No. 1-2023-051-CAO” and for each document you submit, please provide a copy in electronic format whenever possible. 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. Parts 190 through 199, under any other order issued to Respondent under authority of 49 U.S.C. Chapter 601, 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 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 Order are effective upon service in accordance with 49 C.F.R. § 190.5.

August 15, 2023

For Alan K. Mayberry
Associate Administrator
for Pipeline Safety

Date Issued