



U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety
Administration

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

APR 17 2015

VIA CERTIFIED MAIL AND FAX TO: (832)397-4536

Mr. Gary Buchler
Vice President of Gas Operations
Natural Gas Pipeline Company of America, LLC
1001 Louisiana Street
Houston, TX, 77002

Re: CPF No. 4-2015-1006H

Dear Mr. Buchler:

Enclosed is a Corrective Action Order issued in the above-referenced case. It requires Natural Gas Pipeline Company of America, LLC, to take certain corrective actions with respect to the Amarillo #4 natural gas pipeline, which failed on April 13, 2015, in Hutchinson County, Texas. Service is being made by certified mail and facsimile. Service by electronic transmission is deemed complete upon transmission and acknowledgement 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.

Thank you for your cooperation in this matter.

Sincerely,

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Enclosure

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, OPS
Mr. R. M. Seeley, Director, Southwest Region, OPS
Mr. Michael Catt, Vice President, Gas Pipeline Operations, Natural Gas Pipeline
Company of America, LLC
Mr. Reji George, Director, Compliance Codes and Standards, Natural Gas Pipeline
Company of America, LLC

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

In the Matter of)

Natural Gas Pipeline Company,)
of America, LLC)

Respondent.)

CPF No. 4-2015-1006H

CORRECTIVE ACTION ORDER

Purpose and Background:

This Corrective Action Order (Order) is being issued under the authority of 49 U.S.C. § 60112 to require Natural Gas Pipeline Company of America, LLC (NGPL or Respondent), to take the necessary corrective actions to protect the public, property, and the environment from potential hazards associated with the recent failure on Respondent's Amarillo No. 4 natural gas pipeline.¹

A reportable incident occurred on the Amarillo No. 4 pipeline in Hutchinson County, Texas, on April 13, 2015, resulting in the release of an estimated 750,000 million cubic feet (mmcf) of natural gas which ignited causing an explosion and fire. Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), initiated an investigation of the accident. The preliminary findings of the ongoing investigation are as follows.

Preliminary Findings:

- On April 13, 2015, at approximately 10:55 a.m. Central Standard Time (CST), a failure occurred on the 30-inch diameter Amarillo #4 pipeline approximately 7.7 miles west of the town of Stinnett, Texas at 101.4454354 Longitude, 35.9862413 Latitude. The accident was reported to the National Response Center (NRC Report # 1113463) on April 13, 2015, at approximately 12:17 p.m. CST.
- The Amarillo #4 pipeline extends approximately 20.47 miles from Compressor Station 112 to just beyond Compressor Station 191 and is part of Respondent's "Fritch Unit,"

¹ Kinder Morgan, Inc. operates NGPL and owns a 20 percent interest in the pipeline company. Myria Holdings, Inc. owns the remaining interest. See http://www.kindermorgan.com/business/gas_pipelines/central/NGPL/ (last accessed April 16, 2015).

consisting of approximately 515 miles of various pipelines running from Texas to Ohio. The Amarillo #4 pipeline crosses public roads and traverses areas near residences. Portions of the pipeline are located in High Consequence Areas (HCAs).

- As a result of the failure, an estimated 75,000 mmcf of natural gas was released in the blowout which ignited. A 60-foot section and a 30-foot section of pipe were ejected and landed approximately 60-feet and 100-feet from the failure site, respectively.
- The failure site is located approximately 9 miles downstream of Valve 1203 and approximately 0.5 miles upstream of Valve 1204. Local emergency responders closed nearby State Highway 152 and set up incident command of firefighting activities.
- In response, NGPL shut down the pipeline at Station 169 and worked to isolate the 9.5 mile section between Valve 1203, which had to be closed manually, and Valve 1204. Respondent's Amarillo #2 pipeline was also shut down to verify that it had not been damaged in the incident.
- The Amarillo #4 pipeline remains shut down. The cause of the failure has not yet been confirmed, but NGPL's pipeline systems in the area have some history of Stress Corrosion Cracking (SCC). The failed pipe sections are being transported to a metallurgist for testing and failure analysis.
- The Amarillo #4 pipeline was originally constructed in 1968. It consists of Grade X-52 30-inch diameter double submerged arc weld seam pipe manufactured by Republic Steel and has a nominal wall thickness of 0.289," with an asphalt coating and an impressed current cathodic protection system.
- The maximum allowable operating pressure (MAOP) of the pipeline is 712 psig. The MAOP was established by hydrostatic testing. The operating pressure at the time of the failure was approximately 702 psig.
- NGPL experienced an SCC failure in 2003 in another of Respondent's pipeline units known as the Oklahoma Extension pipeline system resulting in the issuance of Corrective Action Order 4-2003-1008H. Near neutral SCC was determined to be a causal factor in that failure. In 2012, a hard spot failure occurred in this unit on the Oklahoma Extension #1 line resulting in the issuance of Corrective Action Order 4-2012-1011H.
- NGPL conducted an in-line inspection (ILI) of the Amarillo #4 pipeline in 2011. It appears that the model used by NGPL in its risk analysis may have incorrectly characterized the pipeline as not susceptible to SCC due to erroneous data on the soil type. There are an estimated 14 miles of "like" pipe in this 20.47 mile segment.
- PHMSA issued Advisory Bulletin ADB-03-05 in October 2003, advising owners and operators of natural gas and hazardous liquids pipelines to consider the threat from stress corrosion cracking when developing and implementing their Integrity Management Plans.

The operators were to determine whether their pipelines were susceptible to SCC and assess the impact of SCC on pipeline integrity.

- NGPL operates one of the largest interstate pipeline systems in the country consisting of approximately 9,200 miles pipeline.²

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 or would be 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 notice and opportunity for hearing, upon a finding that failure to issue the Order expeditiously would result in the likelihood of serious harm to life, property, or the environment. In such cases, an opportunity for a hearing and expedited review will be provided as soon as practicable after the issuance of the Order.

After evaluating the foregoing preliminary findings of fact, I find that continued operation of the pipeline without corrective measures is or would be hazardous to life, property, or the environment. Additionally, having considered the nature of the failure; the proximity of the pipeline to public road crossings and residences; the location of portions of the pipeline in HCAs; the age and manufacture of the pipeline; 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; the potential for SCC not previously identified; 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 the likelihood of serious harm to life, property, or 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 contest its issuance obtain expedited review either by answering in writing or requesting a hearing under 49 C.F.R. § 190.211, to be held as soon as practicable under the terms of such regulation, by notifying the Associate Administrator for Pipeline Safety in writing, with a copy to the Director, Southwest Region, PHMSA (Director). If Respondent requests a hearing, it will be held telephonically or in-person in Southwest Region Office or Washington, D.C.

After receiving and analyzing additional data in the course of this investigation, PHMSA may identify other corrective measures that need to be taken. In that event, PHMSA will notify Respondent of any additional measures that are required and an amended Order issued, if

² See http://www.kindermorgan.com/business/gas_pipelines/central/NGPL/ (last accessed April 16, 2015).

necessary. 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:

Pursuant to 49 U.S.C. § 60112, I hereby order NGPL to immediately take the following corrective actions on the Amarillo #4 pipeline:

Definitions:

"Affected Segment" - The *"Affected Segment"* means NGPL's Amarillo #4 pipeline extending 20.47 miles from Compressor Station 112 to Compressor Station 191.

"Isolated Segment" - The *"Isolated Segment"* means the 9.5-mile segment of NGLP's 30-inch Amarillo #4 from Valve 1203 to Valve 1204.

"Director" - The *"Director"* means the Director, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety, Southwest Region. The Director's address is 8701 S. Gessner, Suite 1110, Houston, Texas 77074.

1. **Operating Restriction.** NGPL must not operate the *Isolated Segment* until authorized to do so by the Director.
2. **Pressure Restriction.** NGPL 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 April 13, 2015.
 - 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 April 20, 2015, NGPL 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, NGPL must take into account any "like pipe" locations, in-line inspection (ILI) features or anomalies present in the *Affected Segment* to provide for continued safe operation while further corrective actions are completed.
3. **Restart Plan.** Prior to resuming operation of the *Affected 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 *Affected 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 *Affected 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 *Affected 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 in-line inspection (ILI) results, hydrostatic tests, root cause failure analysis of prior failures, aerial and ground patrols, corrosion, cathodic protection, excavations and pipe replacements. NGPL 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 NGPL's operations and maintenance procedures manual.
 - h. The *Restart Plan* must provide for hydrostatic pressure testing of the *Affected Segment*.
4. **Return to Service.** After the Director approves the *Restart Plan*, NGPL 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 April 13, 2015 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 NGPL 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.
6. The Director may allow the temporary removal or modification of the pressure restrictions upon a written request from NGPL 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.

7. **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 NGPL.
8. **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 NGPL's pipeline system.
9. **Remedial Work Plan (RWP).**
 - a. Within 90 days following receipt of this Order, NGPL 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 NGPL will use to verify the integrity of the *Affected Segment*. It must address all known or suspected factors and causes of the April 13, 2015 failure. NGPL should consider both the risk of another failure and the consequence of another failure to develop a prioritized schedule for RWP related work along the *Affected Segment*.
 - e. The RWP must include a procedure or process to:
 - i. Identify pipe in the *Affected Segment* with characteristics similar to the contributing factors identified for the April 13, 2015 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 April 13, 2015 are likely to exist elsewhere within the NGPL pipeline systems.
- v. Conduct additional field tests, inspections, assessments, and/or evaluations to determine whether, and to what extent, the conditions associated with the failure on April 13, 2015 and other failures from the failure history 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) Inline inspection (ILI) tools that are technically appropriate for assessing the pipeline system based on the cause of failure on April 13, 2015 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: NGPL 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 April 13, 2015 failure.

- vi. Describe the inspection and repair criteria NGPL 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 NGPL will use to repair, replace, or take other corrective measures to remediate the conditions associated with the pipeline failure on April 13, 2015 and to address other known integrity threats along the *Affected Segment*.
 - 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.
- f. Include a proposed schedule for completion of the RWP.
 - g. NGPL 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/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 RWP after it has been approved and incorporated by reference into this Order will be fully described and documented.
 - h. Implement the RWP as it is approved by the Director, including any revisions to the plan and maintain records of all actions taken pursuant to this Corrective Action Order for a period not less than 10 years.

Other Requirements:

1. *Reporting.* Submit quarterly reports to the Director that: (1) include all available data and results of the testing and evaluations required by this Order; (2) document any approved revisions to the RWP and their implementation; and (3) describe the progress of the repairs or other remedial actions being undertaken. The first quarterly report is due on July 1, 2015. The Director may change the interval for the submission of these reports.
2. *Documentation of Costs.* It is requested but not required that Respondent maintain documentation of the costs associated with implementation of this Order. Include in each monthly report the to-date total costs associated with: (1) preparation and revision of procedures, studies and analyses; and (2) physical changes to pipeline facilities, including repairs, replacements and other modifications.
3. *Approvals.* With respect to each submission requiring the approval of the Director, the Director may: (a) approve the submission in whole or in part; (b) approve the submission on specified conditions; (c) modify the submission to cure any deficiencies; (d) disapprove the submission in whole or in part and direct Respondent to 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 a 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 and 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. Parts 190-199, 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 shall be final.

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).

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.

In your correspondence on this matter, please refer to CPF No. 4-2015-1006H and for each document you submit, please provide a copy in electronic format whenever possible.

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



Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

APR 17 2015

Date Issued