



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

August 19, 2021

VIA ELECTRONIC MAIL TO: kenneth_grubb@kindermorgan.com

Kenneth W. Grubb
Chief Operating Officer of Gas Pipelines
Kinder Morgan, Inc.
1001 Louisiana Street, Suite 1000
Houston, Texas 77002

CPF No. 2-2021-012-CAO

Dear Mr. Grubb:

Enclosed please find a Corrective Action Order (CAO) issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), in the above-referenced case. It requires El Paso Natural Gas Company, LLC, (EPNG or Respondent), operated by Kinder Morgan, Inc., to take certain corrective actions with respect to a rupture that occurred on the 30-inch El Paso Natural Gas pipeline system in Coolidge, Arizona.

Service of the CAO 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.

Sincerely,

**MASSOUD
TAHAMTANI** Digitally signed by
MASSOUD TAHAMTANI
Date: 2021.08.19
14:53:08 -04'00'

for Alan K. Mayberry
Associate Administrator
for Pipeline Safety

Enclosure: CAO

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, OPS
Mr. James Urisko, Director, Southern Region, OPS
Mr. Jaime Hernandez, Director—Engineering, Compliance/Codes & Standards, Kinder Morgan, jaime_hernandez@kindermorgan.com

Pursuant to 49 U.S.C. §§ 60117 and 60106, PHMSA, Office of Pipeline Safety (OPS) and the Arizona Corporation Commission (AZ CC), initiated an investigation of the Incident. The preliminary findings of the agencies' ongoing investigation are outlined below. The National Transportation Safety Board (NTSB) is also conducting an investigation of the Incident.

Preliminary Findings

- At approximately 5:42 am MST on August 15, 2021, EPNG's 30-inch, 2000 Line ruptured, resulting in an explosion and fire. The fire destroyed a farmhouse located approximately 412 feet north-northwest of the failure location and resulted in two fatalities and one injury requiring hospitalization. The fire also destroyed a three-foot-wide irrigation ditch and damaged numerous power poles, and cotton crops at distances up to 500 feet from the failure location.
- Kinder Morgan initially reported the Incident to the National Response Center (NRC) at 9:24 am EDT on August 15, 2021 (NRC Report No. 1313733), indicating there was a release and ignition of natural gas from a transmission line. Kinder Morgan submitted a second NRC report at 11:58 am EDT on August 15, 2021 (NRC Report No. 1313743), reporting the fatalities and injury, providing the coordinates of the failure location and reporting the fire was extinguished at 8:20 am MST. Kinder Morgan submitted a third NRC report at 1:59 pm EDT on August 16, 2021 (NRC Report No. 1313836), reporting a potential exceedance of the reportable quantity for nitrogen oxide may have occurred.
- The Arizona State Fire Marshal and Coolidge Police Department responded to the scene of the Incident. The fire was extinguished at 8:20 am MST.
- A crater measuring approximately 50 feet in diameter and ten feet in depth resulted from the rupture. A 46-foot long section of pipe was ejected and landed approximately 50 feet south-southwest of the crater.
- The 2000 Line of the El Paso Natural Gas system is approximately 745 miles in length, beginning in McCamey, Texas, and ending in Ehrenberg, Arizona. The 2000 Line passes through Class 1, 2, and 3 locations, including high consequence areas (HCAs). The isolated section of the 2000 Line that includes the Incident location is approximately 39 miles in length, beginning at MLV 37 (upstream) and ending at MLV 39 (downstream).
- The Incident occurred in a Class 1 location, non-HCA.
- The Incident occurred where the 2000 Line crosses N. Vail Road in Pinal County. Natural gas flowed north through a 45-degree bend in the pipeline crossing under the road, then through a second 45-degree bend in the pipeline and flowed westward to Picacho Compressor station.

- The north flowing portion of the failed segment of pipeline was manufactured and installed in 1985 with a 30-inch nominal diameter, 0.281-inch wall thickness, and consists of X-70 grade pipe. The pipeline has a double-submerged arc-welded longitudinal seam. The pipe manufacturer and coating type are unknown.
- The portion of the pipeline crossing under N. Vail Road and continuing west was manufactured and installed in 2002, with a 30-inch nominal diameter, 0.375-inch wall thickness, and consists of X-70 grade pipe. The pipe was manufactured by NAPA, has a double-submerged arc-welded longitudinal seam, and a fusion-bonded epoxy coating.
- Kinder Morgan reported the downstream valve, MLV 39, was closed at approximately 6:29 am MST and the upstream valve, MLV 37, was closed at approximately 7:00 am MST on August 15, 2021. The failed section of the pipeline remains shut-in.
- Prior to the rupture, the 2000 Line was reported to be operating at approximately 700 psig. The maximum allowable operating pressure (MAOP) of the 2000 Line is 944 psig.
- The 2000 Line was originally owned and operated by Plains All-American Pipeline and transported crude oil before it was purchased by EPNG in 2000. EPNG converted the system to natural gas service in 2002.

Determination of Necessity for Corrective Action Order and Right to Hearing

Section 60112 of title 49, United States Code, 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 expeditiously order 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 expeditiously 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, manufacturer, 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 hazardous liquid 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 consider appropriate.

After evaluating the foregoing preliminary findings of fact, and having considered that some of the characteristics of the pipeline are unknown at this time, the nature of the material transported, the uncertainty as to the root causes of the Incident, and potential for additional, related incidents, 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 expeditiously would result in the likelihood of serious harm.

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, with a copy to the Director, Southern 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 Pipeline – The “*Affected Pipeline*” means EPNG’s entire 2000 Line. The 2000 Line starts in McCamey, Texas, and ends in Ehrenberg, Arizona. The 2000 Line is approximately 745 miles long.

Isolated Segment – The “*Isolated Segment*” means the approximately 39-mile segment of the 2000 Line from MLV 37 to MLV 39. It is the portion of the “*Affected Pipeline*” that was shut-in with the above-referenced upstream and downstream valves.

Pursuant to 49 U.S.C. § 60112, I hereby order EPNG 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.** EPNG must reduce and maintain a twenty percent (20%) pressure reduction in the actual operating pressure along the entire length of the *Affected Pipeline* such that upon restart the operating pressure along the *Affected Pipeline* will not exceed eighty percent (80%) of the actual operating pressure in effect at the failure location immediately prior to the Incident.
 - 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. Within 15 days of receipt of this Order, EPNG must provide the Director the actual operating pressures of each compressor station and each main line pressure regulating station on the *Affected Pipeline* 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, EPNG must take into account any in-line inspection (ILI) features or anomalies present in the *Affected Pipeline* to provide for continued safe operation while further corrective actions are completed.
 - e. EPNG must review the pressure restriction monthly by analyzing the operating pressure data, taking into account any ILI features or anomalies present in the *Affected Pipeline*. EPNG must immediately reduce the operating pressure further to maintain the safe operations of the *Affected Pipeline*, if warranted by the monthly review. Further, EPNG 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, if

any.

- 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. EPNG 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 EPNG's O&M procedures manual.
4. ***Return to Service.*** After the Director approves the *Restart Plan*, EPNG 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 EPNG 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 EPNG 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 Pipeline* 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, EPNG must perform an aerial or ground instrumented leakage survey of the *Affected Pipeline*. EPNG must investigate all leak indications and remedy all leaks discovered. EPNG must submit documentation of this survey to the Director within 45 days of receipt of this Order.
 7. ***Records Verification.*** EPNG must verify the records for the *Affected Pipeline* 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. EPNG must submit documentation of this record verification to the Director within 45 days of receipt of this Order.
 8. ***Review of Prior In-line Inspection (ILI) Results.*** Within 180 days of receipt of this Order, EPNG must conduct a review of any previous ILI results of the *Affected Pipeline*, including a review of the ILI vendor's raw data and analysis. EPNG must determine whether any features were present in the failed pipe joints from the Incident. Also, EPNG must determine if any features with similar characteristics are present elsewhere on the *Affected Pipeline*. EPNG

must submit documentation of this ILI review to the Director within 180 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 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 Pipeline*.
 - d. Explain the process used to review the ILI results and the results of the reevaluation.
9. ***Mechanical and Metallurgical Testing***. Mechanical and metallurgical testing may be conducted by the NTSB. If the NTSB elects not to conduct the testing, EPNG must conduct the mechanical and metallurgical testing in accordance with the requirements of this Item.
- a. EPNG must complete mechanical and metallurgical testing and failure analysis of the failed pipe, including an analysis of soil samples and any foreign materials, within 45 days of receipt of this Order.
 - b. 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.
 - c. EPNG must complete the testing and analysis as follows:
 - i. Document the chain-of-custody when handling and transporting the failed pipe section and other evidence from the failure site.
 - ii. 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.
 - iii. 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.
 - iv. 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 EPNG.
10. ***Root Cause Failure Analysis (RCFA)***. The NTSB may conduct the root cause failure analysis (RCFA). If the NTSB elects not to conduct the analysis, EPNG must conduct the analysis in accordance with the requirements of this Item.
- a. EPNG must complete a RCFA and submit a final report to the Director within 90 days following receipt of this Order.
 - b. 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.
 - c. The final report must include findings and any lessons learned and whether the findings and lessons learned are applicable to other locations within EPNG's pipeline system.

11. **Remedial Work Plan (RWP).**

- a. Within 90 days following receipt of this Order, EPNG 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 EPNG will use to verify the integrity of the *Affected Pipeline*. It must address all known or suspected factors and causes of the Incident. EPNG must consider the risks and consequences of another failure to develop a prioritized schedule for RWP-related work along the *Affected Pipeline*.
- e. The RWP must include a procedure or process to:
 - i. Identify pipe in the *Affected Pipeline* with characteristics similar to the contributing factors identified for the Incident, including the age and manufacture of the entire length of the *Affected Pipeline*.
 - ii. Gather all data necessary to review the failure history (in service and pressure test failures) of the *Affected Pipeline* 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 Pipeline*. 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 Incident are likely to exist elsewhere on the *Affected Pipeline*.
 - v. Conduct additional field tests, inspections, assessments, and evaluations to determine whether, and to what extent, the conditions associated with the Incident, and other failures from the failure history (see (e)(ii) above) or any other integrity threats are present elsewhere on the *Affected Pipeline*. 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 the Incident, 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: EPNG 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 Incident.

- vi. Describe the inspection and repair criteria EPNG 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 Pipeline*, describe the methods EPNG will use to repair, replace, or take other corrective measures to remediate the conditions associated with the Incident and to address other known integrity threats along the *Affected Pipeline*. 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 Pipeline* 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. EPNG 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.
12. ***CAO Documentation Report (CDR)***. EPNG must create and revise, as necessary, a CAO Documentation Report (CDR). When EPNG 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 EPNG 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 Incident and the response activities;
- iii. Summary of pipe data, material properties and all prior assessments of the *Affected Pipeline*;
- 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 EPNG 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 EPNG 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:

13. ***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.
14. ***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.
15. ***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 December 31, 2021. The Director may change the interval for the submission of these reports.
16. ***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. 2-2021-012-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.

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TAHAMTANI

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MASSOUD TAHAMTANI
Date: 2021.08.19
14:53:54 -04'00'

August 19, 2021

for Alan K. Mayberry
Associate Administrator
for Pipeline Safety

Date Issued