



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

1200 New Jersey Avenue, SE
Washington, DC 20590

December 4, 2025

VIA ELECTRONIC MAIL TO: gbacon@eprod.com

Graham Bacon
Executive Vice President, Chief Operating Officer
Enterprise Products Operating, LLC
1100 Louisiana Street
Houston, TX 77002

Re: CPF No. 4-2025-058-CAO

Dear Mr. Bacon,

Enclosed please find a Corrective Action Order (Order) issued by the Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety. It requires Enterprise Products Operating, LLC, to take certain corrective actions with respect to a pipeline failure which occurred on November 27, 2025, on the Enterprise East Leg Mainline pipeline in Jefferson County, Kansas.

Service by electronic mail is effective upon the date of transmission and acknowledgment of receipt as provided under 49 CFR § 190.5. The terms and conditions of this Order are effective upon completion of service.

Sincerely,

Linda Daugherty
Acting Associate Administrator
for Pipeline Safety

Enclosure: Corrective Action Order

cc: Mr. Bryan Lethcoe, Director, Southwest Region, Office of Pipeline Safety, PHMSA
Suzie Davis, Senior Manager, Compliance, Enterprise Products Operating, LLC,
smdavis@eprod.com

CONFIRMATION OF RECEIPT REQUESTED

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

In the Matter of	)	
	)	
Enterprise Products Operating, LLC	)	CPF No. 4-2025-058-CAO
	)	
Respondent.	)	
	)	
	)	

CORRECTIVE ACTION ORDER

Purpose and Background

The Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), is issuing this Corrective Action Order (CAO or Order) pursuant to the authority provided in 49 U.S.C. § 60112, to require Enterprise Products Operating, LLC (Enterprise or Respondent), to take necessary corrective actions to protect the public, property, and the environment from potential hazards associated with the pipeline failure that occurred on the East Leg Mainline pipeline (East Leg Pipeline or Pipeline)¹ in McLouth, Jeferson County, Kansas (Failure) on November 27, 2025. The East Leg Pipeline is a hazardous liquid pipeline facility that is subject to PHMSA’s jurisdiction pursuant to the Pipeline Safety Act, 49 U.S.C. § 60101 et seq., and Pipeline Safety Regulations, 49 CFR Parts 190 to 199.

The Enterprise MAPCO pipeline system is composed of two parallel pipelines (8” East Leg Mainline and the 10” East Leg Loop) that transports liquified petroleum gas (LPG) in a northeast direction from Conway, Kansas to Janesville, Wisconsin. The East Leg Pipeline includes 9 pump stations and one water navigable crossing. The Failure occurred at Aerial Marker (AM) 158.4 in an agricultural field within 0.5 mile of State Highway 16.

On November 27, 2025, Enterprise detected the Failure when it observed a pressure drop on the East Leg Pipeline and received a public report of a vapor cloud near State Highway 16 in Jefferson County, Kansas.

After detecting the Failure, Enterprise isolated a segment of the East Leg Pipeline, closing valves at McLouth Station (AM 156.1) and AM 168. Enterprise used flares to reduce the pressure on the

¹ Enterprise Products Operating, LLC's East Leg Mainline pipeline is part of the MAPCO pipeline system present in 13 states. The MAPCO pipeline system is a Liquified Petroleum Gas (LPG) pipeline system consisting of four primary segments, totaling approximately 8,074 miles in length. The 2,113-mile Conway North pipelines (East Red and Blue lines) link the NGL hub at Conway, Kansas, to refineries, petrochemical plans and propane markets in the upper-Midwest.

pipeline segment. Enterprise located the Failure at AM 158.4, cut out the failed section, and transported that section to Magnolia, Texas for inspection and metallurgical analysis by a third party, Acuren. The pipe at the location of the failure is pre-1970 low-frequency electric resistance welded (LF-ERW). The failure was along the longitudinal seam.

Enterprise notified the National Response Center (NRC) of the release on the East Leg Pipeline at 21:59 Eastern Time on November 27, 2025. A second report to the NRC was made on November 29, 2025, at 11:45 Eastern Time. Enterprise provided an estimated release amount of 3900 barrels of propane.

The segment of the East Leg Pipeline remains shut-in and not in operation.

Pursuant to 49 U.S.C. § 60117, PHMSA has initiated an investigation of the Failure. The preliminary findings of the Agency's ongoing investigation are as follows:

Preliminary Findings

- The 8" East Leg Pipeline is an 8-inch diameter pipeline that transports liquified petroleum gas (LPG) from Conway, Kansas to Janesville, Wisconsin. The East Leg Pipeline includes 9 pump stations and one navigable water crossing.
- The East Leg Pipeline was originally constructed in 1960. The pipe at the failure location is 0.219 inches thick, API 5L grade X-52, with low frequency electric resistance welding (LF-ERW) seams, and was manufactured by Bethlehem Steel. The Pipeline has coal tar enamel (CTE) coating and cathodic protection. The maximum operating pressure (MOP) of the Pipeline is 1650 psig. When the Failure occurred, the operating pressure was 1562 psig.
- On the evening of November 27, 2025, Enterprise observed a pressure drop on the East Leg Pipeline and received a public report of a vapor cloud near State Highway 16. After detecting the Failure, Enterprise shut in a segment of the East Leg Pipeline, closing valves at McLouth Station (AM 156.1) and AM 168. Enterprise used flares to reduce the pressure on the pipeline segment.
- Enterprise notified the National Response Center (NRC) of the Failure at 21:59 Eastern Time on November 27, 2025.
- Enterprise provided a supplemental NRC notification at 11:45 Eastern Time on November 29, 2025. In its second NRC report, Enterprise estimated a release of 3900 barrels of propane.
- The Failure occurred around AM 158.4, about 1.3 miles southeast of McLouth, Kansas, in an agricultural field within 0.5 mile of State Highway 16. The 2020 United States census counted 859 people, 346 households, and 232 families in McLouth.
- At the point of failure, the pipe was observed to have a 12-foot-long fish-mouth rupture along the longitudinal seam.

- Enterprise cut out the failed section of the East Leg Pipeline and transported the pipe to Acuren in Magnolia, Texas, for inspection and metallurgical analysis.
- The release of LPG poses a risk to public safety, property, and the environment. The Failure caused the creation of a vapor cloud over State Highway 16 which passers-by drove through, risking ignition of the vapor and severe harm to people in the vicinity. Emergency responders established an evacuation zone of one-half mile requiring the evacuation of 15-20 residences and the closure of State Highway 16.
- Previously, on November 29, 2016, a failure occurred on Enterprise's 10-inch East Leg Loop pipeline, which runs parallel to the East Leg Mainline pipeline, resulting in the release of approximately 5,000 barrels of ethane-propane mixture in Platte County, Missouri. The released product ignited and caused a fire. The cause of the failure was determined to be external near-neutral stress corrosion cracking along and adjacent to the ERW seam.
- The failed East Leg Pipeline segment is currently shut-in and not operating.
- The investigation of the Failure is on-going, and information could change. These preliminary findings may be amended based on further findings during the investigation.

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, 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 is 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) any other factors PHMSA may consider as appropriate.

After evaluating the foregoing preliminary findings of fact, and having considered age of the pipe, the circumstances surrounding the Failure, the hazardous nature of the product being transported, the pressure required for transporting the material, the method of manufacture, the uncertainties as to the cause of the Failure, the prior failure on the pipeline system, the ongoing investigations to determine the cause of the Failure, and the possibility that the same condition(s) that may have

caused the failure remain present in the pipeline and could lead to additional failures, it appears that the continued operation of the pipeline without corrective measures would pose a pipeline integrity risk to public safety, property, or the environment. Accordingly, corrective measures are necessary to mitigate the pipeline integrity risk of the pipeline system to protect public safety, property, and the environment.

Accordingly, this Order mandating immediate corrective action is issued expeditiously 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, PHMSA, OPS Southwest Region. If a hearing is requested, it will be held in accordance with 49 CFR § 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 Segment – “*Affected Segment*” means the segment of Respondent's 8-inch East Leg Mainline pipeline running from Conway, Kansas to Bosworth, Missouri.

Isolated Segment – “*Isolated Segment*” means the segment of Respondent's 8-inch East Leg Mainline Pipeline running from McLouth Station (AM 156.1) to AM 168.

Failure Site – “*Failure Site*” means the pipeline section on the Affected Segment where the failure occurred on November 27, 2025, at AM 158.4.

Director – “*Director*” means the Director, PHMSA, Office of Pipeline Safety, Southwest Region. The Director’s address is 8701 South Gessner Road, Suite 630, Houston, TX 77074.

Pursuant to 49 U.S.C. 60112, Enterprise is ordered to immediately take the following corrective actions:

1. **Shutdown of the Isolated Segment.** The 8" Enterprise East Leg Pipeline from the valve at McLouth Station (AM 156.1) to AM 168 is currently out of service. This *Isolated Segment* must remain shut down until the Director has provided written approval to Enterprise to resume operations. The *Affected Segment* is subject to the pressure restriction set forth in Item 2 below.
2. **Operating Pressure Restriction.** Enterprise must reduce and maintain a twenty percent

(20%) pressure reduction in the operating pressure on the *Affected Segment*, such that the operating pressure does not exceed eighty percent (80%) of the actual operating pressure in effect immediately prior to the Failure on November 27, 2025.

- 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. Prior to resuming operation, Enterprise must provide the Director the actual operating pressures of each pump station and each main line pressure regulating station on the *Affected Segment* at the time of the Failure and the reduced pressure restriction set-points at these same locations. Since portions of the Affected Segment are capable of bi-directional operation, the reduced pressure pump station set-points should be specified for both directions of flow where applicable.
 - 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, Enterprise 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. A description of how any ILI features or anomalies were accounted for in the determination of pressure restriction set-points shall be provided with the information .
 - e. Enterprise must review the pressure restriction monthly by analyzing the operating pressure data, taking into account any ILI features or anomalies present in the *Affected Segment*. Enterprise must immediately reduce the operating pressure to maintain the safe operations of the *Affected Segment*, if warranted by the monthly review. Enterprise 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.
3. **Restart Plan.** Prior to resuming operation of the *Isolated Segment*, Enterprise must 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 two (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 daylight restart and include advance communications with local emergency response officials.
 - f. 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 Enterprise's O&M procedures manual.

4. **Return to Service.** After the Director approves the Restart Plan, Enterprise 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 November 27, 2025 in accordance with Item 2 above.
5. **Removal of Pressure Restriction.** The Director may allow the removal or modification of the pressure restriction upon a written request from Enterprise 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. **Mechanical and Metallurgical Testing.** Within 45 days after this Order is issued, Enterprise 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. Respondent 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 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 Respondent.
7. **Remedial Work Plan (RWP).**
 - a. Within 90 days after this Order is issued, Enterprise must submit a Remedial Work Plan (RWP) to the Director for prior approval.
 - b. The Director may approve the RWP incrementally without approving the entire RWP.
 - c. Upon approval by the Director, the RWP becomes incorporated by reference into this Order.
 - d. The RWP must include qualification of the Welding Procedure Specification(s) used in the repair of the failed pipe.
 - e. The RWP must specify the tests, inspections, assessments, evaluations, and remedial measures Respondent will use to verify the integrity of the *Affected Segment*. It must address all known or suspected factors and causes of the Failure. Enterprise must consider the risks and consequences of another failure to develop a prioritized schedule for RWP-related work along the *Affected Segment*.

- f. 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 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, 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 are likely to exist elsewhere on the *Affected Segment*.
 - v. Conduct additional field tests, inspections, assessments, and evaluations to determine whether, and to what extent, the conditions associated with the Failure and other failures from the failure history (see (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 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: Enterprise 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 Failure.

- vi. Describe the inspection and repair criteria Enterprise 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 Enterprise will use to repair, replace, or take other corrective measures to remediate the conditions associated with the Failure, and to address other known integrity threats along the *Affected Segment*. 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 Segment* considering the results of the analyses, inspections, evaluations, and corrective measures undertaken pursuant to the Order.

g. Enterprise must include a proposed schedule for completion of the RWP.

h. Enterprise 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. Enterprise must submit any plan revisions to the Director for prior approval.

ii. The Director may approve plan revisions incrementally.

i. Enterprise must implement the RWP as it is approved by the Director, including any revisions to the plan.

8. **Root Cause Failure Analysis.** Within 180 days after this Order is issued, Enterprise must 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 approved by the Director. Enterprise must ensure that all reports, whether draft or final, are made available in their entirety to the Director at the same time they are made available to Enterprise. The final report must include findings and any lessons learned and whether the findings and lessons learned are applicable to other locations within Enterprise's pipeline system.

9. **Public Awareness Program Review.** Within 180 days after this Order is issued, Enterprise must review and assess the effectiveness of its Public Awareness program with regards to the Failure. Enterprise must amend its Public Awareness Program, if necessary, to reflect the results of this review. The documentation of this *Public Awareness Plan Program Review* must be available for inspection by OPS or provided to the Director, if requested.

Other Requirements:

10. **Approvals.** With respect to each submission under this Order that 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.

11. **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.
12. **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 March 1, 2026. The Director may change the interval for the submission of these reports.
13. **Documentation of the Costs.** It is requested that Respondent maintain documentation of the costs associated with implementation of this 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.

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. 4-2025-058-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 CFR 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 CFR § 190.5.

Linda Daugherty
Acting Associate Administrator
for Pipeline Safety

Date Issued