



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

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

**January 29, 2015**

**VIA CERTIFIED MAIL AND FAX TO: (281)887-7000**

Mr. Michael A. Creel  
Chief Executive Officer  
Enterprise Products Partners, LP  
1100 Louisiana Street  
Houston, TX 77002

**Re: CPF No. 1-2015-5002H**

Dear Mr. Creel:

Enclosed is a Corrective Action Order issued in the above-referenced case. It requires your subsidiary, Enterprise Products Operating, LLC, to take certain corrective actions with respect to the ATEX-1 pipeline that failed on January 26, 2015, near Follansbee, West Virginia. Service is being made by certified mail and facsimile. Service of the Corrective Action Order 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: Mr. Byron Coy, Regional Director, Eastern Region, OPS

**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. 1-2015-5002H
Respondent.	)	

**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 Enterprise Products Operating LLC (Enterprise or Respondent), to take the necessary corrective action to protect the public, property, and the environment from potential hazards associated with the recent failure on Enterprise’s ATEX-1 pipeline.

On January 26, 2015, a reportable accident occurred on the ATEX-1 pipeline, resulting in the release of approximately 23,901 barrels of liquid ethane (Failure). This pipeline is approximately 1,265 miles in length and transports product from Washington County, Pennsylvania, to Mont Belvieu, Texas (ATEX-1). The accident occurred on a 255-mile unit of ATEX 1 that runs from Washington County, Pennsylvania to Seymour, Indiana. Based on a visual inspection of the ruptured pipe, the failure occurred in or very near a circumferential girth weld on the pipe. The cause of the Failure has not yet been determined. Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), initiated an investigation of the accident. The preliminary findings of the ongoing investigation are as follows.

**Preliminary Findings:**

- Respondent is a wholly-owned subsidiary of Enterprise Products Partners, LP, which operates roughly 50,000 miles of natural gas, natural gas liquid, crude oil, refined products and petrochemical pipelines throughout the United States.<sup>1</sup>
- The failed pipeline is a 20-inch diameter line segment that is part of the company’s Greensburg – Pennsylvania/West Virginia (liquid) unit that transports liquid ethane, and runs from the MarkWest Processing Facility in Houston, Pennsylvania to the Ohio River,

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<sup>1</sup> <http://www.enterpriseproducts.com/corpProfile/businessProfile.shtm>.

a distance of approximately 26 miles (Affected Segment). The Failure occurred near milepost 23.1, and near Follansbee, West Virginia (Failure Site).

- The Affected Segment was constructed in November 2013 and is composed of 20-inch diameter, 0.312" wall thickness (generally), API-5L pipe, and is high frequency electric resistance welded (HF ERW) pipe manufactured by American Pipe.
- The maximum operating pressure (MOP) of the pipeline in the Affected Segment is 1440 psig, as established by hydrostatic testing in 2013. At the time of the Failure, the actual operating pressure of the Affected Segment was 1150 psig.
- At approximately 9:40 a.m. C.S.T. on January 26, 2015, the Respondent's ATEX-1 pipeline failed near Follansbee, West Virginia, resulting in the release of approximately 23,901 barrels of liquid ethane into a wooded area. There was no impact to people or to waterways, though the explosion and resulting fire burned approximately five acres of woodlands. The fire in the surrounding area was extinguished at 7:10 p.m. E.S.T., in the evening of January 27, 2015. Enterprise reported the Failure to the National Response Center (NRC Report No. 1106602) on January 26, 2015, at 11:38 a.m.
- After observing a sudden drop in pressure in its control room, Enterprise closed the automated block valves MOV-2001 (mile post 4.05) and MOV-2004 (mile post 25.28) in order to isolate the segment. Thereafter, the control room notified Enterprise personnel, who responded to the rupture location and manually closed Main Line Valve (MLV)2002 (mile post 13.01) and MLV-2003 (mile post 16.42) in an attempt to further restrict product flow to the failure location (mile post 23.1). As a precaution, Line A-1, which shares a right-of-way with ATEX-1, was also isolated. Since Line A-1 is several hundred feet from the Failure Site, Line A-1 was later returned to normal service.
- The Wellsburg Fire Department and Follansbee Police Department responded to the rupture.
- An OPS investigator arrived at the Failure Site on January 26, 2015.
- Based on a visual examination of the pipeline at the rupture location, OPS has preliminarily determined that the rupture occurred in or very near a circumferential girth weld. However, the cause of the failure is still undetermined and the investigation is ongoing. The pipe at the location of the Failure has not been excavated, as of January 28, 2015.
- The accident caused no known injuries, but burned approximately five acres of woodland. One residence, approximately 2,000 feet from the rupture location, sustained external damage to the house siding from radiant heat.
- The ATEX-1 pipeline from block valve MOV-2001 (mile post 4.05) to MOV-2004 (mile post 25.28) is currently out-of-service.

- PHMSA Advisory Bulletin 2010-6528 (75 FED. RES. BULL. 56 (Mar. 2010) provided notification to owners and operators of recently constructed large diameter, high strength (API 5L X70 and X80) hazardous liquid pipeline systems of potential girth weld failures due to welding quality issues.

### **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. As noted in the preliminary findings above, operators of newly constructed large diameter pipelines were advised of potential girth weld failures due to welding quality issues. The bulletin advised operators to review these girth welds, particularly in terrains involving sloping hill sides with potentially unstable soils. Given that the location of the rupture appears to be at a circumferential weld and that the pipeline runs across hilly terrain, there is an increased risk that other vulnerabilities exist. While no definitive explanation for the Failure exists at this time, I find that failure to issue this Order expeditiously 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, Eastern Region, PHMSA (Director). If Respondent requests a hearing, it will be held telephonically or in-person in the Eastern Region 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 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 Enterprise to immediately take the following corrective actions for the Affected Segment and Isolated Segment:

#### Definitions

The term "Affected Segment" means the 26 mile line segment that runs from the MarkWest Processing Facility in Houston, Pennsylvania to the Ohio River.

The term "Isolated Segment" means the 21.23 mile segment of ATEX-1 20-inch line from main line valve MOV-2001 (mile post 4.05) to MOV-2004 (mile post 25.28).

The "Director" means the Director, Eastern Region, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety.

#### Corrective Actions

1. Shut-In Segment. Enterprise may not restart or operate the Isolated Segment until it receives prior written authorization from the Director.
2. Repair Plan. Enterprise must establish a plan to repair the Failure Site in accordance with applicable pipeline safety regulations. The plan must be submitted to the Director for approval. Enterprise may not restart the Isolated Segment until it receives written notification from the Director that the Repair Plan has been approved in its entirety.
3. Restart Plan. Before resuming operation of the Isolated Segment, Enterprise must develop and submit a written "Restart Plan" to the Director for approval.
  - a. Approval. The Director may approve certain portions of the Restart Plan before approving the entire plan. However, Enterprise may not resume operation of the Isolated Segment until it receives written notification from the Director that the Restart Plan has been approved in its entirety.
  - b. Incorporated by Reference. The Restart Plan, once approved by the Director, will be incorporated by reference into this Order.
  - c. Required Elements. The Restart Plan must include the following elements: (1) Provide for adequate patrolling of the Isolated Segment during the restart process; (2) Include incremental pressure increases during start up, with each increment to be held for at least two hours; (3) Include sufficient surveillance of the pipeline during each pressure increment to ensure that no leaks are present when operation of the line resumes; (4) Specify a start time between the hours of 8 a.m. and 3 p.m. and provide twenty-four hour notice to local emergency response officials; (5) Provide for a review of construction, operating and maintenance (O&M) and integrity management records (e.g. ILI results), hydrostatic tests, root cause failure analyses of prior failures, aerial and ground patrols, corrosion, cathodic protection, excavations and pipe replacements, and address any findings that

require remedial measures to be implemented prior to restart; (6) 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 manual; and (7) Provide for hydrostatic pressure testing of the Isolated Segment.

4. *Contingency Plan.* Prior to restart, Enterprise must submit to the Director a contingency plan to operate and monitor the Isolated Segment, including enhanced patrolling and surveillance. This contingency plan must be submitted to the Director and approved by the Director.
5. *Return to Service.* Following approval of the Restart Plan, Enterprise may return the Isolated Segment to service, but the operating pressure may not exceed 80% of the actual operating pressure that was in effect immediately prior to the Failure.
6. *Removal of Pressure Restriction.* Upon written request from Enterprise, the Director may allow the removal or modification of the pressure restriction when a reliable engineering analysis demonstrates that the pressure increase is safe, taking into consideration all known defects, anomalies, and the operating parameters of the pipeline.
7. *Temporary Removal or Modification.* The Director may allow the pressure restrictions to be temporarily removed or modified upon written application from Enterprise. In order to justify such a removal or modification, Enterprise must demonstrate that mitigative and preventive measures will have been implemented prior to and during the temporary removal or modification of the pressure restriction. Enterprise may appeal any determination of under this Section to the Associate Administrator for Pipeline Safety.
8. *Records Verification.* Verify the records for the Affected Segment to confirm the maximum operating pressure (MOP). Enterprise must submit documentation of this record verification to the Director within 45 days of receipt of this Order.<sup>2</sup>
9. *Review of Prior Inline Inspection (ILI) Results.* Within 30 days of receipt of this Order, conduct a review of any previous ILI results of the Affected Segment. Re-evaluate all ILI results since the line was constructed; include a review of the ILI vendors' raw data and analysis. Determine whether any features were present in the failed pipe joint and/or any other pipe removed. Also, determine if any features with similar characteristics are present elsewhere on the Affected Segment. Enterprise must submit documentation of this ILI review to the Director within 45 days of receipt of this Order as follows:
  - a. List all ILI tool runs, tool types, and the calendar dates of the completion of the tool runs.
  - b. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI MOP-impacting, crack, dent, or other integrity-impacting features present in the failed joint and/or pipe in the Affected Segment.

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<sup>2</sup> See PHMSA Advisory Bulletin 2012-06.

- c. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI features with similar characteristics present elsewhere on the Affected Segment.
  - d. Explain the process used to review the ILI results and the results of the re-evaluation.
10. *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 any 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. One business day prior to beginning any mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow for OPS to attend the testing.
  - d. Ensure the testing laboratory sends all reports, whether in draft or final form to the Director, in their entirety at the same time these reports are made available to the Operator.
11. *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 Enterprise's pipeline system.
12. *Emergency Response Plan and Training Review.* Enterprise must review and assess the effectiveness of its emergency response plan with regards to the failure. Include in the review and assessment the on-scene response and support, coordination, and communication with emergency responders and public officials. Also, include a review and assessment of the effectiveness of its emergency training program. Enterprise must amend its emergency response plan and emergency training, if necessary, to reflect the results of this review. The documentation of this plan and review must be available for inspection by OPS or provided to the Director, if requested.
13. *Public Awareness Program Review.* Enterprise must review and assess the effectiveness of its Public Awareness Program within 90 days following receipt of this Order. Enterprise must amend its program, if necessary, to reflect the results of this review. Documentation of this review must be made available to OPS upon request and to the Director.

*14. Integrity Verification and Remediation Plan (IVRP).*

- a. Within 90 days following receipt of this Order, Enterprise must submit an IVRP to the Director for approval.
- b. The Director may approve the IVRP incrementally without approving the entire IVRP.
- c. Once approved by the Director, the IVRP will be incorporated by reference into this Order.
- d. The IVRP must specify the tests, inspections, assessments, evaluations, and remedial measures Enterprise will use to verify the integrity of the Affected Segment. It must address all known or suspected factors and causes of the Failure. Enterprise should consider both the risk of another failure and the consequence of another failure to develop a prioritized schedule for IVRP related work along the Affected Segment.
- e. The IVRP must include a procedure or process to:
  1. Identify pipe in the Affected Segment with characteristics similar to the contributing factors identified for the Failure.
  2. 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.
  3. Integrate the results of the metallurgical testing, RCFA, 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.
  4. Determine if conditions similar to those contributing to the Failure are likely to exist elsewhere on the Affected Segment.
  5. Conduct additional field tests, inspections, assessments, and/or evaluations to determine whether, and to what extent, the conditions associated with the Failure and other failures from the operating 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:
    - a. 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;
- b. Hydrostatic pressure testing;
  - c. Close-interval surveys;
  - d. Cathodic protection surveys, to include interference surveys in coordination with other utilities (e.g. underground utilities, overhead power lines, etc.) in the area;
  - e. Coating surveys;
  - f. Stress corrosion cracking surveys;
  - g. Selective seam corrosion surveys; and
  - h. Other tests, inspections, assessments, and evaluations appropriate for the failure causes.
6. 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.
  7. 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 this Order.
  8. Include a proposed schedule for completion of the IVRP.
  9. Enterprise must revise the IVRP as necessary to incorporate new information obtained during the failure investigation and remedial activities, to incorporate the results of actions undertaken pursuant to this Order, and/or to incorporate modifications required by the Director.
    - a. Submit any plan revisions to the Director for prior approval.
    - b. The Director may approve plan revisions incrementally.
    - c. Any and all revisions to the IVRP after it has been approved and incorporated by reference into this Order will be fully described and documented in the CAO Documentation Report (CDR).
  10. Implement the IVRP as it is approved by the Director, including any revisions to the plan.
15. *CAO Documentation Report.* Enterprise must create and revise, as necessary, a CAO Documentation Report (CDR). When Enterprise 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 Enterprise 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 not be limited to:
  - i. A Table of Contents;
  - ii. A summary of the Failure events and the response activities;
  - iii. A summary of pipe data/properties and all prior assessments of the Affected Segment;
  - iv. A summary of all tests, inspections, assessments, evaluations, and analysis required by this Order;
  - v. A summary of the Mechanical and Metallurgical Testing as required by this Order;
  - vi. A summary of the RCFA with all root causes as required by this Order;
  - vii. Documentation of all actions taken by Enterprise to implement the IVRP, the results of those actions, and the inspection and repair criteria used;
  - viii. Documentation of any revisions to the IVRP. including those necessary to incorporate the results of actions undertaken pursuant to this Order and whenever necessary to incorporate new information obtained during the failure investigation and remedial activities;
  - ix. Lessons learned while completing this Order;
  - x. A path forward describing specific actions Enterprise will take on its entire pipeline system as a result of the lessons learned from work on this Order; and
  - xi. Appendices (if required).

**Other Requirements:**

1. *Reporting.* Submit monthly 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 31, 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; (2) physical changes to pipeline infrastructure,

including repairs, replacements and other modifications; and (3) environmental remediation, if applicable.

3. *Approvals.* With respect to each submission 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. Part 195, 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. 1-2015-5002H 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.

  
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Jeffrey D. Wiese  
Associate Administrator  
for Pipeline Safety

JAN 29 2015  
Date Issued