



U.S. Department  
of Transportation

Pipeline and Hazardous Materials  
Safety Administration

**APR 04 2011**

1200 New Jersey Ave., SE  
Washington, DC 20590

Mr. Wesley J. Christensen  
Senior Vice President, Natural Gas Liquids Operations  
ONEOK NGL Pipeline, L.P.  
100 West Fifth Street  
Tulsa, OK 74103

**Re: CPF No. 4-2010-5016-S**

Dear Mr. Christensen:

Enclosed please find the Safety Order issued in the above-referenced case. It makes a finding that ONEOK NGL Pipeline, L.P.'s Sterling 1 NGL pipeline system has a condition or conditions that pose a pipeline integrity risk and specifies actions that must be taken by ONEOK to ensure that the public, property, and the environment are protected from the risk. When the terms of the order have been completed, as determined by the Director, Southwest Region, this enforcement action will be closed. Service of the Safety Order by certified mail is deemed effective upon the date of mailing, or as otherwise provided under 49 C.F.R. § 190.5.

Thank you for your cooperation in this matter.

Sincerely,

Jeffrey D. Wiese  
Associate Administrator  
for Pipeline Safety

Enclosure

cc: Mr. R. M. Seeley, Director, Southwest Region, PHMSA

**CERTIFIED MAIL – RETURN RECEIPT REQUESTED [ 7005 1160 0001 0041 3641 ]**

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

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**In the Matter of**

**ONEOK NGL Pipeline, L.P.,**

**Respondent.**

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**CPF No. 4-2010-5016-S**

**SAFETY ORDER**

Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), conducted an investigation of the safety of ONEOK NGL Pipeline, L.P.'s (ONEOK or Respondent) Sterling 1 NGL pipeline system in Texas and Oklahoma, including an accident that occurred on November 1, 2010. ONEOK, a subsidiary of ONEOK Partners, L.P., operates approximately 8,000 miles of pipeline primarily in Texas, Oklahoma, and Kansas, which transport highly volatile natural gas liquids (ethane/propane).<sup>1</sup>

As a result of the investigation, the Director, Southwest Region, OPS (Director), issued to Respondent, by letter dated November 10, 2010, a Notice of Proposed Safety Order (Notice). In accordance with 49 C.F.R. § 190.239, the Notice proposed finding that conditions exist on the pipeline system that pose a pipeline integrity risk to public safety, property or the environment, and proposed that Respondent take certain measures to ensure that the public, property, and the environment are protected from the potential risk.

ONEOK responded to the Notice by letter dated November 24, 2010. In its letter, Respondent expressed its intent to comply with the terms of the Notice as proposed, and requested an "informal consultation" pursuant to 49 C.F.R. § 190.239(b)(2). Respondent also provided information concerning the corrective actions it has taken. By letter dated December 1, 2010, ONEOK withdrew its request for an informal consultation, authorizing the entry of this Safety Order. Respondent did not request a hearing, and therefore has waived its right to one.

**FINDINGS**

Respondent did not contest the proposed findings in the Notice that its Sterling 1 NGL pipeline system has a condition or conditions that pose a pipeline integrity risk. Accordingly, pursuant to 49 U.S.C. § 60117(l) and 49 C.F.R. § 190.239, I find as follows:

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<sup>1</sup> This information is reported by Respondent pursuant to 49 C.F.R. § 195.49.

- The Sterling 1 NGL pipeline system is a 596-mile, 8- and 10-inch pipeline that originates in Medford, Oklahoma and traverses Oklahoma and Texas to its endpoint in Mont Belvieu, Texas. The Medford-to-Nevada Segment originates at the Medford Pump Station in Grant County, Oklahoma and terminates at the Nevada Booster Station near Royse City, Texas in Rockwall County. The Medford-to-Nevada Segment is an 8-inch diameter pipeline with Polyken tape coating.
- On November 1, 2010, an accident occurred on the Medford-to-Nevada Segment near MP 251 at station number 13266+06 in a topographically low lying portion of the pipeline. PHMSA became aware of the accident on the same day when NRC Report #958656 was received. PHMSA initiated an investigation of the accident.
- Investigations at the accident site, evaluation of soil and corrosion product samples, and evaluation of the failed section of pipe have suggested the probable cause of the failure to be through-wall pitting corrosion caused by microbiologically induced corrosion (MIC). ONEOK has indicated that the failure occurred in a section of pipe that contained disbonded Polyken tape coating, which appeared to have allowed electrolyte to come into contact with the pipe surface resulting in MIC. MIC can be an accelerated pitting form of corrosion, which poses a threat to pipeline integrity. Comparisons of in-line inspection (ILI) tool runs can provide advanced identification of areas where accelerated corrosion is taking place.
- ONEOK has also indicated that AC stray current induced corrosion has previously been identified on the Sterling 1 NGL pipeline system as a threat to integrity, and the company had implemented AC mitigation measures. Based on data reviewed by ONEOK from testing stations near the accident site, the company indicated that AC or DC stray current induced corrosion was not a probable cause of the accident.
- The Medford-to-Nevada Segment was constructed in 1981 from 8.625-inch diameter, electric resistance welded (ERW) pipe, manufactured by Republic. The wall thickness and grade varies along the segment. There are 67.3 miles of 0.188-inch X46 pipe, 6.2 miles of 0.375-inch X42 pipe, and 193 feet of 0.625-inch X42 pipe.
- The Sterling 1 pipeline system transports batched highly volatile natural gas liquids (HVLs) that are typically an ethane and propane mix. The system usually operates in a steady state operation between 1200 to 1300 psig depending upon the batched product transported.
- The Sterling 1 pipeline system traverses rolling hills and stratigraphic geography as it moves from Medford, Oklahoma to the coastal plains at its endpoint in Mont Belvieu, Texas.
- From the accident site, the nearest Unusually Sensitive Area (USA), as defined in §195.2, is 9,130 feet downstream. The nearest High Consequence Area (HCA), as defined in §195.450, is an “other populated area” located 12,211 feet upstream of the accident site.

- If left unaddressed, accelerated corrosion anomalies may result in pipeline failures and the release of hazardous HVLs. The failures may be in the form of leaks (if the corrosion pits are spaced far apart) or ruptures (if the pits are closely packed together). HVL releases can form vapor clouds that have serious consequences to persons, property, and the environment, especially if an ignition source is present.
- It is probable that accelerated corrosion is present on the Sterling 1 NGL pipeline system in other areas, particularly where tape coating has disbonded. If left unidentified and not addressed, accelerated corrosion anomalies would likely continue to grow and deepen into through wall failures.

### **Issuance of Safety Order**

Section 60117(l) of Title 49, United States Code, provides for the issuance of a safety order, after reasonable notice and the opportunity for a hearing, requiring corrective measures, which may include physical inspection, testing, repair, or other action, as appropriate. The basis for making the determination that a pipeline facility has a condition or conditions that pose a pipeline integrity risk to public safety, property, or the environment is set forth both in the above-referenced statute and 49 C.F.R. §190.239.

After evaluating the foregoing findings and considering the age of the pipe involved, the manufacturer, the hazardous nature of the product transported and the pressure required for transporting such product, the characteristics of the geographical areas where the pipeline facility is located, and the likelihood that the conditions could worsen or develop on other areas of the pipeline and potentially impact its serviceability, PHMSA finds that Respondent's Sterling 1 NGL pipeline system has a condition or conditions that pose a pipeline integrity risk to public safety, property, or the environment. Accordingly, PHMSA issues this Safety Order, which requires that Respondent take measures specified below to address the risk.

### **Corrective Measures**

Pursuant to 49 U.S.C. § 60117(l) and 49 C.F.R. § 190.239, ONEOK NGL Pipeline, L.P. must take the following remedial requirements with respect to the Sterling 1 NGL pipeline system:

1. ONEOK must perform appropriate tests, analyses, and evaluations to establish the probable cause of the accident.
2. ONEOK must compare and re-evaluate the previous ILI runs performed on the Medford-to-Nevada Segment, identify specific areas where accelerated corrosion may be occurring on this segment, and remediate those areas. Criteria for identifying accelerated corrosion and for remediation must be in accordance with the work plan approved by the Director pursuant to Item 5.

3. ONEOK must perform an integrity assessment on the Medford-to-Nevada Segment to identify areas of accelerated corrosion and remediate those areas. Criteria for identifying accelerated corrosion and remediation must be in accordance with the work plan approved by the Director pursuant to Item 5.
4. Until the time that ONEOK receives approval from the Director to operate at higher pressures up to the established maximum of 1335 psig, ONEOK may not operate the Medford-to-Nevada Segment at a pressure more than 1064 psig (discharge pressure at the Durant, Oklahoma Station), which equates to 80% of the operating pressure experienced on the segment immediately prior to the pipeline failure.
5. Within 30 days of receipt of this Order, ONEOK must develop and submit to the Director for approval, a written remedial work plan that includes corrective measures. The work plan must include:
  - (A) Details for the performance of each of the above requirements, including the criteria that will be used for identifying accelerated corrosion for remediation.
  - (B) The performance of additional field testing, inspections, and evaluations to determine whether and to what extent the conditions described in this Order are present elsewhere on the Sterling 1 NGL pipeline system. A provision to make the results of the inspections, field excavations, and evaluations available to PHMSA or its representative;
  - (C) The performance of repairs or other corrective measures that fully remediate the identified risk condition(s), including provisions for continuing long-term periodic testing and integrity verification measures to ensure the ongoing safe operation of the pipeline considering the results of the analyses, inspections, and corrective measures undertaken pursuant to this Safety Order; and
  - (D) A proposed schedule for completion of the actions required by this Order.
6. Revise the remedial work plan as necessary to incorporate new information obtained during the evaluations and associated remedial activities. Submit any such plan revisions to the Director for prior approval. The Director may approve plan elements incrementally. The remedial work plan shall become incorporated into this Safety Order.
7. Implement the work plan as it is approved by the Director, including any revisions to the plan.
8. Submit quarterly reports to the Director that: (1) include available data and results of the testing and evaluations required by this Safety Order; and (2) describe the progress of the repairs and other remedial actions being undertaken. The first report is due 60 days from receipt of this Order.

9. The Director may allow the removal or modification of the pressure restriction set forth in Item 4 upon a written request from ONEOK demonstrating that restoring the pipeline, or portion thereof, 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.

In your correspondence on this matter, please refer to **CPF No. 4-2010-5016-S** and for each document you submit, please provide a copy in electronic format whenever possible.

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).

The Director may grant an extension of time for compliance with any of the terms of the Safety Order upon a written request timely submitted demonstrating good cause for an extension.

Respondent may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator shall be final.

The actions taken pursuant to this Safety 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.

After receiving and analyzing additional data in the course of this proceeding and implementation of the work plan, PHMSA may identify other safety measures that need to be taken. In that event, Respondent will be notified of any proposed additional measures and, if necessary, amendments to the work plan or Safety Order.

The terms and conditions of this Safety Order are effective upon service in accordance with 49 C.F.R. § 190.5.



Jeffrey D. Wiese  
Associate Administrator  
for Pipeline Safety

**APR 04 2011**

Date Issued