U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

Mr. Gary Pruessing
President
ExxonMobil Pipeline Company
800 Bell St., Room 741-D
Houston, TX 77002

MAY 10 2013

Re: CPF No. 4-2013-5006H

Dear Mr. Pruessing:

Please find enclosed the Post-Hearing Decision regarding the Corrective Action Order issued to ExxonMobil Pipeline Company on April 2, 2013. The Decision confirms the Corrective Action Order with respect to the Pegasus Pipeline from Patoka, Illinois, to Nederland, Texas, and clarifies the pressure restrictions upon restart. This Decision is being served by facsimile and certified mail under 49 C.F.R. § 190.5, and its terms and conditions are effective upon receipt.

Thank you for your cooperation in this matter.

Sincerely,

Linda Daugherty
for

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Enclosure

cc: Mr. Alan Mayberry, Deputy Associate Administrator for Field Operations, OPS
Mr. RM Seeley, Director, Southwest Region, OPS
Mr. Jim Stevens, General Counsel, ExxonMobil Pipeline Company *(via email to james.r.stevens@exxonmobil.com)*
Ms. Catherine Little, Hunton & Williams LLP *(via email to clittle@hunton.com)*

<u>CERTIFIED MAIL - RETURN RECEIPT REQUESTED</u>

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

In the Matter of	)	
ExxonMobil Pipeline Company,	)	**CPF No. 4-2013-5006H**
Respondent.	)	

POST-HEARING DECISION CONFIRMING CORRECTIVE ACTION ORDER

On April 2, 2013, the Associate Administrator for Pipeline Safety, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), issued a Corrective Action Order (CAO) under authority of 49 U.S.C. § 60112 and 49 C.F.R. § 190.233 finding that continued operation by ExxonMobil Pipeline Company (EMPCo or Respondent) of its crude oil transmission pipeline known as the Pegasus Pipeline would be hazardous to life, property, and the environment. The CAO made preliminary findings that the potential hazards arose from a March 29, 2013 failure of EMPCo's pipeline and would continue unless certain corrective measures were taken. The CAO further found that failure to issue the order expeditiously without prior notice would result in the likelihood of serious harm to life, property, or the environment.

Following issuance of the CAO, Respondent requested a hearing by letter dated April 12, 2013. In accordance with 49 C.F.R. §§ 190.211 and 190.233(c), a hearing was held on May 2, 2013, in Houston, Texas.

Background

On March 29, 2013, at 3:15 pm, a failure occurred on the Pegasus Pipeline in the town of Mayflower, Arkansas. The failure resulted in the release of approximately 3500 to 5000 barrels of crude oil in a residential area. The accident did not cause any known injuries, fatalities, or fires. Local police evacuated 21 homes. Oil from the pipeline entered the community's storm drainage system. EMPCo initiated spill response to recover the spilled crude oil. There is no indication at this time that oil contaminated a lake approximately one mile away.

When the failure occurred, operating pressure of the pipeline at the failure site was calculated to be 708 psig, which is less than the maximum operating pressure (MOP) of 820 psig established by hydrostatic test in 2006. EMPCo learned of the failure when a drop in pipeline pressure occurred. Upon learning of the pressure drop, EMPCo closed valves upstream and downstream and isolated the failure site. Valves were closed within 16 minutes of the pressure drop. The

distance between the isolating valves is 18 miles. The Pegasus Pipeline currently remains out of service.

The cause of the failure is still undetermined and the investigation is ongoing. The pipe has been excavated and removed and a visual examination of the pipe indicates failure at or near the longitudinal seam. The failed pipe section has been sent to a metallurgist for examination and failure analysis.

In July 2010, Respondent performed an in-line inspection of the portion of the Pegasus Pipeline surrounding the failure site using a magnetic flux leakage and caliper tool. Respondent has reported that no significant anomalies in the area of failure site were found. In February 2013, Respondent performed a transverse flux in-line inspection of the Pegasus Pipeline in the area of the failure site. Results from that inspection have not yet been provided.

The Pegasus Pipeline is approximately 850 miles long and has transported crude oil south from Patoka, Illinois, to the Gulf Coast in Nederland, Texas, since 2006. The pipeline was originally constructed and operated as three separate pipeline systems. The first system (the Northern Section) was constructed in 1947 and 1948 and consists of 648 miles of 20-inch diameter, 0.312" wall thickness, grade API 5LX-42, low frequency electric resistance welded (ERW) pipe manufactured by Youngstown. From 1948 to 2002, the pipeline transported product north from Corsicana, Texas, to Patoka, Illinois. In 2002, the system was idled and purged of product until 2006 when it was reactivated and reversed to flow south.

The second system was constructed in 1954 and consists of 205 miles of 20-inch diameter, grade X-46, electric flash welded pipe manufactured by A.O. Smith. From 1954 to 1995, the system transported product south from Corsicana to Beaumont, Texas.

The third system was constructed in 1973 and consists of 6 miles of 16-inch diameter, grade X-52, ERW pipe. The manufacturer is not known at this time. From 1973 to 1995, the system transported product north from Nederland to Beaumont. In 1995, the second system reversed flow and was "tight-lined" with the third system, creating a single pipeline operation transporting product north from Nederland to the hub in Corsicana (collectively, the Southern Section).

In 2005, the Southern Section reversed flow to the south, and in 2006, the Northern Section was reactivated and reversed flow to the south. From 2006 to 2013, the Northern and Southern Sections were "tight-lined" creating a single 850-mile pipeline operation transporting product south from Patoka to Nederland. During this time the system was re-named the Pegasus Pipeline. Prior to the failure on March 29, 2013, Respondent had made arrangements to separate the systems again at Corsicana to permit diverting flow from Patoka to tankage at Corsicana and to accept product from a third-party connection at Corsicana. Deliveries from the third-party pipeline were scheduled to take place in April 2013, but were postponed following the accident.

Standard for Reviewing a Corrective Action Order

The legal bases for issuance of a CAO are specified in 49 U.S.C. § 60112 and 49 C.F.R. § 190.233. Under those provisions, the Associate Administrator may issue a CAO if he finds a

particular pipeline facility is or would be hazardous to life, property, or the environment.[1] The terms of a CAO may include suspended or restricted use of a facility, physical inspection, testing, repair, replacement, or any other appropriate action.[2] A CAO may be issued without prior notice to the operator if the Associate Administrator further determines that failure to do so would result in the likelihood of serious harm to life, property, or the environment.[3]

The primary purpose of a hearing following issuance of a CAO without prior notice is for the Associate Administrator to determine whether the CAO should remain in effect or be rescinded or suspended.[4] In making this determination, the Associate Administrator must consider among other things: the characteristics of the pipe and other equipment used in the pipeline facility, including its age, manufacturer, physical properties (including its resistance to corrosion and deterioration), and method of its manufacture; the nature of the materials transported; the characteristics of the geographical areas in which the pipeline facility is located; and such other factors as the Associate Administrator may consider appropriate.[5]

If after the hearing, the Associate Administrator continues to find the facility is or would be hazardous to life, property, or the environment, the CAO is confirmed. If the Associate Administrator finds the facility is not hazardous, or if there is insufficient information to support finding a hazard, the CAO must be withdrawn.[6]

Issues Raised at the Hearing

Respondent requested a hearing on four discrete issues that affect the scope of the CAO and the actions Respondent must take to restart the pipeline. Specifically, EMPCo requested that PHMSA clarify or modify the CAO to address the following issues: (1) the restart pressure restriction at the failure site; (2) the definition of "Affected Pipeline" subject to the CAO; (3) the restart pressure restriction at other stations along the pipeline; and (4) the restart pressure at several stations that were not operating at the time of the failure.

In considering the issues raised by Respondent, I have reviewed the evidence to determine whether the CAO should remain in effect or be rescinded or suspended. Respondent did not contest the CAO as to the Northern Section of the Pegasus Pipeline. Based on the evidence in the record, I continue to find the 648-mile Northern Section would be hazardous to life, property, or the environment unless corrective measures are taken. The CAO will remain in effect with regard to that portion of the facility, subject to the clarifications and modifications set forth below.

---

[1] 49 U.S.C. § 60112(a).

[2] 49 C.F.R. § 190.233(a).

[3] § 190.233(b).

[4] § 190.233(b).

[5] § 190.233(e)(1).

[6] § 190.233(c)(4).

Issue 1: Restart Pressure at the Failure Site

At the hearing Respondent requested that the CAO be amended to clarify that the restart pressure at the failure site should be 80% of the actual operating pressure immediately prior to the accident, rather than 656 psig as stated in the order. Respondent explained that at the time of the failure, operating pressure at the failure site was calculated to be 708 psig. Eighty percent of the actual operating pressure would be 566 psig.

The Director did not object to this clarification and confirmed the intent of the CAO was to limit pressure upon restart to 80% of the actual operating pressure at the failure site when the accident occurred. Accordingly, Item 7 of the CAO is amended as set forth below.

Issue 2: Definition of the "Affected Pipeline"

At the hearing, Respondent requested that the CAO be amended to redefine the "Affected Pipeline" as the 648-mile portion of the Pegasus Pipeline between Patoka, Illinois and Corsicana, Texas (the Northern Section). Respondent explained that the differences between the Northern and Southern Sections preclude any broad correlations to be drawn between the hazardous condition at the failure site on the Northern Section and the separate 211-mile Southern Section.

The CAO defined the "Affected Pipeline" as the entire 850-mile Pegasus Pipeline. The CAO considered the entire pipeline to be constructed of 1947 and 1948, 20-inch diameter, 0.312" wall thickness, API 5LX-42 pipe, containing both seamless pipe and low frequency ERW pipe. On that basis, in addition to several other factors, the CAO concluded that the entire pipeline should be subject to the CAO. The other factors considered were: "the uncertainties as to the cause of the failure, the age of the pipeline, the unavailability of the results of the February 2013 in-line inspection, the 2006 change in direction of flow, the location of the Failure Site in a High Consequence Area, and the proximity of the pipeline to navigable waterways, environmentally sensitive areas and populated areas."[7]

Characteristics of the Northern and Southern Sections

At the hearing, Respondent explained that only the Northern Section was constructed in 1947 and 1948 of 20-inch diameter, grade API 5LX-42, low frequency ERW pipe manufactured by Youngstown. Almost all of the Southern Section was constructed in 1954 of 20-inch diameter, grade X-46, flash welded pipe manufactured by A.O. Smith. A small portion was constructed in 1973 of 16-inch, grade X-52 ERW pipe. Respondent explained that flash welded pipe did not present the same integrity risk as pre-1970 ERW pipe and introduced evidence of an historical account of pipe manufacturing processes.[8]

As explained in the literature, which is consistent with information on PHMSA's website, ERW pipe was manufactured by cold-forming a sheet of steel into a cylindrical shape and then passing current between the two edges to heat the steel to a point at which the edges are forced together

---

[7] CAO at 3.

[8] J. F. Kiefner & E. B. Clark, History of Line Pipe Manufacturing in North America (1996).

to form a bond.[9] Initially this manufacturing process used low frequency A.C. current to heat the edges. In 1970, the low frequency process was superseded by a high frequency ERW process which produced a higher quality weld. Over time, the welds of low frequency ERW pipe have been found to be susceptible to selective seam corrosion, hook cracks, and inadequate bonding of the seams. Based on a history of increased risk of failure, PHMSA has deemed pre-1970 ERW pipe to be susceptible to longitudinal seam failure unless an engineering analysis shows otherwise.[10]

Electric flash welded pipe was manufactured by forming a steel sheet into a cylindrical shape. The edges were heated until semi-molten, then forced together. Like low frequency ERW pipe, flash welded pipe is susceptible to selective seam corrosion and hook cracks, but to a lesser extent than low frequency ERW pipe.[11] Flash welding and low frequency ERW are no longer used to manufacture pipe.

Respondent contended that in addition to the differences in manufacturing methods, metallurgy, manufacturer, and years of construction, hydrostatic pressure tests and in-line inspections demonstrate the integrity of the Southern Section has been verified. For example, the Northern Section had 11 seam failures over its 648 miles during a hydrostatic test in 2005-2006, whereas the Southern Section had only 1 seam failure over 205 miles during a pressure test in 1991. This was despite the Southern Section being tested to a higher stress pressure (90-95% SMYS compared to only 86-92% in the Northern Section). Furthermore, the Northern Section had 12 confirmed seam cracks identified during an in-line seam assessment in 2010. The Southern Section did not have any weld cracks or preferential seam corrosion identified by an in-line inspection in 2003-2004. The Southern Section has experienced no in-service seam related failures.

At the hearing, OPS acknowledged that the Northern and Southern Sections had different profiles and risks. OPS clarified that it was not the intent to classify them as identical, but contended there was still cause to include the Southern Section in the order based on the age of the pipe and the older manufacturing process. OPS noted that both have had seam failures (at least during pressure tests), which implies some uncertainty regarding the integrity of the seams. The Director also noted there was uncertainly with regard to the in-line assessments which had previously missed identifying anomalies or potential threats at the locations of the seam failures.

Analysis

To confirm the issuance of the CAO with respect to the Southern Section, I must find the facility is or would be hazardous to life, property, or the environment without corrective measures. Respondent has demonstrated there are distinguishing characteristics between the Southern and Northern Sections, including differences in the type of pipe, method of manufacturing, operational histories, and integrity characteristics. These differences support Respondent's

---

[9] PHMSA Fact Sheet: "Pipe Manufacturing Process" *available at* http://primis.phmsa.dot.gov/comm/FactSheets/FSPipeManufacturingProcess.htm (*last accessed* May 3, 2013).

[10] *See, e.g.*, 49 C.F.R. § 195.303(d).

[11] PHMSA Fact Sheet: "Pipe Manufacturing Process."

position that the Northern and Southern Sections are two separate systems, despite the common Pegasus name.

Separating the Northern and Southern Sections of the Pegasus Pipeline, however, is not determinative when deciding whether the CAO should remain in place. In reviewing the other factors that must be considered, I find several weigh in favor of confirming the CAO as to the Southern Section.

The characteristics of the pipe used in the Southern Section, while different from the pre-1970 ERW pipe used in the Northern Section, present a similar integrity concern. Flash welded pipe of that vintage is known to be susceptible to seam failure, even if to a lesser extent than low frequency ERW pipe. Although Respondent argued that it has evaluated the pipeline according to a valid method and concluded that the Southern Section is not susceptible to seam failure, OPS raised some question as to the appropriateness of this conclusion given the age of the pipe, which was manufactured in 1954, and the fact that it has experienced a seam failure during a hydrostatic test.

In addition, OPS raised some question as to the adequacy of Respondent's procedures for assessing seam integrity across the Pegasus Pipeline, including the Southern Section. For example, in-line inspections performed on the Northern Section in 2010 did not identify an anomaly at the location of the failure on March 29, 2013. Results from a February 2013 in-line seam assessment using a transverse flux inspection tool on the Northern Section are not yet available. The Southern Section has never had an in-line seam assessment using a transverse flux inspection tool, although Respondent had scheduled one prior to the failure. The uncertainty as to the cause of the failure on March 29, 2013, and the uncertainty as to the current seam integrity on the entire Pegasus Pipeline weigh in favor of confirming the CAO until additional information can be gathered.

The nature of the materials transported by the Southern Section is identical to that transported by the Northern Section. Crude oil when released into the environment is a hazard to persons, property and the environment. Although the cause of the failure on March 29, 2013, is not yet known, Respondent stated at the hearing that early indications from the metallurgist are the product did not cause the failure (e.g., there was no sign of internal corrosion).

The hazardous liquid pipeline is located in proximity to environmentally sensitive areas and populated areas.

For the reasons stated above, I find the factors weigh in favor of confirming the CAO with respect to the Southern Section pending further investigation of the cause of the failure and assessment as to whether and what extent the Southern Section is similarly affected. If at such time evidence of the cause(s) of the failure rule out the possibility that the Southern Section is similarly affected, the Director will permit appropriate modification to the corrective action items, or otherwise proceed to close the CAO for that Section.

Issue 3: Restart Pressure at Other Stations

Respondent requested that the CAO be amended to clarify that the restart pressure at other stations along the Affected Pipeline should be 80% of their actual operating pressure

immediately prior to the accident. Respondent explained that segments of the pipeline had various operating pressures when the failure occurred based on hydrostatic tests and different MOPs.

The Director did not object to this clarification and confirmed the intent of the CAO was to limit pressure upon restart to 80% of the actual operating pressure at each station when the accident occurred. Accordingly, Item 7 of the CAO is amended as set forth below.

Issue 4: Restart Pressure for Stations Not Operating at the Time of the Failure

At the hearing Respondent requested that the CAO be modified to permit restart of several stations with a pressure restriction of 80% of their operating pressure measured four days prior to the accident. Respondent explained that these stations are intended to accommodate deliveries from a third-party pipeline into Corsicana, but the stations were not operating at the time of the failure. They had been operating as recently as four days prior to the accident.

The Director did not object to this modification and confirmed it would be consistent with the intent of the CAO to maintain a safety margin throughout the system using a 20% pressure reduction.

Accordingly, Item 7 of the CAO is amended to read as follows:

7. *Pressure Restriction.* After receiving approval from the Director to restart the Affected Pipeline, operating pressure may not exceed 80% of the actual operating pressure in effect immediately prior to the failure. Pressure at the failure site may not exceed 566 psig. For each pump station on the Affected Pipeline, submit the operating pressure at the time of failure and the reduced discharge pressure limit in the restart plan referenced in Item 2. If a station was not operating at the moment of failure, the reduced discharge pressure limit may be calculated from its most recent operating pressure prior to the failure. The pressure restriction required by this Order requires that any relevant remote or local alarm limits, software programming set-points or control points, and mechanical over-pressure devices be adjusted accordingly. The pressure restriction will remain in effect until written approval to increase the pressure or return the pipeline, or a portion thereof, to its pre-failure operating pressure is obtained from the Director pursuant to Item 8.

Conclusion

The CAO issued to EMPCo on April 2, 2013, is confirmed and will remain in effect subject to the modifications set forth above.

for Linda Daugherty

Jeffrey D. Wiese,
Associate Administrator
for Pipeline Safety

MAY 10 2013

Date Issued