



U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety
Administration

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

April 9, 2016

VIA CERTIFIED MAIL AND FAX TO:

Mr. Vern Meier
Vice President – Field Operations
TransCanada Oil Operations, Inc.
717 Texas Ave
Houston, TX 77002

CPF No. 3-2016-5002H

Dear Mr. Meier:

Enclosed is a Corrective Action Order issued in the above-referenced case. It finds that continued operation of the TransCanada Oil Operation's Keystone Mainline #2 between the Freeman and Hartington pump stations near Freeman, South Dakota, is or would be hazardous to life, property, and the environment without immediate corrective actions. The Corrective Action Order requires you to take certain corrective actions to protect the public, property, and the environment in connection with the leak that was initially reported to the National Response Center on April 2, 2016. Service is being made by certified mail and facsimile. Your receipt of this Corrective Action Order constitutes service of that document under 49 C.F.R. § 190.5. The terms and conditions of this Order are effective upon receipt.

We look forward to the successful resolution of the concerns arising out of this accident to ensure the safe operation of this TransCanada facility. Please direct any questions on this matter to Allan Beshore, Region Director, Central Region, OPS, at (816) 329-3811.

Sincerely,

Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

Enclosure: Corrective Action Order and Copy of 49 C.F.R. § 190.233

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, OPS
Mr. Allan Beshore, Region Director, OPS

(PHMSA), Office of Pipeline Safety (OPS), initiated an investigation of the accident. The preliminary findings of the agency's ongoing investigation are as follows:

Preliminary Findings:

- The accident was initially reported by TC to the National Response Center at 3:15 pm CDT on April 2, 2016 (NRC Report No. 1144321), indicating the quantity released as 4.5 barrels (187 gallons). This NRC report was updated on April 7, 2016 with NRC Report No. 1144694 at 11:14 am CDT, to reflect 400 barrels (16,800 gallons) as the estimated quantity released.
- At 12:36 pm CDT on April 2, 2016, Respondent's operations control center received a call from the One-Call center, connecting them with a landowner who reported a leak near Freeman. The release location is in a rural agricultural area alongside County Road 437 near pipeline Mile Post (MP) 411. The pipe failure resulted in the release of an estimated 400 barrels of crude oil. The failure occurred in Hutchinson County, South Dakota, approximately 39 miles southwest of Sioux Falls.
- At 12:41 pm CDT, Respondent's operations control center shut down the entire pipeline and dispatched a technician to confirm the landowner's report.
- On April 7, the immediate cause of the leak was identified as a girth weld anomaly at the 6:00 position on a transition weld. The cause of the welding anomaly is still under investigation and unknown at this time. A third-party metallurgist, contracted by TC, discovered the weld anomaly. At the time of discovery, the anomaly was observed to be releasing crude oil from the pipeline at a rate of approximately two drops per minute. It is not known how long the pipeline had been leaking.
- The 30-inch pipeline moves crude oil from Hardisty, Alberta, Canada to Patoka, Illinois, and separately to Port Arthur, Texas. This portion of the system consists of a 1082-mile-long 30-inch diameter pipeline, 23 pump stations, a terminal facility in Patoka, Illinois, and related facilities that start at the Canadian Border in North Dakota and traverse the States of South Dakota, Nebraska, Kansas and Missouri, terminating in Wood River, Illinois. It was constructed from June 2008 until March 2010.
- The specific pipeline section that failed was installed in 2009. It is 30" in diameter and constructed of API 5L X-70 line pipe manufactured by Welspun. The pipe has a double-submerged helical arc longitudinal seam and is coated with a fusion bond epoxy coating.
- PHMSA issued a special permit (Special Permit) on April 30, 2007 with 51 conditions for Keystone Pipeline, which allowed the pipeline to be operated at a stress level of 80 percent of the steel pipe's specified minimum yield strength (SMYS), whereas, the federal regulations in 49 CFR 195.106 normally limit the operating stress level for

hazardous liquid pipelines to 72 percent of SMYS. The Special Permit was to provide for a level of safety equal to, or greater than, the regulations in effect at the time by requiring TC to more closely inspect and monitor the pipeline over its operational life than similar pipelines installed without a special permit.

- Keystone Pipeline traverses several High Consequence Areas and navigable rivers. The nearest "could-affect" pipeline segment is approximately 1400 feet downstream of the suspected girth-weld failure.
- TC inspected the Keystone Pipeline in November 2015 with an internal acoustic inspection tool. TC also routinely conducted aerial patrols of the Keystone Pipeline, the latest of which was performed on March 29, 2016. None of these activities identified any oil leakage from the Keystone Pipeline at this location.
- Removal of crude oil from the spill area is underway. Various state agencies and numerous contractors working on behalf of the operator, and other operating personnel are performing clean-up, remediation, and monitoring activities.
- The investigation is on-going and information could change. This order 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, 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 hazardous and 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 opportunity for notice and hearing upon a finding that failure to issue the Order expeditiously will likely result in serious harm to life, property or the environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the Order.

After evaluating the foregoing preliminary findings of fact, I find that the continued operation of the Affected Segment without corrective measures is or would be hazardous to life, property and the environment. Additionally, after considering the 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 uncertainties as to the cause of the failure, and the ongoing investigation to determine the cause of the failure, I find that a failure to issue this Order expeditiously to require immediate corrective action would result in likely serious harm to life, property, and 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 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, Central Region, PHMSA (Director). If a hearing is requested, it will be held telephonically or in-person in Kansas City, Missouri.

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 amendment of this Order will be considered. 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 TC to immediately take the following corrective actions with respect to the Affected Segment:

1. ***Shutdown of the Affected Segment.*** The 30" Keystone Pipeline from Freeman (Pump Station 23) to Hartington (Pump Station 24) is currently out of service. The Affected Segment must remain shut down until the Central Region Director has approved a Return-to-Service Plan under this Order.
2. ***Return-to-Service Plan.*** Respondent has developed a Return-to-Service Plan and submitted the plan to the Central Region Director for approval. The plan has been reviewed and approved by the Director. The plan includes a provision for repairing the leaking weld by installing a leak repair clamp on the pipeline. The plan shall also include provisions for increased patrolling of the Affected Segment during restart and until the leak repair clamp and failed girth weld have been removed. Once the Director has authorized the TC to return to service, the pressure on the Affected Segment shall be limited to a maximum allowable discharge pressure of 797 psi at the Freeman Pump Station.
3. ***Testing of Failed Pipeline Section.*** Within 90 days of receipt of this Order, Respondent must develop and submit to the Director for approval a plan to remove the failed pipeline girth weld and complete an independent third-party mechanical and metallurgical failure analysis of the weld. This plan shall include:
 - A. A detailed plan and schedule to shut down the pipeline, cut out the leak repair clamp and the failed girth weld, and install a replacement section of pipe.
 - B. Document the chain-of-custody when handling and transporting the failed girth weld and other evidence from the failure site (if any);
 - C. The testing protocol(s), including selection of the testing laboratory;

- D. Prior to commencing the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow a PHMSA representative to witness the testing; and
 - E. Ensure that the testing laboratory distributes all resulting reports in their entirety (including all media), whether draft or final, to the Director at the same time as they are made available to Respondent.
4. ***Integrity Verification and Remedial Work Plan.*** Within 120 days following receipt of this Order, TC must submit an integrity verification and remedial work plan (RWP) to the Director for approval. The plan must provide for the verification of the integrity of the Affected Segment and must address all factors known or suspected in the leak, including, but not be limited to the integration of information as follows:
- A. A review of construction records, in-line inspection reports, and any other data pertinent to the analysis of the failed girth weld;
 - B. A plan to analyze available data on other girth welds within the Affected Segment to develop a plan for the inspection of selected girth welds with similar characteristics;
 - C. The performance of an acoustic leak detection tool inspection and/or other internal inspections with technologies appropriate to identifying girth weld defects with similar characteristics.
 - D. Utilizing all information gained through history review, operational experience, failure investigation, and root cause analysis, conduct an integrity review designed to prevent reoccurrence.
5. ***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 TC's pipeline system.
6. ***Leak Detection Plan.*** Within 90 days of receipt of this Order, perform a review and submit to the Director a written plan to improve the leak detection capability on the Affected Segment. The review must include a comprehensive analysis of any SCADA, leak detection, surveillance, and other monitoring systems on the Affected Segment. The written plan must include a schedule for improving the leak detection capability on the Affected Segment through additional instrumentation, updated hardware or software, installation of a computational pipeline monitoring system and associated software programming, additional surveillance, pipeline control staffing, ongoing leak surveys, and any other appropriate measures.
7. ***Emergency Response Plan and Training Review.*** Within 90 days of receipt of this Order, TC 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. TC must amend its emergency response plan and emergency training, if necessary, to reflect the results of this review. The documentation of this Emergency Response Plan and Training Review must be available for inspection by OPS or provided to the Director, if requested.

8. **Order Revisions.** Upon approval by the Director, the remedial work plan becomes incorporated into this Order and shall be revised as 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. Submit any such plan revisions to the Director for prior approval. The Director may approve plan elements incrementally.
9. **Implementation of Approved Work Plan.** Implement the work plan as approved by the Director, including any revisions to the plan.
10. **Quarterly Reports.** Submit quarterly reports to the Director that:
 - a. Include all available data and results of the testing and evaluations required by this Order; and
 - b. Describe the progress of the repairs or other remedial actions being undertaken. The first quarterly report for the period from April 2, 2016, through June 30, 2016, shall be due by July 15, 2016.

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.

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 shall correct all deficiencies within the time specified by the Director, and resubmit it for approval. If a resubmitted item is disapproved in whole or in part, the Director may again require Respondent to correct the deficiencies in accordance with the foregoing procedure, and the Director may otherwise proceed to enforce the terms of this Order.


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. 3-2016-5002H" 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.


for Jeffrey D. Wiese
Associate Administrator
for Pipeline Safety

4/19/16
Date Issued

§190.233 Corrective action orders.

(a) *Generally.* Except as provided by paragraph (b) of this section, if the Associate Administrator finds, after reasonable notice and opportunity for hearing in accord with paragraph (c) of this section, a particular pipeline facility is or would be hazardous to life, property, or the environment, the Associate Administrator may issue an order pursuant to this section requiring the operator of the facility to take corrective action. Corrective action may include suspended or restricted use of the facility, physical inspection, testing, repair, replacement, or other appropriate action.

(b) *Waiver of notice and expedited review.* The Associate Administrator may waive the requirement for notice and opportunity for hearing under paragraph (a) of this section before issuing an order whenever the Associate Administrator determines that the failure to do so would result in the likelihood of serious harm to life, property, or the environment. When an order is issued under this paragraph, a respondent that contests the order may obtain expedited review of the order either by answering in writing to the order within 10 days of receipt or requesting a hearing under §190.211 to be held as soon as practicable in accordance with paragraph (c)(2) of this section. For purposes of this section, the term “expedited review” is defined as the process for making a prompt determination of whether the order should remain in effect or be amended or terminated. The expedited review of an order issued under this paragraph will be complete upon issuance of such determination.

(c) *Notice and hearing:*

(1) Written notice that OPS intends to issue an order under this section will be served upon the owner or operator of an alleged hazardous facility in accordance with §190.5. The notice must allege the existence of a hazardous facility and state the facts and circumstances supporting the issuance of a corrective action order. The notice must provide the owner or operator with an opportunity to respond within 10 days of receipt.

(2) An owner or operator that elects to exercise its opportunity for a hearing under this section must notify the Associate Administrator of that election in writing within 10 days of receipt of the notice provided under paragraph (c)(1) of this section, or the order under paragraph (b) of this section when applicable. The absence of such written notification waives an owner or operator's opportunity for a hearing.

(3) At any time after issuance of a notice or order under this section, the respondent may request a copy of the case file as set forth in §190.209.

(4) A hearing under this section is conducted pursuant to §190.211. The hearing should be held within 15 days of receipt of the respondent's request for a hearing.

(5) After conclusion of a hearing under this section, the Presiding Official submits a recommended decision to the Associate Administrator as to whether or not the facility is or

would be hazardous to life, property, or the environment, and if necessary, requiring expeditious corrective action. If a notice or order is contested in writing without a hearing, an attorney from the Office of Chief Counsel prepares the recommended decision. The recommended decision should be submitted to the Associate Administrator within five business days after conclusion of the hearing or after receipt of the respondent's written objection if no hearing is held. Upon receipt of the recommendation, the Associate Administrator will proceed in accordance with paragraphs (d) through (h) of this section. If the Associate Administrator finds the facility is or would be hazardous to life, property, or the environment, the Associate Administrator issues a corrective action order in accordance with this section, or confirms (or amends) the corrective action order issued under paragraph (b) of this section. If the Associate Administrator does not find the facility is or would be hazardous to life, property, or the environment, the Associate Administrator withdraws the notice or terminates the order issued under paragraph (b) of this section, and promptly notifies the operator in writing by service as prescribed in §190.5.

(d) The Associate Administrator may find a pipeline facility to be hazardous under paragraph (a) of this section:

(1) If under the facts and circumstances the Associate Administrator determines the particular facility is hazardous to life, property, or the environment; or

(2) If the pipeline facility or a component thereof has been constructed or operated with any equipment, material, or technique which the Associate Administrator determines is hazardous to life, property, or the environment, unless the operator involved demonstrates to the satisfaction of the Associate Administrator that, under the particular facts and circumstances involved, such equipment, material, or technique is not hazardous.

(e) In making a determination under paragraph (d) of this section, the Associate Administrator shall consider, if relevant:

(1) The characteristics of the pipe and other equipment used in the pipeline facility involved, including its age, manufacturer, physical properties (including its resistance to corrosion and deterioration), and the method of its manufacture, construction or assembly;

(2) The nature of the materials transported by such facility (including their corrosive and deteriorative qualities), the sequence in which such materials are transported, and the pressure required for such transportation;

(3) The characteristics of the geographical areas in which the pipeline facility is located, in particular the climatic and geologic conditions (including soil characteristics) associated with such areas, and the population density and population and growth patterns of such areas;

(4) Any recommendation of the National Transportation Safety Board issued in connection with any investigation conducted by the Board; and

- (5) Such other factors as the Associate Administrator may consider appropriate.
- (f) A corrective action order shall contain the following information:
- (1) A finding that the pipeline facility is or would be hazardous to life, property, or the environment.
 - (2) The relevant facts which form the basis of that finding.
 - (3) The legal basis for the order.
 - (4) The nature and description of any particular corrective action required of the respondent.
 - (5) The date by which the required corrective action must be taken or completed and, where appropriate, the duration of the order.
 - (6) If the opportunity for a hearing was waived pursuant to paragraph (b) of this section, a statement that an opportunity for a hearing will be available at a particular time and location after issuance of the order.
 - (g) The Associate Administrator will terminate a corrective action order whenever the Associate Administrator determines that the facility is no longer hazardous to life, property, or the environment. If appropriate, however, a notice of probable violation may be issued under §190.207.
 - (h) At any time after a corrective action order issued under this section has become effective, the Associate Administrator may request the Attorney General to bring an action for appropriate relief in accordance with §190.235.
 - (i) Upon petition by the Attorney General, the District Courts of the United States shall have jurisdiction to enforce orders issued under this section by appropriate means.

[70 FR 11138, Mar. 8, 2005, as amended by Amdt. 190-16, 78 FR 58912, Sept. 25, 2013]