



U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

'JUL 16 2010

Mr. David Chittick
Director, Pipeline Engineering
TransCanada Pipelines Limited
450 – 1st Street, S.W.
Calgary, Alberta, Canada T2P 5H1

Docket No. PHMSA-2009-0056

Dear Mr. Chittick:

On February 6, 2009, TransCanada Pipeline Limited operator of American Natural Resources Pipeline (TCPL-ANR) wrote to the Pipeline and Hazardous Materials Safety Administration (PHMSA) requesting a special permit to waive compliance from PHMSA's pipeline safety regulation in 49 CFR § 192.611 for one (1) segment of the TCPL-ANR natural gas transmission pipeline system located in Tate County, Mississippi. The regulation requires confirmation or revision of the maximum allowable operating pressure (MAOP) of a pipeline segment where the class location has changed.

PHMSA is denying this special permit due to insufficient information in the application demonstrating the adequacy of the pipe steel toughness properties to mitigate fracture propagation. The reasons for this denial are more fully described in the special permit analysis and findings document enclosed with this letter. This document and all other pertinent documents are available for review in Docket No. PHMSA-2009-0056 in the Federal Docket Management System (FDMS) located on the internet at www.Regulations.gov.

TCPL-ANR should comply with the requirements of 49 CFR § 192.611 by September 30, 2011.

My staff would be pleased to discuss this special permit or any other regulatory matter with you. John Gale, Director of Regulations (202-366-4046), may be contacted on regulatory matters and Alan Mayberry, Deputy Associate Administrator for Pipeline Safety (202-366-5124), may be contacted on technical matters specific to this special permit

Sincerely,

Jeffrey D. Wiese
Associate Administrator for Pipeline Safety

Enclosure: Special Permit Analysis and Findings

U.S. DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
Special Permit Analysis and Findings

Special Permit Information:

Docket Number: PHMSA-2009-0056
Pipeline Operator: TransCanada Pipelines Limited, operator of American Natural Resources Pipeline (TCPL-ANR)
Date Requested: February 6, 2009
Code Section(s): 49 CFR § 192.611

Purpose:

The Pipeline and Hazardous Materials Safety Administration (PHMSA) provides this information to describe the facts of the subject special permit application submitted by TransCanada Pipelines Limited, operator of American Natural Resources¹ (TCPL-ANR), to discuss any relevant public comments received with respect to the application, to present the engineering/safety analysis of the special permit application, and to make findings regarding whether the requested special permit should be granted and if so under what conditions.

Pipeline System Affected:

This special permit application applies to one (1) *special permit segment* along the TCPL-ANR system of natural gas pipelines. This *special permit segment* is on the 30-inch Line 1-501 pipeline located in Tate County, Mississippi. The class location along the pipeline *special permit segment* has changed from an original Class 1 Location to a Class 3² Location.

This special permit application applies to the *special permit segment* and special permit inspection area defined using the TCPL-ANR valve stationing references as follows:

¹ American Natural Resources is owned and operated by TransCanada Pipelines Limited.

² This Class 3 *special permit segment* was originally a Class 1 location that was upgraded to Class 2 location in accordance with § 192.611 (a) hydrostatic test.

- ***Special permit segment*** - Line 1-501, 872 feet, from Valve 27 Station 927 +05 to Valve 27 Station 935+77.
- ***Special permit inspection area*** means the area that extends 220 yards perpendicular on each side of the centerline of the Line 1-501, 30-inch, pipeline from the discharge of the Sardis Compressor Station at Valve 27 Station 0+00 (approximately 17.6 miles upstream of the special permit segment) to the Brownsville Compressor Station at Valve 29 Station 297+05 (approximately 25 miles downstream of the special permit segment). The *special permit inspection area* is approximately 42.77 miles long and 440 yards wide and includes the *special permit segment*.

Special Permit Request

TCPL-ANR submitted an application to PHMSA on February 6, 2009, for a special permit seeking relief from the Federal pipeline safety regulations in 49 CFR § 192.611(a) for one (1) segment of TCPL-ANR natural gas transmission 30-inch Line 1-501 pipeline where a change has occurred from an original Class 1 location to a Class 3 location in Tate County, Mississippi. This special permit request is to allow TCPL-ANR to continue to operate the pipeline *special permit segment* at its current maximum allowable operating pressure (MAOP) of 858 pounds per square inch gauge (psig). The Federal pipeline safety regulations in 49 CFR § 192.611(a) require natural gas pipeline operators to confirm or revise the MAOP of a pipeline segment after a change in class location.

Public Notice:

On April 28, 2009, PHMSA posted a notice of this special permit request in the Federal Register (74 FR 19264). PHMSA did not receive any comments for or against this special permit request as a result of this notice. The request letter, Federal Register notice, and all other pertinent documents are available for review in Docket No. PHMSA-2009-0056 in the Federal Docket Management System (FDMS) located on the internet at www.Regulations.gov.

Analysis:

Background: On June 29, 2004, PHMSA published in the Federal Register (69 FR 38948) the criteria it uses for the consideration of class location change waivers, now referred to as a special

permit. Certain threshold requirements must be met for a pipeline section to be further evaluated for a class location change special permit. The age and manufacturing process of the pipe; system design and construction; environmental, operating and maintenance histories; and integrity management program elements are evaluated as significant criteria. These significant criteria are presented in matrix form and can be reviewed in the FDMS, Docket Number PHMSA-RSPA-2004-17401. Special permits will only then be granted when pipe conditions and active integrity management provides a level of safety greater than or equal to a pipe replacement or pressure reduction.

Threshold Requirements: Each of the threshold requirements published by PHMSA in the June 29, 2004, FR notice is discussed below in regards to the TCPL-ANR special permit petition.

- 1) No pipeline segments in a class location changing to Class 4 Location will be considered. This special permit request is for the PHMSA 2009-0056 segment of TCPL-ANR pipeline where a class location change has occurred from a Class 1 location to a Class 3 location.
- 2) No bare pipe will be considered. These TCPL-ANR *special permit segment* is coated with Allied cold tar enamel, primer, and felt wrap. TCPL-ANR has met this requirement.
- 3) No pipe containing wrinkle bends will be considered. There are no wrinkle bends in the *special permit segments*. TCPL-ANR has met this requirement.
- 4) No pipe segments operating above 72% of the specified minimum yield strength (SMYS) will be considered for a Class 3 special permit. The *special permit segment* operates at or below 72% SMYS. TCPL-ANR has met this requirement.
- 5) Records must be produced that show a hydrostatic test to at least 1.25 x maximum allowable operating pressure (MAOP) and 90% of SMYS. TCPL-ANR records submitted show that the sections of the 30-inch Line 1-501 pipeline has been hydrostatically tested to 1,150 psig which is 1.34 x MAOP and 96.5% of SMYS. TCPL-ANR has met this requirement. TCPL-ANR has mechanical and chemical properties test reports for the pipe to verify the pipe specifications, but these reports indicate the pipe has low toughness properties.
- 6) In-line inspection (ILI) must have been performed with no significant anomalies identified that indicate systemic problems. The proposed *special permit segment* was last inspected by ILI in 2003, with no immediately actionable anomalies found. TCPL-ANR has met this

requirement for wall loss, but would need to run in line inspection tools both high resolution MFL and geometry tools to detect corrosion and to detect dents.

- 7) TCPL-ANR has met this requirement for wall loss, but would need to run an ILI tool to detect dents and re-run ILI for anomalies and corrosion.
- 8) Criteria for consideration of class location change waiver, now referred to as a special permit, published by PHMSA in the Federal Register (69 FR 38948), define a *waiver inspection area (special permit inspection area)* as up to 25 miles of pipe either side of the *waiver segment (special permit segment)*. The *special permit inspection area* must be inspected according to operator's integrity management program and periodically inspected with an in-line inspection technique. The *special permit inspection area* is approximately 42.77 miles in contiguous length. This special permit, if issued, would be contingent upon the operator's incorporation of each of the *special permit segments* in its written integrity management program as a "covered segment" in a "high consequence area" (HCA) per 49 CFR § 192.903.

Criteria Matrix: The original and supplemental data submitted by TCPL-ANR for the *special permit segments* have been compared to the class location change special permit criteria matrix.

The data fall within the *probable acceptance* column of the criteria matrix except for:

- a. Possible acceptable justification – pipe coating, depth of cover, hydrostatic test rupture, ILI, and cathodic protection.
- b. Requires substantial justification - pipe manufacture and girth weld inspections

The data findings below fall within the "possible acceptance" or the "requires substantial justification" column of the criteria matrix:

- 1) Possible Acceptable Justification - Pipe coating, leaks & failures, depth of cover and ILI inspections: The 30-inch pipe is coated with coal tar enamel coating. TCPL-ANR would be required to remediate this coating in the special permit segment by Direct Current Voltage Gradient (DCVG) survey or an Alternating Current Voltage Gradient (ACVG) survey and close interval surveys (CIS) and remediate poor quality coating. The pipeline did have a hydrostatic test failure in 1966, but has no leaks or failures since that time. Depth of cover was not confirmed by TCPL-ANR, so a survey and remediation of shallow areas would need

to be required if a special permit was issued. To confirm cathodic protection a CIS survey would be required in the special permit inspection area.

- 2) Requires substantial justification - pipe manufacture and girth weld inspections: TCPL-ANR indicates 30-inch Line 1-501 pipeline was installed in 1966 and consists of American Petroleum Institute Specification 5LX, *Specification for Line Pipe* (API 5LX), double submerged arc welded (DSAW), X-60 steel pipe manufactured by Kaiser Steel. TCPL-ANR states it has mill test reports to verify the strength and chemistry of the pipe, but the pipe steel toughness is low for fracture arrest. TCPL-ANR has tested this pipeline to 96.5% SMYS test levels, 1150 psig, and 134% of MAOP. TCPL-ANR reports no in service leaks or failure on this 30-inch pipeline in the special permit inspection area. This would place all *special permit segments* in the “requires substantial justification” column of the criteria matrix. TCPL-ANR would be required by the special permit conditions to hydrostatically test the 30-inch pipe in the special permit segment to 100% SMYS and to cut pipe samples to verify the pipe strength properties. TCPL-ANR does not have records to show that pipeline girth welds were non-destructively tested during construction. TCPL-ANR would be required to conduct tests to verify girth weld quality in the special permit conditions, if a special permit was issued.

To further address the pipe manufacture and girth weld quality, an operator of pipe such as the pipe involved in this application would have to treat all *special permit segments* as “covered segments” in an HCA per 49 CFR § 192.903. ILI assessments, anomaly repairs, CIS, and stress corrosion cracking direct assessment (SCCDA) of 30-inch Line 1-501 pipeline would be required to be performed along the entire length of the *special permit inspection area* and *special permit segments* according to the requirements of 49 CFR § 192.929 within one year after the grant of a special permit and on a 7 year reassessment interval. A special permit would need to include a condition that each *special permit segment* be operated at or below its existing MAOP. TCPL-ANR would be required by a special permit to evaluate girth weld quality and pipe strength.

PHMSA has determined that issuing a special permit with conditions would not provide equivalent safety for this area where an original Class 1 location is being upgraded to a Class 3 location. TCPL-ANR did not furnish documentation that shows the pipe steel toughness properties are high enough to mitigate fracture propagation and arrest cracks in the steel pipeline. Low toughness pipe can potentially increase the consequences of a pipeline failure in a Class 3 location. Class location upgrades that are considered by PHMSA for special permits in populated areas must meet pipe toughness standards, so that integrity evaluations for special permit conditions are technically sound.

Findings:

PHMSA has determined that a special permit, even with conditions, that would allow TCPL-ANR to leave the existing subject pipeline segment in service at its current MAOP will not ensure equivalent safety in this populated Class 3 location and would not be consistent with pipeline safety. Accordingly, we recommend that the special permit request be denied.

JUL 16 2010

Completed in Washington DC on: _____

Prepared By: PHMSA – Engineering and Emergency Support