U.S. DEPARTMENT OF TRANSPORTATION

PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION (PHMSA)

Special Permit Analysis and Findings

Special Permit Information:

Docket Number:	PHMSA-2008-0066
Requested By:	Columbia Gulf Transmission Company[1]
Date Requested:	December 5, 2007
Code Sections:	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 Columbia Gulf Transmission Company (Columbia Gulf), 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 request applies to nine natural gas transmission pipeline segments on the 30-inch Mainline 100, 30-inch Mainline 200, and 36-inch Mainline 300 pipelines operated by Columbia Gulf and located in Williamson and Davidson Counties, Tennessee where a change has occurred from an original Class 1 location to a Class 3 location or a Class 2[2] location to Class 3 location. This special permit allows Columbia Gulf to continue to operate the nine pipeline segments at their current maximum allowable operating pressure (MAOP) of 935 pounds per square inch gauge (psig) for the 30-inch Mainline 100 and 1008 psig for both the 30-inch Mainline 200 and 36-inch Mainline 300 pipelines.

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[1] Columbia Gulf Transmission Company is owned and operated by NiSource Gas Transmission and Storage (NGT&S).

[2] The Class 3 location *special permit segments* were originally a Class 1 location area that was upgraded to a Class 2 location in accordance with a § 192.611(a) hydrostatic test.

This special permit applies to the *special permit segments* defined as follows using Columbia Gulf's stationing:

- *Special Permit Segment 1, 30-inch Mainline 100* - 690 ft., Station 1584+69 to 1591+59
- *Special Permit Segment 2, 30-inch Mainline 200* - 1,081 ft., Station 1584+58 to 1595+39
- *Special Permit Segment 3, 36-inch Mainline 300* - 534 ft, Station 1584+74 to 1590+08
- *Special Permit Segment 4, 30-inch Mainline 100* - 10,797 ft., Station 1783+03 to 1891+00
- *Special Permit Segment 5, 30-inch Mainline 200* - 10,525 ft., Station 1785+75 to 1891+00
- *Special Permit Segment 6, 36-inch Mainline 300* - 9,816 ft., Station 1792+84 to 1891+00
- *Special Permit Segment 7, 30-inch Mainline 100* - 5,567 ft., Station 2210+36 to 2266+03
- *Special Permit Segment 8, 30-inch Mainline 200* - 5,487 ft., Station 2212+41 to 2267+28
- *Special Permit Segment 9, 36-inch Mainline 300* - 603 ft., Station 2208+45 to 2214+48

This special permit applies to the *special permit inspection areas* defined as follows:
Special permit inspection area – means the area that extends 220 yards on each side of the centerline of the outermost pipeline on each side of the right-of-way along the entire length of Columbia Gulf pipeline system (Mainline 100, Mainline 200 and Mainline 300 pipelines) as follows:

- *Special Permit Inspection Area 1, 30-inch Mainline 100* - Station 264+69 to 3586+03 (62.9 miles)
- *Special Permit Inspection Area 2, 30-inch Mainline 200* - Station 264+58 to 3587+28 (62.9 miles)
- *Special Permit Inspection Area 3, 36-inch Mainline 300* - Station 264+74 to 3534+48 (62.9 miles)

Note: Each *special permit inspection area* extends approximately 62.9 miles along each pipeline (Mainlines 100, 200 and 300) with overlapping areas and includes the *special permit segments.*

The *special permit inspection areas* are located in Maury, Williamson, Davidson and Wilson Counties, TN. The special permit inspection areas start approximately 5.0 miles downstream of Hampshire, TN Compressor Station, and end approximately 17.6 miles upstream of the Hartsville, TN Compressor Station. The *special permit inspection areas* extend approximately 62.9 miles on each pipeline, Mainlines 100, 200 and 300.

Special Permit Request

Columbia Gulf submitted an application to PHMSA on December 5, 2007, for a special permit seeking relief from the Federal pipeline safety regulations in 49 CFR § 192.611(a) for nine segments of Columbia Gulf's Mainline 100, 200, and 300 natural gas transmission pipelines where a change has occurred from a original Class 1 location per 192.611 to a Class 3 location or a Class 2[3] location to Class 3 location in Williamson and Davidson Counties, Tennessee. This special permit allows Columbia Gulf to continue to operate the pipeline segments at their current maximum allowable operating pressure (MAOP) of 935 pounds per square inch gauge (psig) on the Mainline 100 pipeline and a 1008 psig MAOP on the Mainline 200 and 300 pipelines. 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. A special permit would allow Columbia Gulf to continue to operate each of the nine special permit segments at their existing MAOP's despite a change in class location.

In its application, Columbia Gulf suggested that the nine special permit segments be included in three separate special permit inspection areas (see Columbia Gulf's application for the specific details). The *special permit inspection areas* on the Mainline 100, Mainline 200 & Mainline 300 pipelines would begin approximately 25 miles upstream of the beginning of the *special permit segments* of each mainline to approximately 25 miles downstream of the *special permit segments* of each mainline.

Public Notice:

On April 29, 2008 PHMSA posted a notice of this special permit request in the Federal Register (73 FR 23305). 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-2008-0066 in the Federal Docket Management System (FDMS) located on the internet at www.Regulations.gov.

[3] The Class 3 location segment was originally a Class 1 location area that was upgraded to Class 2 location in accordance with a § 192.611(a) hydrostatic test.

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 being granted through special permits. First, certain threshold requirements must be met for a pipeline section to be further evaluated for a class location change special permit. Second, 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. Third, such special permits will only then be granted when pipe conditions and the operator's integrity management program provides a level of safety greater than or equal to a pipe replacement or pressure reduction. As described later in this document, in addition to technical review, PHMSA focused heavily on enforcement history in reviewing this application.

Threshold Requirements: Each of the threshold requirements published by PHMSA in the June 29, 2004, FR notice is discussed below in regards to the Columbia Gulf 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 nine segments of Columbia Gulf's Mainline 100, 200, and 300 pipelines where a class location change has occurred from Class 1 to Class 2 or Class 2 to Class 3 locations. Columbia Gulf has met this requirement.
2) No bare pipe will be considered. These Columbia Gulf *special permit segments* are coated with coal tar enamel. Columbia Gulf has met this requirement.
3) No pipe containing wrinkle bends will be considered. There are no wrinkle bends in the *special permit segments*. Columbia Gulf 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 segments* operate at or below 72% SMYS. Columbia Gulf 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. Columbia Gulf records submitted show that

the sections of the Mainline 100, 200, and 300 pipelines containing the *special permit segments*, have been hydrostatically tested to a minimum of 1169 psig for Mainline 100 pipeline, which is 1.25 x MAOP and 90% of SMYS; Mainline 200 pipeline has been hydrostatically tested to a minimum of 1264 psig, which is 1.25 x MAOP and 90% of SMYS; and Mainline 300 pipeline has been hydrostatically tested to a minimum of 1317 psig, which is 1.30 x MAOP and 94% of SMYS . Columbia Gulf has met this requirement.

6) In-line inspection (ILI) must have been performed with no significant anomalies identified that indicate systemic problems. The proposed *special permit segments* were last inspected by ILI in 2004 and 2005. Columbia Gulf has met this requirement for wall loss, but will need to run a geometry tool to detect dents and new ILI runs to meet the timing requirements of a special permit. The special permit conditions will require the running of ILI Tools.
7) Criteria for consideration of class location change waiver, now being granted through special permits, 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 Columbia Gulf's integrity management program and periodically inspected with an in-line inspection technique. The *special permit inspection area* is approximately 62.9 miles long, which is the entire length of the Mainline 100, 200, and 300 pipelines. This special permit is contingent upon Columbia Gulf's incorporation of each of the nine *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 Columbia Gulf for the *special permit segment* have been compared to the class location change special permit criteria matrix. The nine *special permit segments* fall in the probable acceptance column of the criteria matrix for all criteria except for:

a. Possible acceptance – pipe manufacture, pipe material, pipe coating, and Line 100 had a pinhole seam leak in 1993 and a pipe body leak in 1983.
b. Requires substantial justification – Columbia Gulf has not performed External Corrosion Direct Assessment (ECDA) or Stress Corrosion Cracking Direct Assessment (SCCDA) on its pipelines and for some older lines, and non-

destructive testing records for girth welds are not available. Moreover, the enforcement history for Columbia Gulf indicates outstanding inspection findings from a Corrective Action Orders (CAO) on its pipelines.

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

1) Pipe design and construction, including pipe manufacture, material and design stress: 30-inch Mainline 100, 30-inch Mainline Line 200 and 36-inch Mainline 300 pipelines were installed in 1954, 1958 & 1969 and consists of American Petroleum Institute Specification 5LX, *Specification for Line Pipe* (API 5LX), submerged arc welded (SAW), X-52 steel pipe manufactured by Republic Steel, submerged arc welded (SAW), X-56 steel pipe manufactured by Republic Steel and double submerged arc welded (DSAW), X-65 steel pipe manufactured by U.S. Steel. These pipes are of unknown or low toughness but Columbia Gulf has addressed this risk in their integrity management plan. The 30-inch Mainline 100 has had a seam leak in 1993 and a body leak in 1983 in the *special permit inspection area.* Moreover, the pipelines have not had any known systemic manufacturing issues. This places all *special permit segments* in the "possible acceptance" column of the criteria matrix

   To further address these pipe design and construction issues, this special permit will include conditions requiring Columbia Gulf to treat all *special permit segments* as "covered segments" in an HCA per 49 CFR § 192.903. Columbia Gulf will also be required to perform ILI assessments, anomaly repairs, CIS, and stress corrosion cracking direct assessment (SCCDA) of Mainline 100, Mainline 200 and Mainline 300 pipelines along the entire length of the *special permit inspection areas* and *special permit segments* according to the requirements of 49 CFR § 192.929 within one year after the grant of this special permit. This special permit will include a condition that Columbia Gulf must continue to operate each *special permit segment* at or below its existing MAOP.

2) Direct Assessment (ECDA & SCCDA): Columbia Gulf has not completed an external direct assessment (ECDA) or a stress corrosion cracking assessment (SCCDA) of *the special permit segments.* This places both *special permit segments* in the "requires substantial justification" column of the criteria matrix. To address these issues, this special permit will be

conditioned upon CGTC completing a Direct Current Voltage Gradient (DCVG) survey or an Alternating Current Voltage Gradient (ACVG) survey; a close interval survey (CIS); and an SCCDA along the Mainline 100, Mainline 200 and Mainline 300 pipelines not later than one year after the grant of this special permit.

3) Columbia Gulf has an outstanding PHMSA CAO on its system. PHMSA is requiring Columbia Gulf to implement employee training in natural gas pipeline integrity management, corrosion control, anomaly evaluation, validation and repairs to meet 49 CFR Part 192 and the special permit conditions.

PHMSA has determined that imposing the special permit conditions will address these concerns and provide equivalent safety for these areas.

Operational Integrity Compliance: PHMSA has reviewed this special permit request to ensure that integrity threats to the pipeline in the *special permit segments* and *special permit inspection areas* are addressed in the operator's operations and management plan (O&M Plan). Columbia Gulf must have a systematic program to review and remediate pipeline safety concerns. Additional operational integrity review and remediation requirements will be required by this special permit for this special permit segment class location change. The pipeline operational integrity requirements are to ensure that the operator has an ongoing program to locate and remediate safety threats. Some of these threats to integrity and safety are the pipe coating quality, cathodic protection effectiveness, operations damage prevention program for third party damage, weld seam and girth weld integrity, anomalies in the pipe steel, and material and structures either along or near the pipeline that could cause the cathodic protection system to be ineffective. PHMSA carefully designed a comprehensive set of conditions that Columbia Gulf would be required to meet in order for the special permit to be granted. Among other things, the conditions include:

- A close interval survey to determine the effectiveness of the cathodic protection system must be performed within the *special permit segments* and *special permit inspection area* and all areas with inadequate cathodic protection must be remediated.

- A coating survey to determine the quality of the pipe coating must be conducted and in-effective coating areas must be required to be remediated within the *special permit segments*.
- Stress corrosion cracking surveys on the pipeline will be required to ensure that the pipe steel is not cracking due to the effects of high and near neutral pH SCC within the *special permit segments* and *special permit inspection area.*
- The latest methods of damage prevention must be incorporated by the operator, such as the best practices of the Common Ground Alliance (CGA) within the *special permit inspection areas.*
- Interference currents from electric transmission lines and other interfering structures in the *special permit segments* and *special permit inspection area* must be identified, controlled and mitigated by conducting surveys and installing grounding systems where required.
- An analysis of pipeline field coated girth welds that could have shielding coatings that could cause corrosion of the pipe steel must be undertaken in the *special permit segments* and *special permit inspection area* and in-line inspection logs that indicate 30% or greater wall loss corrosion indications on shielding or unknown coatings must be exposed and evaluated.
- Anomalies and dents on the pipeline must be repaired based upon the special permit repair criteria.
- Girth welds in the *special permit segments* must have had a non destructive test plan during construction, or a quality review and remediation program must be implemented by the pipeline operator.
- All shorted casing (either metallic or electrolytic) at road crossings and railroad crossings in the *special permit segments* and *special permit inspection areas* must be cleared to prevent corrosion.
- Pipeline longitudinal seams within the *special permit segments* and *special permit inspection areas* must have an engineering analysis to determine if there are any threats and remediated if integrity threats are determined.

- Periodic close interval surveys and in-line inspection surveys (pipeline internal surveys to determine corrosion in the pipeline) must be performed on the *special permit segments* and *special permit inspection areas* at the applicable reassessment intervals.
- Training of Senior Executive Management (Executive Vice President and Group CEO, Vice President of Operations and Vice President of Engineering), Engineering and Operations Managers and Supervisors, and Technical Personnel (Engineers and Operations Technicians) in natural gas pipeline integrity management, corrosion control, and anomaly evaluation, validation and repairs to meet Part 192 and these special permit conditions.
- Columbia Gulf must maintain an open and transparent relationship with PHMSA to ensure effective implementation of special permit conditions and must make records and other applicable information available to PHMSA upon request. Columbia Gulf must fully execute the special permit conditions and proactively respond to findings encountered throughout implementation.

The special permit will contain numerous conditions to ensure Columbia Gulf meets or exceeds the threshold requirements with equivalent safety and to ensure that granting the special permit will not be inconsistent with safety.

Past Enforcement History – 2000 through 2009

The enforcement history is an important reflection of how Columbia Gas has been observed to follow pipeline safety regulations, and was a major area of focus for the review of this application. A review of PHMSA enforcement actions against Columbia Gulf and Columbia Gas from 2000 through 2009 shows the following enforcement actions against the companies. The existence of these actions requires substantial justification pursuant to the Class Location Special Permit Criteria as confidence is necessary that conditions contained in a special permit would be closely followed. Columbia Gulf and Columbia Gas are owned and operated by NiSource Gas Transmission and Storage (NGT&S).

Below is a listing of PHMSA closed enforcement matters of all types in all PHMSA Regions for Columbia Gulf and Columbia Gas from 2000 through 2009:

- Letters - of Concern or Warning - 30 matters

- Notices – of Amendment or of Probable Violation – 20 matters
- Fines - $1,221,000 collected, additional penalties have been proposed

The preceding enforcement history summary reveals a number of compliance issues, including pipeline maintenance issues.

PHMSA initially was inclined to deny this special permit application based on the enforcement history issue. PHMSA notified Columbia Gulf senior management of the agency's enforcement history concerns, prior to taking final action on the special permit application. Columbia Gulf acknowledged performance issues and requested a meeting with PHMSA to explain improvements the company had made to its pipeline safety programs that were designed to improve compliance with the regulations. In a meeting with PHMSA on July 28, 2009, Columbia Gulf senior management gave a presentation entitled "Integrity Management Improvements," which described changes made by Columbia Gulf to improve compliance with pipeline safety regulations. In an August 27, 2009 meeting with PHMSA, Columbia Gulf presented its "Special Permit Management Plan," which described an organizational structure and plan to manage special permit compliance. The presentations from the meetings listed above are posted on the docket.

In analyzing whether or not to grant a special permit, PHMSA considered the organizational, management and procedural changes described by Columbia Gulf. PHMSA believes that some of these changes are positive and necessary for pipeline safety and will incorporate additional conditions into the special permit to capture the company's commitments. These additional conditions will require Columbia Gulf (NGT&S) Executive Management, Mid-Level Management and Technical Support Personnel to make improvements in integrity management, training, and operating procedures. The additional conditions include:

- Columbia Gulf (NGT&S) must complete the training of Senior Executive Management (Executive Vice President/Group CEO, Vice President of Operations and Vice President of Engineering), Engineering and Operations Managers and Supervisors, and Technical Personnel (Engineers and Operations Technicians) in natural gas pipeline integrity management, corrosion control, anomaly evaluation,

validation and repairs to meet § 192 and the special permit conditions. Columbia Gulf Senior Executive Management Level Commitment to: Execution of Special Permit Requirements for Class Location Changes in accordance with letter from Mr. Chris Helms, Executive Vice President and Group CEO, of NGT&S (owner and operator of Columbia Gulf) to PHMSA dated September 21, 2009.

- Columbia Gulf (NGT&S) must maintain a transparent relationship with PHMSA to ensure implementation of all conditions.
- Columbia Gulf 's Executive Vice President/Group CEO will require letters of commitment from responsible employees throughout Columbia Gulf (NGT&S) requiring that these individuals commit in writing to comply with the special permit conditions, to reinforce and demonstrate the full commitment to compliance with the special permit throughout the organization.

PHMSA has determined that imposing the special permit conditions summarized in this document will ensure that granting the special permit will not be inconsistent with safety.

Findings:

Based on the information submitted by Columbia Gulf and PHMSA's analysis of technical, operational and safety issues, and given the conditions that will be imposed in the special permit, PHMSA finds that granting this special permit to Columbia Gulf to operate *special permit segments* of the Mainline 100, 200, and 300 natural gas transmission pipelines at the current MAOP, where a change in class location has occurred from an original Class 1 location to a Class 3 location, would not be inconsistent with pipeline safety.

Completed in Washington DC on: MAR 2 2010

Prepared By: PHMSA – Engineering and Emergency Support