

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

September 30, 2010

Victor Gaglio  
Sr. Vice President of Operations and Engineering  
Columbia Gas Transmission LLC  
1700 MacCorkle Av., SE  
Charleston, WV 25314

**CPF 2-2010-1010S**

Dear Mr. Gaglio:

Enclosed is a Notice of Proposed Safety Order (Notice) issued in the above-referenced case. The Notice proposes that you take certain measures with respect to your Columbia Gas Transmission LLC (CGT) Line P pipeline in Kentucky and West Virginia to ensure pipeline safety. Your options for responding are set forth in the Notice. Your receipt of the Notice constitutes service of that document under 49 C.F.R. §190.5.

We look forward to a successful resolution to ensure pipeline safety. Please direct any questions on this matter to me at (404) 832-1160.

Sincerely,

Wayne T. Lemoi  
Director, Southern Region  
Office of Pipeline Safety  
Pipeline and Hazardous Materials Safety Administration

Enclosures: Notice of Proposed Safety Order and Copy of 49 CFR §190.239

**DEPARTMENT OF TRANSPORTATION  
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION  
OFFICE OF PIPELINE SAFETY**

Southern Region  
Atlanta, GA 30303

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**In the Matter of** )  
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**Columbia Gas Transmission LLC** )  
 )  
**Respondent** )  
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**CPF 2-2010-1010S**

**NOTICE OF PROPOSED SAFETY ORDER**

**Background and Purpose**

Pursuant to Chapter 601 of title 49, United States Code, the Pipeline and Hazardous Materials Safety Administration (PHMSA) has initiated an investigation of the safety of the Columbia Gas Transmission LLC (CGT) Line P in Kentucky and West Virginia. CGT is a subsidiary of NiSource Gas Transmission & Storage (NGT&S).

As a result of the investigation it appears that conditions exist on CGT's pipeline facilities that pose a pipeline integrity risk to public safety, property or the environment. Pursuant to 49 U.S.C. §60117(l), PHMSA issues this Notice of Proposed Safety Order (Notice), notifying you of the preliminary findings of the investigation, and proposing that you take measures to ensure that the public, property, and the environment are protected from the potential risk.

The pipeline facilities that pose a pipeline integrity risk are located in the downstream segment of CGT's approximately 66.5-mile Line P, which originates at the Beaver Creek Junction in Floyd County, Kentucky and terminates at the Kenova Compressor Station in Wayne County, West Virginia. Natural gas flows through Line P from south to north, which operates as two distinct operating segments with the upstream segment running from Beaver Creek Junction to Chestnut Junction, and the downstream segment running from Chestnut Junction to the Kenova Compressor Station.

The downstream segment is approximately 38 miles long and originates at Chestnut Junction where CGT's Line PM 117 delivers additional gas into Line P. There is one compressor station, Walbridge, located approximately 15 miles downstream of Chestnut Junction and 23 miles upstream of Kenova; however, the Walbridge Station does not operate as a booster unit along Line P. Walbridge contains a single 800 hp unit that serves to compress local production gas from CGT's Line BM-19 into Line P.

CGT's records indicate the downstream pipeline segment of Line P consists of approximately 2 miles of 16-inch, 32.5 miles of 20-inch, and 3.5 miles of 24-inch pipe. Approximately 10 miles of the 20-inch (several sections) is composed of seamless, bare, coupled pipe with no cathodic protection. This pipe was originally installed in 1928 and is located within an area that extends approximately 12 miles downstream from Chestnut Junction. The remaining 28 miles of the downstream segment is coated, welded pipe installed at various times between 1958 and 1999.

The maximum allowable operating pressure (MAOP) of the downstream segment was originally established as 360 psig but was subsequently lowered to 288 psig based on a Class Location 2 area located downstream of Chestnut Junction. According to CGT, approximately 10 miles of the pipe in the downstream segment has a hoop strength that corresponds to 600 psig at 100% of the specified minimum yield strength (SMYS)<sup>1</sup> with the remaining 28 miles having a hoop strength that corresponds to 950 psig or greater at 100% SMYS.

### **Preliminary Findings**

On September 9, 2010, a rupture occurred in the downstream segment of CGT's Line P pipeline about half way between Chestnut Junction and the Kenova Compressor Station, approximately 850 feet south of State Route 645 in Lawrence County, Kentucky. The rupture occurred in a Class Location 1 area. There was no ignition of the escaping natural gas.

The rupture occurred in an approximately 3-mile continuous pipe section of the bare, coupled, 20-inch OD x 0.250-inch WT seamless pipe with unknown grade that was installed in 1928. The nearest sections of cathodically protected coated pipe are located approximately 150 feet downstream of the rupture site and approximately 3 miles upstream of the rupture site. The coated section located approximately 150 feet downstream of the rupture site was installed in 1979 and is approximately 170 feet long. The coated section located 3 miles upstream of the rupture site was installed in 1969 and is approximately 1 mile long.

An assessment of the site by the operator indicated that the failure occurred in a section of uncoated pipe that was constructed in the late 1920's with Dresser couplings as the joining method between 20 foot nominal lengths of pipe. An approximately 20-foot long joint of pipe was expelled from the ground and landed approximately 90 feet from the site of the rupture. The expelled piece was a full 20-foot joint of pipe, which had separated from the nearest upstream and downstream couplings. The origin of the failure appeared to be within the expelled joint, located approximately 7-8 feet from one end of the joint. A preliminary evaluation of the failure origin by CGT indicated an area of reduced wall thickness on the external surface, likely caused by external corrosion. Wall thickness measurements of 119-120 mils were recorded using an ultrasonic thickness (UT) gauge at the likely site of the rupture origin, as compared to a measurement of 301 mils near the end of the joint.

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<sup>1</sup> When pipe of unknown grade is used in a pipeline and it has not been tensile tested, the federal pipeline safety regulations specify that 24,000 psi is to be used as the assumed minimum yield strength for design purposes (see §192.107(b)(2)). By using 24,000 psi in the design formula for steel pipe, the operator has calculated that 600 psig is the internal operating pressure that corresponds to 100% SMYS for this pipe.

The approximately 10 miles of bare, coupled, cathodically unprotected seamless pipe remaining in the downstream segment of Line P is a pipeline integrity risk to public safety, property or the environment as follows:

- Wall Loss - Based on an examination of the ruptured pipe and CGT's records, areas of excessive wall loss caused by external corrosion along the cathodically unprotected sections of the 10 miles of bare pipe are likely. External corrosion can be exacerbated by the existence of a corrosive environment. CGT identified a corrosive environment as a possible contributing factor to the incident in its preliminary analysis after the failure.
- Dresser couplings - These couplings can only withstand a small amount of "pulling" force across the coupling before a pipe joint will separate from the coupling. The couplings can also fail due to axial thrust forces at closely spaced angle changes or pipe bends. These problems can be exacerbated by certain environmental conditions such as shallow cover, high water table, rutted right-of-way, saturated soft soil, erosion, soil movement, and recent excavation. Moreover, the couplings electrically isolate each pipe joint preventing the use of an impressed current cathodic protection system on the pipeline segment without bonding across each coupling.
- Age and Condition - This pipe was installed circa 1928. There is virtually no possibility that the condition of this cathodically unprotected pipe will get better over time. Conversely, the condition of this pipe will likely continue to deteriorate over time and lead to more safety concerns as time goes by.
- Assessment - Under existing regulations, the failure in the downstream segment of Line P on September 9, 2010, requires CGT to assess and mitigate integrity issues on this pipeline segment. There are, however, technical issues that will make assessment of this bare, coupled, cathodically unprotected, pipe challenging. There are four accepted methods<sup>2</sup> to assess pipelines:
  - In-Line Inspection (ILI): The use of ILI to assess this segment is not considered viable due to the relatively low operating pressure of the pipeline. In essence there is not enough differential pressure to drive an ILI tool
  - Pressure tests: Notwithstanding certain exceptions, hydrostatic pressure testing using water as the test medium is the preferred pressure test assessment method for gas transmission pipelines. That said the use of hydrostatic pressure tests on this segment may not be a viable assessment method because of the Dresser couplings.
  - Direct Assessment: This method includes External Corrosion Direct Assessment (ECDA), Internal Corrosion Direct Assessment (ICDA), and Stress Corrosion Cracking Direct Assessment (SCCDA). Because this is bare, cathodically unprotected, coupled pipe there are very few direct assessment methods available to complete these assessments.

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<sup>2</sup> PHMSA acknowledges that these assessment methods are generally used to evaluate the integrity of pipelines in High Consequence Areas (HCAs) regulated under the Gas Transmission Pipeline Integrity Management rules in 49 CFR Part 192, Subpart O. However, these assessment methods can and should be used by operators to evaluate the integrity of other pipeline segments that pose an integrity risk to public safety, property or the environment.

- Other technology: The use of other technologies on bare, unprotected, coupled pipe is not a likely option for assessment in that most new assessment technologies are developed to assess welded, coated pipe that is cathodically protected.

### **Proposed 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 CFR §190.239, a copy of which is enclosed.

After evaluating the foregoing preliminary findings of fact 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, it appears that the continued operation of the affected pipeline without corrective measures would pose a pipeline integrity risk to public safety, property, or the environment.

Accordingly, PHMSA issues this Notice of Proposed Safety Order to notify Respondent of the proposed issuance of a safety order and to propose that Respondent take the measures specified herein to address the potential risk.

### **Response to this Notice**

In accordance with §190.239, you have 30 days following receipt of this Notice to submit a written response to the official who issued the Notice. If you do not respond within 30 days, this constitutes a waiver of your right to contest this Notice and authorizes the Associate Administrator for Pipeline Safety to find facts as alleged in this Notice without further notice to you and to issue a Safety Order. In your response, you may notify that official that you intend to comply with the terms of the Notice as proposed, or you may request that an informal consultation be scheduled (you will also have the opportunity to request an administrative hearing before a safety order is issued). Informal consultation provides you with the opportunity to explain the circumstances associated with the risk condition(s) alleged in the notice and, as appropriate, to present a proposal for a work plan or other remedial measures, without prejudice to your position in any subsequent hearing. If you and PHMSA agree within 30 days of informal consultation on a plan and schedule for you to address each identified risk condition, we may enter into a written consent agreement (PHMSA would then issue an administrative consent order incorporating the terms of the agreement). If a consent agreement is not reached, or if you have elected not to request informal consultation, you may request an administrative hearing in writing within 30 days following receipt of this Notice or within 10 days following the conclusion of an informal consultation that did not result in a consent agreement, as applicable. Following a hearing, if the Associate Administrator finds the facility to have a condition that poses a pipeline integrity risk to the public, property, or the environment in accordance with §190.239, the Associate Administrator may issue a safety 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 2-2010-1010S** for each document you submit, please provide a copy in electronic format whenever possible.

### **Proposed Corrective Measures**

Pursuant to 49 U.S.C. §60117(1) and 49 C.F.R. §190.239, PHMSA proposes to issue to Columbia Gas Transmission LLC (CGT) a safety order incorporating the following remedial requirements with respect to its Line P in Kentucky and West Virginia:

1. PHMSA has previously approved a return to service plan. If and when the downstream segment of Line P is returned to service, CGT is to maintain a pressure reduction of at least 20% of the operating pressure in place at the time of rupture on September 9, 2010, until and unless an increase in pressure is approved by PHMSA.
2. CGT is to perform a root cause analysis to:
  - a. Determine the cause of the failure, including a study and analysis of environmental, material, operational, personal performance and other factors that may have contributed to the failure;
  - b. Review the control center response to the accident to determine the adequacy of pipeline information provided to the Supervisory Control and Data Acquisition (SCADA) system and to review control center procedures, alarms, and controller training for recognizing pipeline failures; and,
  - c. Provide a report on the root cause analysis to the Director, Southern Region.
3. Within 60 days after a safety order is issued, CGT is to develop and submit to the Director, Southern Region for approval a work plan to replace all bare, coupled, cathodically unprotected line pipe in the Line P within 12 months from the date of the safety order. The Director may approve plan elements incrementally. At a minimum, the work plan must include:
  - a. A milestone schedule to show the key elements required for pipe replacement such as pipe procurement, permits, begin construction, pressure testing, etc.
  - b. The specific pipeline sections to be replaced identified by mile post or stationing.
  - c. The specifications of the pipe to be installed.
  - d. The name, phone number, and email address of CGT's point-of-contact for the pipe replacement project.
4. CGT is to revise the work plan if necessary to incorporate new information obtained during the pipe replacement project and is to submit any such plan revisions to the Director, Southern Region for approval. The Director may approve plan revisions incrementally.
5. The work plan and all revisions will become incorporated into the safety order.
6. Beginning 90 days after a safety order is issued, CGT is to prepare and submit monthly progress reports to the Director, Southern Region, with sufficient detail to

allow the Director to track the progress of the pipe replacement project and to provide the Director an opportunity to observe and inspect construction activities as they occur.

7. CGT will implement the work plan as it is approved by the Director, including any revisions to the plan.
8. 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.
9. The Director may allow the removal or modification of the pressure restriction set forth in Item 1 upon a written request from CGT demonstrating that the hazard has been abated and that restoring the pipeline 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. The Director's determination will be based on all known factors and provisions of evidence that mitigative actions taken by the operator provide for the safe operation of the pipeline segment.
10. CGT may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator shall be final.

The actions proposed by this Notice of Proposed 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. § 60101 et seq., 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.

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Wayne T. Lemoi  
 Director, Southern Region  
 Office of Pipeline Safety  
 Pipeline and Hazardous Materials Safety Administration

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Date issued