VIA FEDERAL EXPRESS MAIL AND FAX TO: (403) 920-2200

July 9, 2018

Mr. Randal Broussard
SVP, US Gas Operations East
Columbia Gas Transmission, LLC
201 Energy Parkway, Suite 100
Lafayette, LA 70508

CPF 1-2018-1016S

Dear Mr. Broussard:

Enclosed is a Notice of Proposed Safety Order (Notice) issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) in the above-referenced case. The Notice proposes that TransCanada take certain measures with respect to Columbia Gas Transmission, LLC's Leach Xpress (LEX) pipeline system, near Moundsville, WV. Your options for responding are set forth in the Notice. Your receipt of the Notice constitutes service of that document under § 190.5.

We look forward to a successful resolution to ensure pipeline safety. Please direct any questions on this matter to me at 609-771-7809.

Thank you for your cooperation in this matter.

Sincerely,

Robert Burrough
Director, Eastern Region
Pipeline and Hazardous Materials Safety Administration

Enclosure: Notice of Proposed Safety Order
Copy of 49 C.F.R. § 190.239

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, PHMSA
Mr. Stanley Chapman III, President, US Gas Pipelines, Columbia Midstream Group, LLC; 700 Louisiana Street, Suite 700, Houston, TX 77002

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

In the Matter of	)	
Columbia Gas Transmission, LLC,	)	
a subsidiary of TransCanada Corporation,	)	**CPF No. 1-2018-1016S**
Respondent.	)	

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), U.S. Department of Transportation, has initiated an investigation and information review of the safety of Columbia Gas Transmission, LLC's, a subsidiary of TransCanada Corporation (TransCanada or Respondent), Leach Xpress (LEX) gas pipeline system.

The investigation was prompted after PHMSA was notified on June 7, 2018, by the National Response Center of a reportable incident that occurred on the LEX pipeline system, which resulted in the release of approximately 165 million cubic feet (MMCF) of natural gas, an ignition of natural gas, and a fire (the Failure). The Failure resulted in the ejection of approximately 83 feet of 36-inch pipe from the ditch onto the right of way. The Failure occurred in a remote, Class 1 rural location and there were no reported injuries, fatalities or evacuations. The cause of the Failure has not yet been determined.

As a result of the investigation, it appears conditions exist on your pipeline system that pose an integrity risk to public safety, property, or the environment. Pursuant to 49 U.S.C. § 60117(1), PHMSA, Office of Pipeline Safety (OPS), issues this Notice of Proposed Safety Order (Notice), notifying you of the preliminary findings of the investigation, and proposing that you take certain measures to ensure that the public, property, and the environment are protected from this integrity risk.

For the purposes of this Notice:

"Affected Segment" means the approximately 50 miles of TransCanada's 30-inch and 36-inch LEX Pipeline from the upstream Lone Oak Compressor Station (Mile Post 7.2) near Lone Oak, WV within Marshall County through the downstream Summerfield Compressor Station (MP 57.2) near Summerfield, OH in Noble County. The "*Affected Segment*" generally runs westerly through portions of Noble and Monroe Counties in OH, and Marshall County in WV.

"Isolated Segment" means the approximately 14.35-mile segment of the LEX pipeline from the upstream valve LEX-500 (MLV 2) at MP 18.5 to the downstream valve LEX-600 (MLV 3) at MP 32. It is the portion of the "*Affected Segment*" that was shut-in after the failure on June 7, 2018 by closing MLV 2 (upstream of the failure) and MLV 3 (downstream of the failure) and that must remain shut-in until a restart plan is approved by the "Director".

"*Director*" means the Director, Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety, Eastern Region, 820 Bear Tavern Road Suite 103, West Trenton, NJ 08628

Preliminary Findings:

- Columbia Gas Transmission, LLC, a subsidiary of TransCanada Corporation, operates over 10,468 miles of interstate natural gas transmission pipelines, 37 storage fields across four states, and transports an average of three billion cubic feet of natural gas per day through New York, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, Ohio, Kentucky, North Carolina and Delaware. Columbia Gas was acquired by TransCanada in 2016.[1]

- The failed pipeline is a 36-inch diameter line that transports natural gas and runs from Majorsville, PA, to Crawford, OH, approximately 130 miles. The Failure occurred near milepost 20.6, approximately seven miles south of Moundsville, WV (Failure Site).

- The *Affected Segment* runs along several hills and ridges with steep elevation changes. The Failure Site is located on Nixon Ridge.

- The section of the *Affected Segment* near the Failure Site was constructed in 2017. The pipeline at the Failure Site section consists of grade X-70, 36" steel pipe with a wall thickness of 0.515" and 0.618". The pipeline, which was manufactured by Durabond in 2015, has fusion bonded epoxy coating and double submerged arc welded (DSAW) seams. The impressed current cathodic protection system has not been energized, but

[1] See, TransCanada Website, *available at* https://www.transcanada.com/en/operations/natural-gas/columbia-gas-transmission/(last accessed June 11, 2018)

TransCanada is in the process of having it commissioned. Galvanic anodes were installed at foreign lines crossings.

- The maximum allowable operating pressure (MAOP) of the *Affected Segment* is 1440 psig, as established by hydrostatic test in 2017. At the time of the Failure, the actual operating pressure of the pipeline upstream from the Failure was 1280 psig; downstream of the Failure at Eureka Metering Station, the operating pressure was 1243.7 psig.

- At approximately 4:55 a.m. EDT on June 7, 2018, TransCanada discovered a failure on the LEX pipeline system, as determined by its gas controller, from a pressure drop observation. The incident was determined to be a natural gas release, an ignition of natural gas, and fire in the area of Moundsville, West Virginia. The Failure resulted in the ejection of approximately 83 feet of 36-inch pipe from the ditch onto the right of way and the loss of 165 MMCF of natural gas. The Failure occurred in a remote, Class 1 rural location. There were no reported injuries, fatalities or evacuations. The Failure was reported to the National Response Center (NRC Report No. 1214458) on June 7, 2018 at approximately 6:12 a.m. EDT.

- TransCanada isolated the *Affected Segment* via manual closure of LEX-500, a main line valve (MLV) known as MLV 2, and LEX-600 (MLV 3) (*Isolated Segment*). MLV 2 is located approximately 1.6 miles upstream of the Failure Site and was manually closed at approximately 5:20 a.m. EDT. MLV 3 is located approximately 12.75 miles downstream of the Failure Site and automatically closed at approximately 4:55 a.m. EDT. The upstream Lone Oak compressor station's compressor units were shut down via a command issued from TransCanada's Gas Control at approximately 4:36 a.m. EDT. In addition, LEX-700, MLV 4, further downstream from MLV 3, automatically closed at approximately 5:32 a.m. EDT.

- PHMSA, Roberts Ridge Volunteer Fire Department, West Virginia Department of Environmental Protection, West Virginia Division of Forestry, and the Federal Energy Regulatory Commission responded to the scene. PHMSA inspectors initiated an investigation of the Failure on June 7, 2018.

- The *Isolated Segment* was shut-in via the closure of MLVs 2 and 3. The *Isolated Segment* currently remains out of service.

- On December 12, 2017, TransCanada completed a hydrostatic test on test section LX1-3A of the LEX pipeline, which includes the location of Failure. The section was successfully tested for a duration of 8 hours to a minimum test pressure of 1880 psig. In addition, on December 14, 2017, TransCanada ran an Enduro Digital Data Logger Caliper tool from the Taylor B (746+11) launch site near Glen Easton, WV to Games Ridge (1139+34.9) receive site near Moundsville, WV. The report was generated on

December 20, 2017. On May 17th, 2018, a combo High-Resolution Magnetic Flux Leakage (HR MFL) + Geo Tool was run with IMU. TransCanada has not yet received the report from the combo HR MFL + Geo Tool run, but the vendor has been asked to provide an expedited preliminary inline inspection report as soon as practicable due to the Failure. PHMSA has not yet received the preliminary inline inspection report or any analysis from the report.

- Since the Failure, TransCanada has identified six other points along the pipeline that, based on their geotechnical flyover, are areas of concern due to the existence of large spoil piles, steep slopes, or indications of slips. TransCanada has also performed minor repair work and grading of the Failure Site.

- The PHMSA investigation is ongoing and the cause of the failure is unknown at this time. The preliminary investigation suggests that the Failure was the result of land subsidence causing stress on a girth weld.

- PHMSA has issued several Advisory Bulletins of note, including Advisory Bulletin ADB 97-03 on March 4, 1997 entitled "Potential Soil Subsidence on Pipeline Facilities," cautioning owners and operators of possible hazards relating to soil subsidence on pipeline facilities, and advising the need to monitor the potential impact of flooding and soil subsidence on those facilities. PHMSA also issued Advisory Bulletin, ADB 12-06 on May 7, 2012, entitled "Verification of Records Establishing MAOP and MOP," advising operators of gas transmission pipelines and associated facilities to verify that their records confirm their MAOP and MOP.

Proposed Issuance of Safety Order:

Section 60117(1) 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 action, which may include physical inspection, testing, repair, replacement, 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 C.F.R. § 190.239, a copy of which is enclosed.

After evaluating the foregoing preliminary findings of fact and considering the location of the Failure Site on Nixon Ridge, the identification of six additional areas of concern based on the existence of large spoil piles, steep slopes, or indications of slips, the fact that subsidence or slippage could lead to additional failures of the pipeline in areas with similar geological conditions, the fact that the *Affected Segment* was operating between approximately 86-89% of its MAOP at the time of the Failure, the hazardous nature of the natural gas transported, the age of the pipe, and the ongoing investigation to determine the cause of the failure, it appears that the continued operation of the *Affected Segment*, without corrective measures, poses a pipeline integrity risk to

public safety, property, and 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 measures specified herein to address the potential risk

Proposed Corrective Actions:

Pursuant to 49 U.S.C. § 60117(1) and 49 C.F.R. § 190.239, PHMSA proposes to issue to TransCanada Corporation a safety order incorporating the following remedial requirements with respect to the *Affected Segment* and *Isolated Segment*:

1. ***Review of Isolated Segment.*** TransCanada must review and inspect the *Isolated Segment* for conditions similar to those of the Failure including a review of construction, operating and maintenance (O&M) and integrity management records such as in-line inspection (ILI) results, hydrostatic tests, root cause failure analysis of the Failure, aerial and ground patrols, cathodic protection, excavations and pipe replacements. Respondent must address any findings that require remedial measures to be implemented within 30 days of discovery.
2. ***Enhanced surveillance and monitoring.*** TransCanada must provide for enhanced patrolling and surveillance of the *Isolated Segment* until the cause of the Failure is determined.
3. ***Installation of Strain Gauges.*** Within 45 days of receipt of the final Safety Order, TransCanada must install at least six (6) strain gauges on the pipeline in the immediate area of the Failure. TransCanada must also determine if additional locations exist along the *Affected Segment* with conditions similar to the Failure site and install strain gauges.
4. ***Hydrostatic Testing.*** TransCanada must provide for hydrostatic pressure testing of any pipe installed in the *Isolated Segment.*
5. ***Weather Contingency Plan.*** Within 30 days of receipt of the final Safety Order, TransCanada must submit to the Director a contingency plan to operate and monitor the *Isolated Segment* during saturated soil or flooding conditions, including enhanced patrolling and surveillance.
6. ***Instrumented Leakage Survey.*** Within 30 days of receipt of the final Safety Order, TransCanada must perform an aerial or ground instrumented leakage survey of the *Affected Segment.* TransCanada must investigate all leak indications and remedy all leaks discovered. TransCanada must submit documentation of this survey to the Director within 45 days of receipt of the final Safety Order.
7. ***Records Verification***. As recommended in PHMSA Advisory Bulletin 2012-06, TransCanada must verify the records for the *Affected Segment* to confirm the maximum

operating pressure or MAOP. TransCanada must submit documentation of this record verification to the Director within 45 days of receipt of the final Safety Order.

8. ***Review of Prior Inline Inspection (ILI) Results.*** Within 30 days of receipt of the final Safety Order, TransCanada must conduct a review of any previous inline inspection (ILI) results of the *Affected Segment.* TransCanada must re-evaluate all ILI results, including a review of the ILI vendors' raw data and analysis. TransCanada must determine whether any features were present in the failed pipe joint and any other pipe removed. Also, TransCanada must determine if any features with similar characteristics are present elsewhere on the *Affected Segment.* TransCanada must submit documentation of this ILI review to the Director within 45 days of receipt of the final Safety Order as follows:

   A. List all ILI tool runs, tool types, and the calendar years of the tool runs.

   B. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI features present in the failed joint and/or other pipe removed.

   C. List, describe (type, size, wall loss, etc.), and identify the specific location of all ILI features with similar characteristics present elsewhere on the *Affected Segment.*

   D. Explain the process used to review the ILI results and the results of the reevaluation.

9. ***Mechanical and Metallurgical Testing***. Within 45 days of receipt of the final Safety Order, TransCanada must arrange for third-party mechanical and metallurgical testing and failure analysis of the failed pipe, including an analysis of soil samples and any foreign materials. TransCanada must complete the testing and analysis as follows:

   A. Document the chain-of-custody when handling and transporting the failed pipe section and other evidence from the failure site.

   B. Within 10 days of receipt of the final Safety Order, develop and submit the testing protocol and the proposed testing laboratory to the Director for prior approval.

   C. At least five days prior to beginning the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow for a PHMSA representative to witness the testing.

   D. Ensure the testing laboratory distributes all reports whether draft or final in their entirety to the Director at the same time they are made available to TransCanada.

10. ***Root Cause Failure Analysis.*** Within 90 days following receipt of the final Safety Order, TransCanada must complete a root cause failure analysis (RCFA) and submit a final report of this RCFA to the Director. The RCFA must be supplemented and facilitated by an independent third party with prior written approval of the Director, and must document the decision-making process used in the analysis and all factors contributing to the Failure. The final report must include findings, any lessons learned, and whether the

findings and any lessons learned are applicable to other locations within TransCanada pipeline system.

11. ***Remedial Work Plan.*** Within 90 days following receipt of the final Safety Order, TransCanada must submit a Remedial Work Plan (RWP) to the Director for approval. The Director may approve the RWP incrementally without approving the entire RWP. TransCanada must revise the RWP as necessary to incorporate new information obtained during the failure investigation and remedial activities, to incorporate the results of actions undertaken pursuant to the final Safety Order, and to incorporate modifications required by the Director. TransCanada must submit any such plan revisions to the Director for prior approval. The Director may approve plan revisions incrementally. Once approved by the Director, the RWP, and any revisions, will be incorporated by reference into the final Safety Order. TransCanada must implement the RWP as approved by the Director, including any revisions to the plan. The RWP must:

    A. Specify the tests, inspections, assessments, evaluations, and remedial measures TransCanada will use to verify the integrity of the *Affected Segment*. It must address all known or suspected factors and causes of the June 7, 2018 failure. TransCanada should consider both the risk of another failure and the consequence of another failure to develop a prioritized schedule for RWP related work along the *Affected Segment*.

    B. Include a procedure or process to identify pipe in the *Affected Segment* with characteristics similar to the contributing factors identified for the June 7, 2018 failure.

    C. Include a procedure or process to gather all data necessary to review the failure history (in service and pressure test failures) of the *Affected Segment* and to prepare a written report containing all the available information such as the locations, dates, and causes of leaks and failures.

    D. Include a procedure or process to integrate the results of the metallurgical testing, root cause failure analysis, and other corrective actions required by the final Safety Order with all relevant pre-existing operational and assessment data for the *Affected Segment.* Pre-existing operational data includes, but is not limited to, construction, operations, maintenance, testing, repairs, prior metallurgical analyses, and any third-party consultation information. Pre-existing assessment data includes, but is not limited to, ILI tool runs, hydrostatic pressure testing, direct assessments, close interval surveys, and DCVG/ACVG surveys.

    E. Include a procedure or process to determine if conditions similar to those contributing to the failure on June 7, 2018 are likely to exist elsewhere on the *Affected Segment.*

    F. Include a procedure or process to conduct additional field tests, inspections,

assessments, and/or evaluations to determine whether, and to what extent, the conditions associated with the failure on June 7, 2018 or any other integrity threats are present elsewhere on the *Affected Segment*. At a minimum, this process must consider all failure causes and specify the use of one or more of the following:

i. Inline inspection (ILI) tools that are technically appropriate for assessing the pipeline system based on the cause of failure on June 7, 2018, and that can reliably detect and identify anomalies,
ii. Hydrostatic pressure testing,
iii. Close-interval surveys,
iv. Cathodic protection surveys, to include interference surveys in coordination with other utilities (*e.g.* underground utilities, overhead power lines, etc.) in the area,
v. Coating surveys,
vi. Stress corrosion cracking surveys,
vii. Selective seam corrosion surveys; and,
viii. Other tests, inspections, assessments, and evaluations appropriate for the failure causes.

Note: TransCanada may use the results of previous tests, inspections, assessments, and evaluations if approved by the Director, provided the results of the tests, inspections, assessments, and evaluations are analyzed with regard to the factors known or suspected to have caused the June 7, 2018 failure.

G. Describe the inspection and repair criteria TransCanada will use to prioritize, excavate, evaluate, and repair anomalies, imperfections, and other identified integrity threats. Include a description of how any defects will be graded and a schedule for repairs or replacement.

H. Based on the known history and condition of the *Affected Segment,* describe the methods TransCanada will use to repair, replace, or take other corrective measures to remediate the conditions associated with the pipeline failure on June 7, 2018, and to address other known integrity threats along the *Affected Segment*. The repair, replacement, or other corrective measures must meet the criteria specified in paragraph G, above.

I. Include a procedure or process to implement continuing long-term periodic testing and integrity verification measures to ensure the ongoing safe operation of the *Affected Segment* considering the results of the analyses, inspections, evaluations, and corrective measures undertaken pursuant to the final Safety Order.

J. Include a proposed schedule for completion of the RWP.

12. ***Monthly Reports.*** TransCanada must submit monthly reports to the Director that: (1) include analysis of all available data and results of the testing and evaluations required by the final Safety Order; (2) describe the progress of repairs and other remedial actions being undertaken; and (3) document all mandated actions and management of change plans to ensure that all procedural modifications are incorporated into TransCanada's operations and maintenance procedures manual. The first report will be due 30 days from issuance of the final Safety Order.

13. ***Safety Order Documentation Report (SODR***). When TransCanada has completed all the items in the final Safety Order it will submit a final SODR in its entirety to the Director. This will allow the Director to conduct a thorough review of all actions taken by TransCanada with regards to the final Safety Order prior to approving the closure of the final Safety Order. The intent is for the SODR to summarize all activities and documentation associated with the final Safety Order in one document.

    A. The Director may approve the SODR incrementally without approving the entire SODR.

    B. Once approved by the Director, the SODR ***will*** be incorporated by reference into the final Safety Order.

    C. The SODR must include but is not limited to:

        1. Table of Contents;
        2. Summary of the pipeline failure of June 7, 2018, and the response activities;
        3. Summary of pipe data/properties and all prior assessments of the *Affected Segment*;
        4. Summary of all tests, inspections, assessments, evaluations, and analysis required by the final Safety Order;
        5. Summary of the Mechanical and Metallurgical Testing as required by the final Safety Order;
        6. Summary of the RCFA with all root causes as required by the final Safety Order;
        7. Documentation of all actions taken by TransCanada to implement the RWP, the results of those actions, and the inspection and repair criteria used;
        8. Documentation of any revisions to the RWP including those necessary to incorporate the results of actions undertaken pursuant to the final Safety Order and whenever necessary to incorporate new information obtained during the failure investigation and remedial activities;
        9. Lessons learned while completing the final Safety Order;

10. A path forward describing specific actions TransCanada will take on its entire pipeline system as a result of the lessons learned from work on the final Safety Order; and

11. Appendices (if required).

With respect to each submission under the final Safety Order that 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 take all required actions in 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 the final Safety Order.

The Director may grant an extension of time for compliance with any of the terms of the final Safety Order upon a written request timely submitted demonstrating good cause for an extension. TransCanada 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 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 investigation, PHMSA may identify other corrective measures that need to be taken. In that event, Respondent will be notified of any additional measures required and amendment of the final Safety 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.

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 Director. If you do not respond within 30 days, this constitutes a waiver of your rights 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 final Safety Order. In your response, you may indicate 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 final Safety Order is issued). Informal consultation provides you with an opportunity to explain the circumstances associated with the risk conditions 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, the parties may enter into a written consent agreement, in which case 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 the 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 final Safety Order.

Be advised that all material submitted in response to this enforcement action is subject to public availability. 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. 1-2018-1016S** and for each document you submit, please provide a copy in electronic format whenever possible.

7/9/2018

Robert Burrough
Director, Eastern Region
Pipeline and Hazardous Materials Safety Administration

Date issued