U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue SE
Washington, DC 20590

VIA CERTIFIED MAIL AND FAX TO: (678) 762-2466

Mr. Tim Felt
President & Chief Executive Officer
Colonial Pipeline Company
1185 Sanctuary Parkway, Suite 100
Alpharetta, GA 30009-4765

SEP 16 2016

Re: CPF No. 2-2016-5005H

Dear Mr. Felt:

Enclosed is a Corrective Action Order issued in the above-referenced case, requiring Colonial Pipeline Company to take certain corrective actions with respect to the failure on its Pipeline One (Line #1), that occurred on September 9, 2016, near Pelham, Alabama.

Service is being made by certified mail and facsimile. Service of the Corrective Action Order by electronic transmission is deemed complete upon transmission and acknowledgement of receipt, or as otherwise provided under 49 C.F.R. § 190.5. The terms and conditions of this Order are effective upon completion of service.

Thank you for your cooperation in this matter.

Sincerely,

Alan K. Mayberry
Acting Associate Administrator
for Pipeline Safety

Enclosure

cc: Ms. Linda Daugherty, Deputy Associate Administrator for Field Operations, Office of Pipeline Safety, PHMSA
Mr. James Urisko, Regional Director, Southern Region, Office of Pipeline Safety, PHMSA

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

In the Matter of	)	
Colonial Pipeline Company,	)	**CPF No. 2-2016-5005H**
Respondent.	)	

CORRECTIVE ACTION ORDER

Purpose and Background:

This Corrective Action Order (Order) is being issued under the authority of 49 U.S.C. § 60112 to require Colonial Pipeline Company (Colonial or Respondent), to take the necessary corrective action to protect the public, property, and the environment from potential hazards associated with the recent failure on its Colonial's Pipeline One (Line #1).[1]

On September 9, 2016, a reportable accident occurred on Colonial's Line #1, a hazardous liquid pipeline in Shelby County, Alabama, approximately three miles from the town of Pelham, Alabama (Failure). The Failure resulted in the release of approximately 6,000 barrels of gasoline into a pond (Pond #2) approximately 460 feet north of Colonial's Line #1. Line #1 transports gasoline from Houston, Texas, to Greensboro, North Carolina. The Failure occurred on a section of Line #1 that runs from Collins, Mississippi, to Atlanta Junction Station, in Atlanta, Georgia. Colonial operates a parallel pipeline that runs adjacent to Line #1, Pipeline Two (Line #2), that is approximately 40 feet apart from Line #1 at the assumed site of the Failure. Line #2 transports petroleum product from Epes, Alabama, to Anderson, South Carolina.

Pursuant to 49 U.S.C. § 60117, the Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), initiated an investigation of the accident.

The preliminary findings of the ongoing investigation are as follows.

[1] Colonial operates roughly 5,500 miles of hazardous liquid transmission pipeline within the United States. The pipelines travel through the states of Texas, Louisiana, Mississippi, Alabama, Georgia, North and South Carolina, Virginia, Maryland, Pennsylvania, New Jersey, and New York. Branches from the main lines also extend into Tennessee. The system delivers a daily average of approximately 100 million gallons of liquid petroleum products to businesses and communities through the Southern and Eastern United States.

Preliminary Findings:

1) Line #1 is a 36-inch diameter hazardous liquid pipeline that runs from Houston, Texas, to Greensboro, North Carolina. The Failure occurred on a segment of Line #1 that runs from Collins, Mississippi, to Respondent's Atlanta Junction Station, in Atlanta, Georgia (Affected Segment). The exact location of the Failure is unknown,[2] but the Assumed Failure Site is on a section of Line #1 that runs from Colonial's Cahaba River block valve, near Mile Post (MP) 5065+11, to Colonial's Pelham Station in Pelham, Alabama, near MP 5545+46. A pond (Pond 2) off of the right-of-way is approximately 460 feet from the Assumed Failure Site on Line #1 (Assumed Failure Site).

2) The Affected Segment was constructed in 1963 and is composed of 36-inch diameter, 0.281-inch wall thickness, American Petroleum Institute (API) 5L, X52 pipe. The pipe has asphalt enamel coating and a double-submerged arc-welded (DSAW) seam type, and was manufactured by the National Tube Company.

3) The Maximum Operating Pressure (MOP) of Line #1 is 553 pounds per square inch gauge ("psig"), as established by hydrostatic testing in 1963. During the 30 days prior to the Failure, the operating pressure of Line #1 near the Assumed Failure Site fluctuated between 31 psig and 495 psig.[3]

4) On September 9, 2016, at 11:10 am Central Standard Time (CST), personnel of the Alabama Surface Mining Commission reported a probable leak near Line #1, in a right-of-way for this pipeline in a rural area. The personnel noted a strong gasoline odor and sheen on Pond #2, and also discovered dead vegetation near this pond.

5) Pond #2 is located near mile post 5163+89 (MP 5163+89), on Line #1, in Shelby County, Alabama, approximately three miles from Pelham, Alabama. Pond #2 is bounded by Line #1 to the south and another pond, Pond #3, to the north.

6) On September 9, 2016, beginning at 11:30 AM CST, in response to the 11:10 am notification from the Alabama Surface Mining Commission,[4] Respondent initiated a shutdown of Lines #1 and #2. This process began when Colonial's Supervisory Control and Data Acquisition (SCADA) system controller remotely closed an automatic valve downstream of the Assumed Failure Site, at MP 5545+47 on Line #1.

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[2] *See infra* Preliminary Findings 17 – 19.

[3] PHMSA officials note the variation in operating pressure readings on Line #1 in the 30 days prior to the Failure is a function of Colonial's normal pipeline operations. During normal operations, pressure readings can fluctuate depending on maintenance activities or required throughput of Line #1, and the referenced range is representative of these operational adjustments.

[4] *See supra* Preliminary Finding 4.

7) On September 9, 2016, at 12:14 PM CST, Respondent's personnel at the Assumed Failure Site confirmed that gasoline had accumulated in Pond #2.

8) On September 9, 2016, at 12:59 PM CST, Respondent notified the National Response Center that gasoline had entered Pond #2 as a result of the Failure from Line #1.

9) On September 9, 2016, at approximately 3:00 PM CST, Colonial personnel manually closed a valve on Line #1 upstream of the Assumed Failure Site at MP 5065+11.

10) On September 9, 2016, at 6:57 PM CST, Colonial personnel observed a total of four deceased small wild animals near Pond #2 – a rabbit and three raccoons.

11) On September 9, 2016, at 9:00 PM CST, inspectors from the Southern Region of PHMSA, OPS, arrived at Respondent's Incident Command Center in Hoover, Alabama.

12) On September 9, 2016, at 9:00 PM CST, officials from the Pelham, Alabama Fire Department (Fire Department) determined that the air at the Assumed Failure Site and at Pond #2 contained high concentrations of benzene[5] and gasoline vapor.[6] The detected levels of benzene and gasoline vapors remained at unsafe levels at both locations through September 12, 2016.

13) On September 9, 2016, at 9:00 PM CST, due to the high concentration of benzene and gasoline vapor at both the Assumed Failure Site and Pond #2, Fire Department officials suspended all activity and evacuated all persons from these locations until September 12, 2016.

14) On September 9, 2016, at 9:13 PM CST, after consulting with PHMSA, Respondent restarted Line #2 upon confirming that the observed product in Pond #2 was gasoline from Line #1, and that no release had occurred on Line #2.

15) At approximately 8:00 AM CST on September 13, 2016, Fire Department and Colonial officials determined that after approximately 83 hours of unsafe concentrations of benzene and gasoline vapors in the air at the Assumed Failure Site, these concentrations had dropped to safe levels. Shortly after this determination, Colonial and PHMSA personnel were permitted access to the Assumed Failure Site. However, at this time, Fire Department and Colonial Officials determined these unsafe levels of benzene and gasoline vapor were still present in the air at Pond #2.

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[5] Benzene is a chemical that is a natural part of the gasoline transported in Line #1 and is highly flammable. Further, inhalation of high concentrations of benzene can result in sickness or death. *See* Centers for Disease Control. https://emergency.cdc.gov/agent/benzene/basics/facts.asp (last visited September 14, 2016).

[6] U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. 2016 Emergency Response Guidebook. Guide 115 – Gases (Flammable – Included Refrigerated Liquids). Pages 170 – 171.

16) At approximately 8:00 PM CST on September 13, 2016, Fire Department and Colonial Officials determined that benzene and gasoline vapors had again risen to unsafe levels in the air at the Assumed Failure Site. Colonial Officials believed that the rise in benzene and gasoline vapor levels in the air at the Assumed Failure Site was caused by wind transport of benzene and gasoline vapors coming off of the accumulated gasoline in Pond #2.

17) Based on the unstable and fluctuating benzene and vapor levels at the Assumed Failure Site, at approximately 8:00 PM CST on September 13, 2016, Colonial personnel determined that it was necessary to indefinitely postpone their planned excavation activities at the Assumed Failure Site.

18) Colonial personnel will commence excavation activities at the Assumed Failure Site upon confirmation that benzene and gasoline vapor concentrations in the air at the Assumed Failure Site remain steady at safe levels.

19) Colonial's excavation activities at the Assumed Failure Site must commence in order for PHMSA personnel to gain the opportunity to examine the section of Line #1 which failed and determine a probable cause for the Failure. As Colonial has indefinitely suspended these activities, the probable cause of the Failure is currently unknown.

20) At approximately 8:00 PM CST on September 13, 2016, Colonial Officials updated the estimated volume release amount to 6,000 barrels of gasoline from Line #1 as a result of the Failure. This estimate is based on assumed evaporation rates, and estimates of volume accumulated in Pond #2.

21) At approximately 8:00 AM CST on September 15, 2016, Colonial officials announced that sampling indicated the presence of gasoline in Pond #3. There is presently no estimate of the volume of gasoline in Pond #3, or confirmation of how the gasoline reached the pond.

22) As of 8:00 AM CST on September 15, 2016, Colonial personnel report that approximately 54,653 gallons of gasoline have been recovered from Pond #2, and approximately 36,980 gallons of gasoline were drained from an isolated section of Line #1 bounding the Assumed Leak Site.

23) At approximately 12:30 PM CST on September 16, 2016, Colonial officials announced that its personnel had discovered a culvert below the water line in Pond #2. Colonial officials further noted this culvert connects to Pond #3, and that they believe gasoline has flowed from Pond #2, through this culvert, into Pond #3. These officials have not made an estimate as to how much gasoline is in Pond #3.

24) Through continual monitoring, Colonial personnel at the Incident Command Center have determined that a nearby populated area, Alabaster, Alabama, approximately 3 miles from the suspected Leak Site, has not been and is not currently under any

threat from the benzene and gasoline vapors. Colonial personnel continue to monitor air quality in this area for any changes.

25) In response to this incident, PHMSA is coordinating with personnel from the United States Environmental Protection Agency (EPA), as well as Local and State emergency management agencies. EPA personnel and officials from the have also reported to Colonial's incident command site. The National Transportation Safety Board (NTSB) and the Defense Logistics Agency (DLA) are aware of, and monitoring, the status of the Failure.

26) The Assumed Failure Site is within an unusually sensitive ecological area (USEA), as identified by the most current National Pipeline Mapping System (NPMS) data.[7] Aside from the above-referenced impacts to wildlife, there were no fatalities or ignition of the released gasoline.

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 or would be hazardous, 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 notice and opportunity for hearing, upon a finding that failure to issue the Order expeditiously would result in the likelihood of serious harm to life, property, or the environment. In such cases, an opportunity for a hearing and expedited review will be provided as soon as practicable after the issuance of this Order.

After evaluating the foregoing preliminary findings of fact, I find that continued operation of the pipeline without corrective measures is or would be hazardous to life, property, or the environment. Additionally, I have considered the unknown probable cause of the Failure and the ongoing investigation; the unknown location of the Failure; the age of the pipeline and the history of known problems or failures on pipelines being owned and operated by Respondent; the high concentrations of benzene and gasoline vapor near the Assumed Failure Site; the proximity of the pipeline to populated areas or other unusually sensitive ecological areas; the deceased wildlife and vegetation near the Assumed Failure Site; and the soil and water contamination in the vicinity of the Assumed Failure Site. I therefore find that a failure to issue this Order expeditiously to require immediate corrective action would result in the likelihood of serious harm to life, property, or the environment.

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[7] National Pipeline Mapping System. *Ecological Unusually Sensitive Areas (USAs)*. Website: https://www.npms.phmsa.dot.gov/USAEcoData.aspx (last visited September 15, 2016) (Showing the NPMS standards for an unusually sensitive ecological areas).

Accordingly, this 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 contest its issuance obtain expedited review either by answering in writing or requesting a hearing under 49 C.F.R. § 190.211, to be held as soon as practicable under the terms of such regulation, by notifying the Associate Administrator for Pipeline Safety in writing, with a copy to the Director, Southern, PHMSA (Director). If Respondent requests a hearing, it will be held telephonically or in-person in Southern Region office or Washington, D.C.

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, PHMSA will notify Respondent of any additional measures that are required and an amended Order issued, if necessary. 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:

Definitions:

Affected Segment means the segment of Respondent's Line #1 running from Colonial's Collins Station in Collins, Mississippi, to its Atlanta Junction Station in Atlanta, Georgia.

Isolated Segment means the segment of Respondent's Line #1 running from Colonial's Cahaba River block valve, near MP 5065+11, to MP 5545+46, near Colonial's Pelham Station in Pelham, Alabama.

Director means Director, Southern Region, PHMSA.

Assumed Failure Site means the section on the Isolated Segment where the leak occurred on September 9, 2016, approximately 460 feet from Pond #2.

Pursuant to 49 U.S.C. § 60112, I hereby order Colonial to immediately take the following corrective actions for the Affected Segment and Isolated Segment.

1. ***Shutdown of Pipeline.*** Colonial must not operate the *Isolated Segment* until authorized to do so by the Director.

2. ***Restart Plan***. Prior to resuming operation of the *Isolated Segment,* Colonial must develop and submit a written *Restart Plan* to the Director for prior approval.

    a. The Director may approve the *Restart Plan* incrementally without approving the entire plan, but the *Isolated Segment* cannot resume operation until the *Restart Plan* is approved in its entirety.

    b. Once approved by the Director, the *Restart Plan* will be incorporated by reference into this Order.

c. The *Restart Plan* must include procedures to safely return the *Isolated Segment* to service and provide evidence that all mandated actions required prior to restart are adequately completed.

d. The *Restart Plan* must specify a daylight restart and must include advance communications with local emergency response officials.

e. The *Restart Plan* must provide for a review of the *Isolated Segment* for conditions similar to those in which the failure occurred. This review should include a review of Colonial's construction, operating and maintenance (O&M) and integrity management records such as in-line inspection (ILI) results, hydrostatic tests, root cause failure analysis of prior failures, aerial and ground patrols, corrosion, cathodic protection, excavations and pipe replacements. Colonial must address any findings that require remedial measures to be implemented prior to restart.

f. The *Restart Plan* must include documentation of the completion of all mandated actions and a management of change plan to ensure that all procedural modifications are incorporated into Colonial's operations and maintenance manual.

g. The *Restart Plan* must provide for hydrostatic pressure testing of the *Isolated Segment.*

h. Prior to restart, Colonial must submit to the Director a contingency plan to operate and monitor the *Isolated Segment* during flooding conditions, including enhanced patrolling and surveillance.

i. Within 90 days of restarting the *Isolated Segment*, perform an ILI to ensure that there has been no metal loss, deformation, or other damage to the *Affected Pipeline*.

3. ***Mechanical and Metallurgical Testing***. Within 45 days of excavation and exposure of the Assumed Failure Site, Colonial must complete mechanical and metallurgical testing, as well as a failure analysis of the failed pipe, including an analysis of soil samples and any foreign materials. The testing and failure analysis must be completed by an independent laboratory or expert. The testing and analysis must be completed in accordance with the following instructions:

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 removing the failed pipe, develop and submit the testing protocol and the proposed testing laboratory to the Director for prior approval;

c. Prior to beginning the mechanical and metallurgical testing, provide the Director with the scheduled date, time, and location of the testing to allow for an OPS 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 Colonial; and

e. The Director may grant an extension of time, in accordance with **Item 11** ***Extensions of Time,*** to complete the Mechanical and Metallurgical Testing.

4. ***Root Cause Failure Analysis.***

   a. Within 90 days of excavation and exposure of the Assumed Failure Site, Colonial must 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 whether the findings and any lessons learned are applicable to other locations within Colonial's pipeline system, and actions Colonial is taking for those other locations where the lessons learned are applicable.

   b. The Director may grant an extension of time, in accordance with **Item 11** ***Extensions of Time,*** to complete the RCFA. If an extension of time is granted, Colonial must complete a preliminary RCFA of the Assumed Failure Site and submit a report of this preliminary RCFA to the Director. The preliminary 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 preliminary report must include findings and any lessons learned whether the findings and any lessons learned are applicable to other locations within Colonial's pipeline system, and actions Colonial is taking for those other locations where the lessons learned are applicable.

5. ***Emergency Response Plan and Training Review.*** Colonial 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. Colonial 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.

6. ***CAO Documentation Report (CDR)***. Colonial must create and revise, as necessary, a CAO Documentation Report (CDR). When Colonial has concluded all the items in this Order, it will submit the final CDR in its entirety to the Director. This will allow the Director to complete a thorough review of all actions taken by Colonial with regards to this Order prior to approving the closure of this Order. The intent is for the CDR to summarize all activities and documentation associated with this Order in one document.

   a. The Director may approve the CDR incrementally without approving the entire CDR.

   b. Once approved by the Director, the CDR will be incorporated by reference into this Order.

   c. The CDR must include but not be limited to:

i. Table of Contents;

ii. Summary of the pipeline failure of September 9, 2016, and the response activities;

iii. Summary of pipe data/properties and all prior assessments of the *Affected Segment*;

iv. Summary of all tests, inspections, assessments, evaluations, and analysis required by the Order;

v. Summary of the Mechanical and Metallurgical Testing as required by the Order;

vi. Summary of the RCFA with all root causes as required by the Order;

vii. Lessons learned while completing this Order;

viii. A path forward describing specific actions Colonial will take on its entire pipeline system as a result of the lessons learned from work on this Order; and

ix. Appendices (if required).

Other Requirements:

7. ***Reporting.*** Colonial must submit quarterly reports to the Director that: (1) include all available data and results of the testing and evaluations required by this Order; and (2) describe the progress of the repairs or other remedial actions being undertaken. The first quarterly report is due on January 1, 2017. The Director may change the interval for the submission of these reports.

8. ***Documentation of the Costs***. It is requested but not required that Respondent maintain documentation of the costs associated with implementation of this Order. Include in each monthly report submitted, the to-date total costs associated with: (1) preparation and revision of procedures, studies and analyses; (2) physical changes to pipeline infrastructure, including repairs, replacements and other modifications; and (3) environmental remediation, if applicable.

9. ***Approvals.*** 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 must correct all deficiencies within the time specified by the Director, and resubmit it for approval.

10. ***Extensions of Time***. 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.

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. Part 195, 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.

Respondent may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator will be final.

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).

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.

In your correspondence on this matter, please refer to CPF No. 2-2016-5005H and for each document you submit, please provide a copy in electronic format whenever possible.

The terms and conditions of this Amended Corrective Action Order are effective upon receipt.

Alan K. Mayberry
Acting Associate Administrator
for Pipeline Safety

SEP 16 2016
Date Issued