



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

OCT 13 2016

**Re: CPF No. 2-2016-5005H**

Dear Mr. Felt:

Enclosed is an Amended 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 Amended 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**

<b>In the Matter of</b>	)	
	)	
<b>Colonial Pipeline Company,</b>	)	<b>CPF No. 2-2016-5005H</b>
	)	
<b>Respondent.</b>	)	

**AMENDED CORRECTIVE ACTION ORDER**

**Purpose and Background:**

This Amended Corrective Action Order (Amended CAO) 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).<sup>1</sup>

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 7,370 barrels (bbls) 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 202-mile section of Line #1 that runs from Collins, Mississippi, to Pelham, Alabama. 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 Failure Site. Line #2 transports petroleum product from Epes, Alabama, to Anderson, South Carolina.

On September 16, 2016, PHMSA issued a Corrective Action Order (CAO) to Colonial. The CAO required Colonial to shut down failed section on Line #1 and carry out mechanical and metallurgical testing and failure analysis of the failed section of pipe. At the time, the location of the Failure and the extent of the environmental impact were unknown. This Amended

---

<sup>1</sup> 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 throughout the Southern and Eastern United States.

Corrective Action Order replaces and supersedes the CAO issued to Colonial on September 16, 2016.

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 in the Original CAO noted the failure and related information and details about the defect discovered as a result of the September 9, 2016 failure. Since that time, the following events have occurred and certain information has been discovered or clarified:

**Amended 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 Pelham Station, in Pelham, Alabama (Affected Segment). The Failure occurred at Station 5155+57 on a section of Line #1 that runs from Colonial's downstream Cahaba River block valve, near Station 5055+00, to Colonial's Pelham Station in Pelham, Alabama, near Station 5545+17. A pond (Pond #2) outside the company's right-of-way is approximately 460 feet from the Failure Site on Line #1 (Failure Site). Two other ponds are in the vicinity of the failed section: Pond #1 to the south of Line #1, and Pond #3 to the north of Pond #2. All referenced ponds are man-made reclamation and evaporation ponds used during historic rural surface strip mining.
- 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 generally has asphalt enamel coating and a double-submerged arc-welded (DSAW) seam type, and was manufactured by the National Tube Company. Several sections of the Affected Segment were subject to replacement and recoat projects since original construction, and may have more modern pipe and/or types of coating.
- 3) Pond #2 is located near Station 5154+13, 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. Pond #3 is also a man-made reclamation and evaporation pond used during historic rural surface strip mining.
- 4) From September 12-13, 2016, Colonial installed stopple fittings upstream and downstream of the Failure location in order to begin drain-down of the line before excavation of the release location. The downstream stopple was tapped and plugged and work continued on the upstream stopple installation. On September 14, 2016, the upstream stopple was completed at 1:30 AM CDT. Nitrogen injections began at 5:00 AM CDT and initial drain-up operations were completed that evening.
- 5) As of 8:00 AM CDT on September 15, 2016, Colonial personnel announced that sampling indicated the presence of dissolved constituents in Pond #3.

- 6) At approximately 12:30 PM CDT 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 the dissolved constituents flowed from Pond #2, through this culvert, into Pond #3.
- 7) On September 16, 2016, the amount of product extracted from the pipe remained at 880 bbls. Adequate pressure to evacuate the product remaining in the stoppled section of the line could no longer be provided by injecting nitrogen into the line.
- 8) As of the 9:00 AM CDT on September 17, 2016, the amount of product extracted from the pipe was 1,073 bbls. Colonial installed a temporary pig launcher and receiver in order to use a pig to remove the remaining product. Colonial used water to push the pig to complete the product removal effort. There was no estimate on volume remaining in stoppled section of the pipe.
- 9) On September 20, 2016, PHMSA approved the installation of a 36-inch diameter temporary 500-foot bypass line on the Isolated Segment to facilitate limited pipeline operation of Line #1. Specifications of the bypass pipe are as follows:
  - a. Grade (API): X52 and X60
  - b. SMYS: 811.77 psi
  - c. Wall thickness: 0.281-inch
  - d. Coating Fusion Bond Epoxy and Trenton Hot Wax
  - e. Tie-in welds NDT method X-Ray.
  - f. Upon startup of the bypass, the bypass has been operating at a 20% reduction from the highest steady-state pressure for the 90 days prior to shutdown of Line #1. This pressure reduction will remain in place throughout operation of the bypass.
- 10) On September 22, 2016, at 8:45 PM CDT, the temporary bypass reached full operational status. Due to the artificial lighting provided by Colonial, Director approved a non-daylight start in a supplemental letter, dated September 21, 2016. Colonial personnel are monitoring the security of the above-ground bypass at all times until the bypass is removed from service.
- 11) On September 28, 2016, Colonial started excavation of the failed section of Line #1. The failed section of Line #1 was excavated on September 29, 2016, around 1:00 PM CDT. A small crack was found on a buckle that had not been previously identified or known by Colonial. According to Colonial, the buckle had not been identified in the 2014 internal assessment or geometry data and, pending verification, was not present during a 2015 recoat project.

**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 preliminary findings in the CAO and the foregoing additional 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 undetermined cause of the Failure and the ongoing investigation; the 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 proximity of the pipeline to populated areas or other unusually sensitive ecological areas; the deceased wildlife and vegetation near the Failure Site; and the soil and water contamination in the vicinity of the 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.

Accordingly, this Amendment to the Corrective Action Order mandating immediate corrective action is issued without prior notice and opportunity for a hearing. The terms and conditions of this Amended Corrective Action Order are effective upon receipt.

**The actions required by this Amended Corrective Action Order are in addition to the requirements that apply to under the CAO issued on September 16, 2016.**

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 Collins, Mississippi, to Colonial's Pelham Station in Pelham, Alabama.

*Isolated Segment* means the segment of Respondent's Line #1 running from Colonial's Cahaba River block valve, near Station 4984+90, to Station 5545+17, 10.6 miles from Colonial's Pelham Station in Pelham, Alabama.

Director means Director, Southern Region, PHMSA.

Failure Site means the section on the Isolated Segment where the leak occurred on September 9, 2016 at Station 5155+57.

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. ***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. This applies to the restart of Line #1 upon its permanent repair, and removal of the temporary bypass.
  - 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 for removal of the temporary bypass and provide evidence that all mandated actions required for such removal have been completed.
  - d. 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.
  - e. The *Restart Plan* must specify a daylight restart and must include advance communications with local emergency response officials.
  - f. 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.

- g. 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.
  - h. The *Restart Plan* must provide for hydrostatic pressure testing of the replacement pipe.
  - 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*.
2. ***Pressure Restriction.*** After the removal of the temporary bypass and receiving approval from the Director to restart Line #1, Colonial must maintain a twenty percent (20%) pressure reduction from the highest steady state pressures recorded throughout the *Affected Segment* within the 90-days prior to discovery. At no point within the *Affected Segment* shall the pressure exceed eighty percent (80%) of the highest steady state pressure recorded during the 90 days prior to discovery of the Failure.
3. ***Removal of Pressure Restriction.***
- a. Upon written request from Colonial, the Director may allow the removal or modification of the pressure restriction when a reliable engineering analysis demonstrates that the pressure increase is safe, taking into consideration all known defects, anomalies, completion of the Repair Plan, and the operating parameters of the *Affected Segment*.
  - b. The Director may allow the temporary removal or modification of the pressure restrictions upon a written request from Colonial, demonstrating that temporary mitigative and preventive measures will be implemented prior to and during the temporary removal or modification of the pressure restriction. The Director's determination will be based on the failure cause and provision of evidence that preventative and mitigative actions taken by the operator provide for the safe operation of the *Affected Segment* during the temporary removal or modification of the pressure restriction. Appeals to determinations of the Director in this regard will be decided by the Associate Administrator for Pipeline Safety.
4. ***Mechanical and Metallurgical Testing.*** Within 45 days of excavation and exposure of the 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 13 Extensions of Time**, to complete the Mechanical and Metallurgical Testing.
5. **Remedial Work Plan.** Within 60 days of receipt of this Order, develop and submit to the Director for prior approval a written Remedial Work Plan (RWP) that includes corrective measures. The RWP must fully address all known or suspected factors that caused or contributed to the Failure and must include, as applicable:
- a. All planned pipeline repairs or changes to operations and maintenance, personnel qualification or training, or corrosion control procedures or activities required to address all threats identified by the analysis and must contain a schedule for performing these repairs or changes. Repairs of pipeline segments must comport at a minimum with the deadlines set out in 49 C.F.R. § 195.452(h)(4). All conditions defined in 49 C.F.R. § 195.452(h)(4)(i) through (iv) must be repaired. All repairs must be performed in compliance with 49 C.F.R. § 195.422.
  - b. The comprehensive analysis and RWP must be submitted no later than 150 days after excavation of the failed pipe to the Director, Southern Region, OPS, for review and approval.
  - c. Threats identified in areas where a pipeline failure could affect a high consequence area must be properly addressed by and incorporated into Colonial's Integrity Management Program (IMP). Submit all resulting changes to your IMP no later than four months after the date of this Order for the approval of the Director.
  - d. The comprehensive analysis and RWP, along with any resulting changes to Colonial's IMP, must be reviewed by an independent risk assessment expert prior to submission to the Director, to verify that Colonial has included all known accidents and occurrences, has properly identified potential and existing threats, and determined that the RWP is adequate to address the identified threats.
6. **Implementation of Work Plan.** Implement the Remedial Work Plan as it is approved by the Director, including any revisions to the plan.
7. **Root Cause Failure Analysis.**
- a. Within 90 days of excavation and exposure of the 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 13 Extensions of Time**, to complete the RCFA. If an extension of time is granted, Colonial must complete a preliminary RCFA of the 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 including, but not limited to, manufacturing defects, operational or maintenance errors, and natural disasters. 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.
8. **Emergency Response Plan and Training Review.** Colonial must review and assess the effectiveness of its emergency response plan with regards to the Failure. In its review, Colonial should seek input local, state and federal agencies responding to release and investigating the cause of 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.
  9. **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 Remedial Work Plan as required by the Order;
- vii. Summary of the RCFA with all root causes as required by the Order;
- viii. Lessons learned while completing this Order;
- ix. 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
- x. Appendices (if required).

**Other Requirements:**

10. **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 15, 2017. The Director may change the interval for the submission of these reports.
11. **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.
12. **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.
13. **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 Amendment to the CAO are in addition to and do not waive any requirements that apply to Respondent's pipeline system under the Original CAO, and 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.

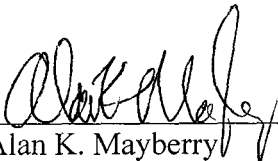
Respondent may appeal any decision of the Director to the Associate Administrator for Pipeline Safety. Decisions of the Associate Administrator will be final.

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. 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

**OCT 13 2016**  
\_\_\_\_\_  
Date Issued