U.S. Department
of Transportation
Research and
Special Programs
Administration

400 Seventh Street, S.W
Washington, 0 C. 20590

July 31, 1996

VIA TELECOPY AND CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Don Brinkley
President/CEO
Colonial Pipeline Company
Resurgens Plaza
945 East Paces Ferry Road
Atlanta, Georgia 30326

Re: CPF No. 26503-H Dear Mr. Brinkley:

Enclosed is a Hazardous Facility Order and Notice Proposing to Amend the Order Following Opportunity for a Hearing that has been issued by the Associate Administrator for Pipeline Safety. The Order portion of the document places a pressure restriction on two areas of the Pasadena-Linden line, requires excavation and repair of the pipe in those two areas, if needed, and requires evaluation of the pressure control devices on the line. The Notice portion of the document also proposes to amend the Order to address the issue of rail transportation induced fatigue failures through a program of hydrotesting or internal inspection.

Pursuant to agreement by Mr. Victor A. Yarborough, Vice President-Operations, service is being made by telecopy.

Sincerely,

Gwendolyn M. Hill
Pipeline Compliance Registry
Office of Pipeline Safety

Enclosure

cc: Mr. Victor A. Yarborough Vice President-Operations

I.

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
WASHINGTON, DC

In the Matter of	)	
	)	
Colonial Pipeline Company,	)	
	)	
Respondent.	)	CPF No. 26503-H
	)	

HAZARDOUS FACILITY ORDER AND
NOTICE PROPOSING TO AMEND THE ORDER
FOLLOWING OPPORTUNITY FOR HEARING

On June 27, 1996, the Office of Pipeline Safety (OPS), received telephonic notice of a spill that began before midnight on a pipeline near Simpsonville, South Carolina. The pipeline is operated by Colonial Pipeline Company (Colonial), and is part of its pipeline extending from Pasadena, Texas, to Linden, New Jersey that was constructed in the 1960's (original construction Pasadena-Linden line). Approximately 22,800 barrels of diesel fuel oil spilled into the Reedy River. Following cleanup of the spill, Colonial repaired the pipeline and, with the concurrence of the Regional Director, Southern Region, returned it to service at a maximum allowable operating pressure of 374 p.s.i.g. This reduced operating pressure had been put into effect by Colonial sometime after March following its discovery of an area of reduced wall thickness due to general pipe corrosion in the Reedy River pipeline crossing.

Pursuant to 49 U.S.C. § 60117, the Southern Region, OPS, has initiated an investigation of the incident. In addition, because of other incidents on pipelines operated by Colonial (the Colonial System) over many years, OPS has formed a task force for a broader examination of the Colonial System.

Preliminary Findings.

a. Colonial is an interstate carrier of petroleum products, operating over 5,270 miles of pipeline. Colonial operates pipeline ranging in size from 6 inches to 40 inches between Pasadena, Texas and Linden, New Jersey. Much of the Colonial System was installed in the 1960's, with loops installed in the 1970's and 1980's.

b. The segment of pipeline involved in the June 26 1996 incident is between Anderson and Simpsonsville, South Carolina. It is part of the original construction Pasadena-Linden line. This pipeline is used to transport various petroleum products.

c. The June 26, 1996 pipeline rupture spilled approximately 22,800 barrels of diesel fuel oil into the Reedy River approximately one mile north of State Highway 418 near Simpsonville, South Carolina. The Reedy enters the Saluda River, which in turn empties into Lake Greenwood.

d. The failu~e occurred in an area of general corrosion that had been identified by an instrumented internal inspection of the pipeline in March 1996. The internal inspection was done using the VETCO magnetic flux leakage "smart pig." Following Colonial's verification of the area as general corrosion, Colonial calculated that there was sufficient wall thickness to operate the pipeline at the Reedy River location at a reduced pressure of 374 p.s.i.g. Colonial reduced the pressure and, on April 9, 1996, filed a safety-related condition report with OPS as an action taken to address corrosion. The report is required by 49 C.F.R. § 195.55.

e. The final report on the March 1996 smart pig runs has not yet been completed by VETCO. However, on July 24, 1996, OPS received a report from a consultant hired by OPS to review and evaluate the raw data from the smart pig runs. The consultant has identified to OPS two additional significant anomalies which may indicate areas of general corrosion. Both areas are located in water crossings: Little Creek at log footage reference 287257 and Broad River at log footage 423200 to 427000.

f. The pressure of the pipeline at the point of failure is estimated to have been between 399 and 418 p.s.i.g. indicating an overpressure of the pipeline and failure of relief devices or pressure switches to maintain the 374 p.s.i.g. reduced pressure.

g. OPS investigation of aspects regarding the overpressure of the line indicates a discrepancy between the predicted performance of the pressure safety devices at the pump stations on the line involved in the June 26, 1996 incident and the apparent performance of those switches. Despite the performance predicted by Respondent's in-house transient flow model, the safety pressure switches did not control pipeline pressure to prevent the overpressure that occurred. The occurrence of the overpressure points to a possible flaw in the switches or in the flow model itself.

h. OPS has been concerned with other failures that have occurred on the original construction Pasadena-Linden line. Overpressure has been a factor in many of these failures, including two failures in Virginia in March, 1980, two in South Carolina in 1979, and a 1970 failure in Alabama. Although there have been changes to operations over the years, the operation of the entire line is controlled from a single location (in Atlanta, Georgia). Thus, any discrepancies between the actual and predicted performance of pressure control switches may well be system-wide.

1. In addition to overpressure, fatigue caused by rail transportation of the line pipe prior to construction has been a factor in six longitudinal seam failures. The most recent of these was the December 18, 1989 failure in Orange County, Virginia which resulted in a shut down of the water system of~ the City of Fredericksburg, Virginia.

j. The longitudinal seam failures due to rail transportation-induced fatigue have all involved two types of pipe. The first, including that involved in the June 26, 1996 failure, is API 5LX-52, 0.281-in. wall thickness, double submerged arc-welded steel pipe manufactured by National Tube. In addition, API 5LX-52, 0.281-inch wall thickness, double submerged arc welded steel pipe manufactured by the Republic Steel Corporation has also experienced rail transportation-induced fatigue failure.

k. The maximum operating pressure established for the pipeline involved in the June 26, 1996 failure was 500 p.s.i.g. prior to the recent reduction in the vicinity of Simpsonville, S.C. because of corrosion. The 500 p:.s.1.g. pressure was established by a directive issued November 20,

1979, by the Materials Transportation Bureau, the predecessor to OPS. This directive had been issued following two failures near Simpsonville due to rail transportation induced fatigue after an overpressure condition near Simpsonville.

1. The Colonial System traverses both densely populated areas and sparsely populated areas. The line intersects rivers, tributaries of rivers, drainage areas, and other environmentally sensitive areas. The pipeline spill on June 26, 1996 has caused an undetermined amount of environmental damage to the Reedy River.

Determination that Respondent's Original Construction Pasadena-Linden Line is a Hazardous Facility; Res~ondent's Right to a Hearing.

Section 60112 of Title 49, United States Code, provides for the issuance of a hazardous facility 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 hazardous 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 hazardous facility order without prior opportunity for notice and hearing, upon a finding that failure to issue the Order expeditiously will result in likely serious harm to life, property or the environment. In such cases, an opportunity for a hearing will be provided as soon as practicable after the issuance of the order.

After evaluating the foregoing preliminary findings of fact, I find that the continued operation of this pipeline without corrective measures to address the two anomalies found by internal inspection and the pressure controlling devices would be hazardous to life, property and the environment. Additionally, after considering the circumstances of the failures that have occurred on the original construction Pasadena-Linden line, the rail transportation-induced fatigue to which the pipe in this line is subject, the pipeline's location, the gravity of the current spill, the lack of assurance that the pressure controlling devices work as intended, and the lack of actual knowledge as to the nature and extent of the most serious anomalies found during the March 1996 internal inspection, I find that a failure to issue expeditiously this Order, requiring limited immediate action, would result in likely serious harm to life, property, or the environment.

Accordingly, this Hazardous Facility Order, prohibiting the resumption of normal pressure on two portions of this pipeline and mandating needed immediate corrective action with respect to the pressure controlling devices and the two significant anomalies detected by internal inspection, 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, the Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, delivered personally, by mail or by telecopy at (202) 366-4566. Any hearing will be held in Atlanta, Georgia or Washington, D.C. on a date that is mutually convenient to OPS and the Respondent.

Required Corrective Action

Pursuant to 49 U.S.C. 60112, I hereby order Colonial Pipeline Company to take the following corrective actions with respect to its original construction Pasadena-Linden line:

With respect to the two identified locations in South Carolina,

1. *Restrict the maximum allowable operating pressure of the line at Little Creek in South Carolina and at Broad River in South Carolina to 80 per cent (80%) of the normal maximum operating pressure at the two sites.*

2. *Within 60 days of receipt of this Order, excavate and examine the anomalies identified in the March, 1996 internal inspection in Little Creek (log footage 287257) and in Broad River (log footage 423200 to 427000). Determine whether corrective action is needed and implement it.*

3. *Provide OPS forty-eight (48) hours advance notice prior to beginning the excavations provided for in Item #2 in order to allow OPS to observe the excavation.*

4. *Upon the written request of the Respondent confirming that the corrective action provided in Item #2 has been completed, the Regional Director may authorize resumption of the normal operating pressures. Such authorization must be in writing and obtained prior to exceeding the reduced operating pressures.*

With respect to the entire original construction PasadenaLinden line,

5. *Within 90 days of receipt of this Order, evaluate the pressure controlling switches and the transient flow model in use on the original construction Pasadena-Linden line to determine whether each device is operating consistently with Respondent's in-house transient flow model and is operating as intended. If there are deficiencies in design or in operation of the switches, repair, replace, or establish a plan to address the deficiencies or revise the transient flow model, as appr9priate. Complete these corrective measures, or prepare a written plan to address any deficiencies discovered, within 120 days of receipt of this Order. Any such plan is subject to the approval of the Regional Director, Southern Region, OPS (Regional Director.)*

6. *Report the actions taken under Item #5 to the Regional Director.*

7. *In order to facilitate the work of the task force examining Colonial pipeline operations, designate a single point of contact to coordinate exchange of information about matters that may affect the safe operations of Colonial pipelines.*

8. *The Regional Director may grant an extension of time, upon receipt of a written request stating reasons an extension is needed, for completion of any of the actions required in this Order.*

The procedures for the issuance of this Order are described in Part 190, Title 49, Code of Federal Regulations. Section 190.233, a copy of which is enclosed, is made part of this Order and describes the Respondent's procedural rights relative to this Order.

Failure to comply with this Order may result in the assessment of civil penalties of not more than $25,000 per day and in referral to the Attorney General for appropriate relief in United States District Court.

Proposed Amendment to this Order to Address Pipe Subject to Rail Transportation-induced Fatigue -- Proposed Corrective Measures; Respondent's Right to a Hearing

For the foregoing preliminary findings of fact, I also propose to find that the continued operation of the original construction Pasadena-Linden line without corrective measures to address pipe subject to rail transportation-induced fatigue is hazardous to life, property, and the environment. The internal inspection technology now available provides a means of finding

longitudinal seam cracks left in the line pipe because of rail transportation-induced fatigue before they grow to failure over time.

Accordingly, I propose to amend this Hazardous Facility Order to require Respondent to take the following actions with respect to its original construction Pasadena-Linden line for the portions containing National Tube and Republic Steel double submerged arc welded pipe. Excepted from this amendment are those portions of the line, between Louisa, Virginia and Dorsey Junction, Maryland, that have already been inspected.

9. Conduct one of the following two tests:

   a. Internal inspection of the National Tube and

   Republic Steel pipe within five years of receipt of this Amendment using the British Gas elastic wave pig, or its equivalent.

   b. Hydrostatically test the portions containing National Tube or Republic Steel by January 1, 2002.

10. If internal inspection is elected, submit a plan for conducting the internal inspection to the Regional Director within 90 days of receipt of this Amendment. The plan will:

    a. Use risk management principles to establish priorities for scheduling the internal inspection.

    b. Describe the minimum crack defects that will be identified by the pig, in terms of length and depth of defects. Cracks adjacent to the longitudinal weld that are at least as short as two and one-half inches in length, and at least as deep as 25% of the nominal wall thickness of the pipe must be identifiable.

    c. Include non-destructive techniques to evaluate anomalies, destructive testing evaluation criteria, if any is needed, and other techniques to demonstrate the effectiveness of the pig run.

    d. Include acceptance criteria that use engineering calculations to determine whether cracks or crack-like features remaining in the line will grow by fatigue due to the normal operating pressure fluctuations during service.

e. Taking the crack growth data described in b. into account, prepare an analysis to determine how long the pipeline could safety operate with those remaining cracks before another internal inspection, using a smart pig that could detect longitudinal seam defects, is needed. Submit this analysis to the Regional Director within 120 days after completion of the elastic wave pig run.

f. The success of the pig run is subject to the concurrence of the Regional Director. In order to provide the Regional Director adequate assurance that the pig data accurately identifies the anomalies described in b., submit to the Regional Director, for approv~l, a validation procedure within 120 days following completion of the elastic wave pig run.

11. If hydrostatic testing is the option elected, submit a hydrostatic testing plan to the Regional Director within 90 days of receipt of this Amendment. The plan shall provide for hydrotesting at a pressure between 100% of the segment's specified minimum yield strength (SMYS) at its lowest elevation and 85% SMYS at its highest elevation.

Within 10 days of receipt of this proposed amendment, Respondent may request a hearing, to be held as soon as practicable, by notifying the Associate Administrator for Pipeline Safety in writing, delivered personally, by mail or by telecopy at (202) 366-4566. Any hearing will be held in Washington, D.C. or Atlanta, Georgia on a date mutually convenient to OPS and Respondent.

Neither this Order nor the proposed amendment fully address whether additional measures should be taken for the long-term safety of Colonial pipelines and of the original construction Pasadena-Linden line in particular. The task force being established by OPS will be examining those issues and may recommend additional measures. If any additional measures are to be required through an order, the Respondent will be

notified of that determination in writing through further amendment of this Order or through the issuance of a separate order, as appropriate. To the extent consistent with safety, the Respondent will be afforded notice and an opportunity for a hearing prior to the imposition of any additional measures through an order.

Richard B. Felder
Associate Administrator
for Pipeline Safety

Date Issued: July 31, 1996

Enclosure