



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

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

SEP 17 1999

Mr. David Lemmon
President
Colonial Pipeline Co.
945 E. Paces Ferry Rd.
Atlanta, Georgia 30326

Re: CPF No. 28505, Colonial Pipeline Co.

Dear Mr. Lemmon:

Enclosed is the Final Order issued by the Associate Administrator for Pipeline Safety in the above-referenced case. It makes findings of violation of pipeline safety standards and requires corrective action with respect to those violations. Your receipt of the Final Order constitutes service of that document under 49 C.F.R. § 190.5.

Sincerely,

Gwendolyn M. Hill
Pipeline Compliance Registry
Office of Pipeline Safety

Enclosure

cc: Carole Sims, Esq.

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

DEPARTMENT OF TRANSPORTATION
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION
OFFICE OF PIPELINE SAFETY
WASHINGTON, DC 20590

In the Matter of)

Colonial Pipeline Co.,)

Respondent.)

CPF No. 28505

FINAL ORDER

Following the pipeline failure at the Morgan Falls landfill in Fulton County, Georgia on March 30, 1998, pursuant 49 U.S.C. § 60117, representatives of the Office of Pipeline Safety (OPS) conducted an on-site pipeline safety inspection of Respondent's facilities and records in Atlanta, Georgia and at the accident site. As a result of the inspection, the Director, Southern Region, OPS, issued to Respondent, by letter dated August 20, 1998, a Notice of Probable Violation and Proposed Compliance Order. In accordance with 49 C.F.R. § 190.207, the Notice proposed finding that Respondent had violated 49 C.F.R. §§ 195.108, 110, 266(a), 402, and 404. The Notice also proposed that Respondent take certain measures to correct the alleged violations.

Following extensions of time to respond, Respondent responded to the Notice by letter dated October 23, 1998 (Response). Respondent contested some allegations, sought clarification of the terms of the proposed compliance order, and requested the entry of a consent order to resolve the case. The request for a consent order was denied. The pipeline safety law, 49 U.S.C. § 60122, requires consideration of any history of prior offenses in determining sanctions for future violations. Thus, it is OPS policy to address allegations of violation in final orders unless there are compelling reasons not to do so. There are no compelling reasons that we should not address the violations in this case. At Respondent's request, a hearing was held on December 15, 1998 in Atlanta, Georgia.

FINDINGS OF VIOLATION

Respondent challenged each of the allegations in this case. Except for items 1 and 3 of the Notice, which are addressed below in the section titled Withdrawal of Allegation, each item is discussed in turn.

External loads. Item 2 of the Notice alleged violation of 49 C.F.R. § 195.110 for failing to design for anticipated external loads in the landfill area and for the localized stresses that would be caused by inadequate support. Respondent objected to application of section 110 to the situation in the landfill area on the grounds that "the factual situation at Morgan Falls is unlike the examples cited in the regulation", that the referenced standard ASME B31.4, section 419, reinforces a reading of section 110 as limited to particular external loads, and that the external loads found at Morgan Falls were not anticipated at the time of construction. Section 110 reads (in relevant part) as follows:

(a) Anticipated external loads (e.g.), earthquakes, vibration, thermal expansion, and contraction must be provided for in designing a pipeline system. In providing for expansion and flexibility, section 419 of ASME/ANSI B31.4 must be followed.

(b) The pipeline and other components must be supported in such a way that the support does not cause excess localized stresses.

Respondent's argument initially fails because the list of examples provided within the text of section 110(a) is explanatory and expansive rather than limiting. One of those examples, earthquake, does not fit clearly within the dictionary definition of "load" as "the forces to which a structure is subjected due to superposed weight . . ." Webster's New Collegiate Dictionary, 1976, 2 b. Yet it is one of those forces commonly considered in the design of pipelines. See preamble to the final rule, 34 Fed. Reg. 15473, 15474 (1969). Forces attributable to the weight of matter above a pipeline, activities over a pipeline, and lack of a stable subsurface (the circumstances in Morgan Falls) are the more commonly understood type of external loads that must be provided for in designing a pipeline.¹ The National Transportation Safety Board determined the settlement of the soil and compacted trash underneath the pipeline to be the probable cause of the failure that occurred March

¹ The need to account for this type of external load is not limited to hazardous liquid pipelines, but appears to be commonly understood by engineers. *Wisconsin Central Limited v. Public Service Commission of Wisconsin*, 95 F.3d 1359 (7th Cir. 1996)(recognizing engineering studies that recognize depth of burial and thickness of pipe as valid alternatives to casing in constructing gas pipelines beneath railbeds); *River Construction Corporation v. United States*, 159 Ct. Cl. 254 (1962)(rejecting claims that testing to assure that concrete water pipeline could withstand concentrations of weight was overdosing); *United States Pipe and Foundry Co. v. City of Waco*, 100 S.W. 2d 1099 (Tex. App. 1936)(discussing the suitability of certain cast iron pipe given the planned use in deep fills).

30, 1998 and the stresses created by activities over the line to be contributing causes. Pipeline Accident Brief, DCA-98-MP-002., p. 6 (National Transportation Safety Board, March 22, 1999).

Contrary to Respondent's argument, inclusion of the referenced ASME standard does not support a limited reading of the overall requirement to provide for external forces that is found in the first sentence of section 110(a). Inclusion of the referenced ASME standard simply points the designer of a pipeline system to the detailed engineering calculations in the ASME standard when providing expansion and flexibility in design. Similarly, section 110(b) gives further directions to a designer on support but through classic performance language; i.e. avoid excess localized stresses.

Finally, there is the issue of whether the external loads that existed at Morgan Falls were anticipated when the pipeline was constructed. Respondent chose to construct its pipeline through an active landfill and purchased an easement from Fulton County, the owner of the landfill. In recent years, the landfill operation was replaced by recycling operations. Although Respondent argued that it worked with the landfill operator as well as with subsequent recyclers, to assure that their activities did not damage the pipeline, the original easement does not limit activities in order to protect the pipeline. Indeed the original easement explicitly reserves the rights of the landfill operator to the free conduct of operations:

It is understood and agreed this easement shall not restrict or impair the ingress and egress of Grantors crossing over said easement with their equipment, in the free use of its property for a landfill.

Said pipeline shall be buried so that it does not interfere more than is absolutely necessary with the use of the landfill by the Grantee. *Right of Way Easement No 2634530, March 15, 1978.*

Respondent points to the activities of the current recycler as the likely cause of the external loads and claims that these were not anticipated when the pipeline was constructed. The activities discussed were the deposit of a compost pile over the pipeline and the operation of wood chipping machines within the landfill. However, these activities are not so fundamentally different from those engaged in by the original landfill operator – namely, depositing and burying trash in the landfill and the operation of heavy equipment in the landfill – as to be unanticipated. Furthermore, the chance of settlement due to compaction of the trash in the landfill should have been anticipated from the beginning.

Accordingly, I find that Respondent violated 49 U.S.C. § 195.110 as alleged.

Operating procedures. Item 4 of the Notice also alleged two instances of violation of 49 C.F.R. § 195.402(a) for failing to follow the operating procedures it had established for aerial inspections and for responding to emergencies.

Procedures for aerial inspections – The Notice alleged that the patrol pilot was not reporting certain activities of the recycler, namely the buildup of material on the pipeline right of way in the area in which the March 30, 1998 failure occurred. Respondent's "DOT Reference Guide, Procedure for Inspection of Pipeline Right of Way" provides, in applicable part:

The pilots shall be alert for and report any of the following conditions:

J. Dumping of rubbish, sludge, dirt, or unknown substances on the right-of-way.

Patrol pilots shall continue to report the previously defined conditions as long as they exist or until notified by district personnel that there is no longer a need to continue reporting the condition. . . .

During the course of patrols, the pilot shall establish radio contact with [Respondent's facilities]. . . the pilot will report all recent sightings not previously communicated to [Respondent].

PATROL REPORTS AND RECORD MANAGEMENT

Patrol pilots shall enter segments flown and aerial observations on [Respondent's] computer program after each day's flight. p. 32.1-32.3.

Respondent argued that there is no requirement for a particular type of notice from the district personnel and that, through discussions with another pilot, the pilot thought that there was no longer a need to report. Respondent did not say that district personnel were in fact aware of the situation and had requested pilots to discontinue reports. Based on the evidence, I find that the pilot had not received notice from the district personnel that reporting was not required and that continued reporting of the situation at Morgan Falls should have occurred.

Respondent indicated that it would change its procedures to clarify that discontinuance of reporting should only occur upon a specific request from the district personnel. This should help avoid a similar miscommunication in the future. However, it appears that the pilots in some areas have limited ability to establish immediate radio contact with ground-based personnel during patrol. Assuring such radio contact would vastly improve communications. The adequacy of Respondent's planned correction will be evaluated by OPS under this final order.

Emergency procedures – The Notice also alleged that Respondent failed to follow its own emergency procedures in two aspects – in its documentation of the initial report of the March 30, 1998 failure and in its reaction to the report. Respondent's procedures provide that a control center employee receiving a report of possible failure shall accurately document the report on a Leak Report Questionnaire/Checklist (Leak Report) and that the line shall be shutdown under specified circumstances. In this case, an employee received a report concerning a leak, decided to drive to the site to investigate, and notified the control center of this. The control center initiated a slowdown of the pipeline until the employee called back in and confirmed the failure. It does not appear that the delay in initiating shutdown made an appreciable difference in the amount of product released.

With respect to the first, Respondent argued that personnel at its control center correctly completed the Leak Report based on a call from the employee who went to investigate. However, the evidence indicates that the information recorded on the Leak Report did not correctly document information about the failure relayed by the employee who went to investigate. The nature of the observation by the outside caller, as recorded elsewhere by control center personnel and presumably relayed by the employee who had gone to investigate, was inaccurately recorded on the Leak Report. Handwritten time line notes prepared by control center personnel and a tape recording of a telephone call placed in the control center indicate that the employee who had gone to investigate said that the initial caller had reported an odor and product seeping out of the ground. However, the Leak Report Questionnaire/Checklist noted only odor and soil discoloration.

With respect to the second failure to follow emergency procedures and initiate shutdown, Respondent claimed that its response, initiating slowdown and investigation, was proper based on the report of the observation that it had. However, even if the employee who went to investigate had believed that he did not have a confirmed report, the evidence indicates that the control room believed that an individual had reported that there was product on the ground.² Respondent's procedures for "Leaks or Suspected Leaks" appears to clearly require shutdown under these circumstances:

The following types of reports must be accepted as conclusive evidence of a leak or puncture:

.....

D. An individual makes a positive report of sighting product.

² The name, address, and contact number of the initial caller was not recorded anywhere and thus was not available for follow up if there were any questions. Respondent has amended its procedures to provide that an employee receiving an outside call about a leak should endeavor to obtain this information. Respondent's response to notice of amendment, CPF No. 28506M, item 4.

This reading of the procedures is further bolstered by the notice on the Leak Report that a report of product sighting shall constitute "conclusive evidence of a leak requiring the line be shut down immediately."

Accordingly, I find that Respondent violated 49 U.S.C. § 195.402(a) by failing to follow its procedures for aerial patrols and for responding to emergencies as discussed above.

Records of aerial patrols:

Item 5 of the Notice alleged that Respondent failed to maintain accurate records of its aerial patrols in that the records indicate that pipeline at Morgan Falls was patrolled by two pilots on six occasions in March 1998. Post accident interviews indicate patrol by one pilot on three occasions during that month. Respondent explained the discrepancy by noting that the two pipelines in the Atlanta area diverge into two rights-of-way, known as the north and south loops and that the written records do not differentiate between the two. Respondent noted that it exceeds the pipeline safety standards on the number of aerial inspections it conducts and believes that the written records of those inspections should not be characterized as inaccurate. However, without written records on whether an inspection of a particular segment was done, Respondent must rely on the memories of the pilots to assure compliance. This is unacceptable. Respondent has indicated its willingness to change how it records the inspections in the future.

Accordingly, I find that Respondent violated 49 C.F.R. § 195.404(a)(3) by failing to maintain accurate records of aerial patrols.

These findings of violation will be considered prior offenses in any subsequent enforcement action taken against Respondent.

WITHDRAWAL OF ALLEGATION

External Pressure. Item 1 of the Notice alleged violation of violation of 49 C.F.R. § 195.108 for failing to provide adequate pipeline support. Respondent claims that the section 108 applies only to situations in which there are pressure differentials between the interior and exterior of the pipe, such as may occur with a submerged pipeline. Design factors such as wall thickness rather than support are generally provided to address these differentials. Respondent noted conversations it had with OPS personnel on their understanding of this regulation. I agree with Respondent that section 108 is not applicable to the situation in Morgan Falls. Accordingly, this allegation is withdrawn.

Construction Records. Item 3 of the Notice alleged that Respondent either did not maintain or could not produce the nondestructive test records for girth welds for Line 01 Spread 1A, the area that included the site of the March 30, 1998 failure. Respondent responded that it had originally been unable to locate the records because they were not clearly identified. Apparently, some markings may have been obliterated. It has since made the records available for review.

Accordingly, this allegation is withdrawn.

COMPLIANCE ORDER

Under 49 U.S.C. § 60118(a), each person who engages in the transportation of hazardous liquids or who owns or operates a pipeline facility is required to comply with the applicable safety standards established under chapter 601. The Notice proposed numerous measures to address the violations. Respondent has already initiated some of the actions required under this Final Order and need not repeat any that the Regional Director, Southern Region, agrees in writing need not be repeated.

At the hearing, Respondent raised various concerns about the proposed corrective action. In many cases, the concern was that the terms of the proposed compliance order appeared to limit Respondent's ability to apply engineering analysis to the issues. That was not the intent of the Southern Region and, accordingly, some modifications are made to the terms in this final order. There are two of these that need a little explanation.

First, item 1.c., which deals with degradable material under the access road, has been modified to recognize that a careful engineering analysis may be just as effectual as a reconstruction of the site. Second, item 1. d. deals with an anomaly that was described as a smooth dent. Small smooth dents do not normally require repair. The Southern Region believes that this particular anomaly may be one that requires repair because of special circumstances.

Pursuant to the authority of 49 U.S.C. § 60118(b) and 49 C.F.R. § 190.217, Respondent is hereby ordered to take the following actions:

1. Complete the following immediate steps to address external loads/ inadequate support:
 - a. Review the Dacula to Greensboro cage and deformation tool pig run data and verify that the calibration and standardization of the temporary playback was proper. Identify anomalies that require immediate attention. For any such anomalies, inspect the pipeline, and repair or replace any defects as required –
 - Provide the Director, Southern Region, OPS, with a list of the anomalies to be examined, prior to digging.
 - Inspect all defects for crack-like indications using fluorescent magnetic wet particle examination, or the equivalent.
 - Use repair requirements at least as complete as described in paragraph 3 below.
 - b. Using a third party consultant, perform a review of the pipeline traversing the Morgan Falls landfill, between pipeline station numbers 967+69 and 972+30, including the surface water retention pond over the pipeline. In the review, consider the effect of any resultant forces and related stresses that may be imposed on the pipeline considering such factors as changes in groundwater level, surface water runoff, abrupt changes in

product flow, the pipe depth, surrounding soil characteristics, supporting material, anticipated product fluid densities, line evacuations, nitrogen displacement, overburden, and buoyancy. Provide to the Director, Southern Region –

- A report summarizing the review, and
- An action plan to correct any problems that could affect pipeline integrity.

c. Using sound engineering practices, determine whether any landfill degradable material exists under the pipeline crossing the Morgan Falls dump access road. If any degradable material exists under the pipeline at the road, demonstrate that the risk to pipeline integrity as to settlement is minimal or develop a plan to correct any problems affecting pipeline integrity. Consider anticipated road traffic and pipeline loading.

d. Examine the Line 01 anomaly located at location ODO 130199 based on the 1998 internal line inspection, develop a plan for addressing the anomaly for approval of the Director, Southern Region, and carry out the plan.

e. Maintain the existing pressure restriction on Line 01 until the Director, Southern Region, confirms completion of the work listed in items 1 a. through d.

2. Take the following steps to address the future risk to pipeline integrity caused by external loads/inadequate support with respect to those parts of your system that traverse any active or inactive landfill:

a. Identify all Colonial pipeline segments traversing inactive or active landfills.

b. For each pipeline segment identified in 2.a., determine whether the segment was installed through or is supported vertically or horizontally by degradable landfill material. If there is no verifiable documentation that the pipe was installed in original undisturbed soil, assume that the pipeline is supported by degradable landfill material until you determine otherwise by physical tests digs, core sampling, or other sound engineering practice.

c. For each pipeline segment identified in 2.b. as supported by degradable landfill material, use a firm or firms with geotechnical, soils, and engineering expertise and determine factors that might affect the integrity of the pipeline. Prepare a site specific analysis to determine the potential for pipeline settlement, movement, and stresses imposed by forces in the landfill site and an assessment on recommended actions to be taken to minimize any identified risks with a comparison of the associated risks to those of a line installed in an area outside the landfill. The site specific analysis shall take into consideration the following –

- Characteristics, depth, and layers of landfill material supporting the pipe;
- Potential for settlement forces imposed on the pipeline caused by decomposition of landfill material surrounding or supporting the pipe;

- Existing and anticipated pipe overburden;
 - Ground movement and imposed forces on pipe caused by vibration resulting from heavy equipment operated by Colonial or anticipated third party whether on or off the right of way;
 - Property owner easement rights and past and anticipated future activity on right of way;
 - Any resultant forces and related stresses that may be imposed on the pipeline considering such factors as changes in groundwater level, surface water runoff, abrupt changes in product flow, the pipe depth, surrounding soil characteristics, supporting material, anticipated product fluid densities, line evacuations, nitrogen displacement, overburden, and buoyancy.
 - Acidic/basic environment, pH value;
 - Pipeline specifications, construction specifications, method of installation;
 - Known pipeline anomalies, defects, abnormalities, including those based on available pig data;
 - Susceptibility of land or material movement by natural causes such as earthquakes, landslides, flooding;
 - Other activities or factors that could affect the integrity of the pipeline.
- d. Within 60 days of the final order, submit a schedule, for approval, to the Director, Southern Region, on the analysis and assessment required by 2.c. on the
- e. Prepare an action plan with implementation schedule to address any risks identified in 2.c. and submit it for approval of the Director, Southern Region.
- f. Complete the implementation plan.

3. Within 30 days from the date of the final order, review the 1998 Dacula to Greensboro cage and deformation tool pig run data for indications of anomalies not already identified for item 1.a. above and submit a plan and schedule for the exposure and inspection of these to the Regional Director, Southern Region, for approval. The plan shall include exposure, inspection, and repair of the defects as follows –

- a. Expose and inspect all buckles and develop a methodology for repair or removal, providing a copy of the methodology and the basis for it to the Director, Southern Region.
- b. Expose and inspect all dents with a depth equal to or greater than 6% of the nominal diameter of the pipe, all dents on welds, all anomalies on the top half of the pipe, all multiple/overlapping dents.
- c. Repair or remove defects in accordance with Colonial's repair procedures, including the methodology developed for buckles, and the pipeline repairs section of ASME B31.4.

d. In addition, repair or remove all multiple/overlapping dents and all unconstrained smooth dents of depth greater than 2% of nominal pipe diameter (unless a pressure cycle analysis reveals that the unconstrained dent would not come close to failing within the useful life of the pipeline).

e. Perform a wet magnetic particle inspection on all exposed anomalies found with any scratch, gouge, or groove indication (visual or from the pig data); all multiple/overlapping dents, all buckles, and all exposed sharp dents.

4. Modify your aerial patrol reporting and tracking system to insure that accurate records are maintained.

5. Revise your right of way inspection procedures to require that the pilot continue to report conditions even if district personnel indicate that they no longer need the report and to require that all aerial observations be reported, documented and reviewed with follow up documentation by district personnel, or alternatively, revise your right of way inspection procedures to require that district personnel document any request that a particular condition no longer needs to be reported so as to assure that each pilot has that information prior to each flight.

6. Prepare a structured, documented pilot training program for initial and regularly scheduled refresher training and proficiency testing that addresses required patrol observations, emergency procedures, record keeping requirements, and communications between pilot and ground personnel. Include in the program the changes required by item 4. as well as input from ground based personnel. Within 6 months of the final order, have all patrol pilots successfully complete the training program.

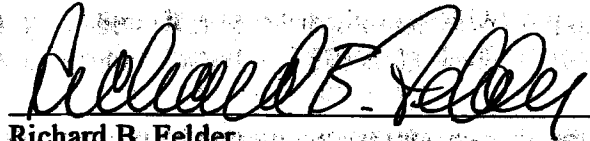
7. The Director, Southern Region, OPS may grant an extension of time for completion of any of the actions required herein, or agree to a modification of a plan which he originally approved, upon receipt of a written request from the Respondent stating reasons therefore.

Under 49 C.F.R. § 190.215, Respondent has a right to petition for reconsideration of this Final Order. The petition must be received within 20 days of Respondent's receipt of this Final Order and must contain a brief statement of the issue(s). The filing of the petition automatically stays the payment of any civil penalty assessed. All other terms of the order shall remain in full effect unless the Associate Administrator, upon request, grants a stay.

Failure to comply with this Final Order may result in the assessment of civil penalties of up to \$25,000 per violation per day, or in the referral of the case for judicial enforcement. Nothing in this Final Order shall constitute or be construed as a release, covenant not to sue, waiver or limitation of any rights, remedies or authorities, civil or criminal, including but not limited to penalties under 49 U.S.C. §§ 60122 and 60123, that the Department of Transportation or any

other agency of the United States may have against Colonial Pipeline Company under any statutory, regulatory, or common law authority.

The terms and conditions of this Final Order are effective upon receipt.



Richard B. Felder
Associate Administrator for Pipeline Safety

SEP 17 1999

Date: _____